ACuTe

Digital Theatre

A Casebook

ETC EUROPEAN THEATRE CONVENTION

ACuTe

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DIGITAL THEATRE

A Casebook

ANIMATION

AI

ARTISTIC RESIDENCY

AUDIENCE INTERACTION

AUDIENCE DEVELOPMENT

AUGMENTED REALITY

CRT MONITORS

DESIGN THINKING

DIGITAL THEATRE ARCHIVE

GAMING

GRAVITY

INTERNATIONAL COLLABORATIONS

LARGE LANGUAGE MODELS (LLMS)

MEDIATURGY

PROJECTIONS

PROTOTYPE

REMOTE AUDIENCES

SMARTPHONES

STUDENTS

SUSTAINABILITY

VR

FOREWORD

ACuTe: The Future for Digital Theatre

BY
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It is with great pride that I introduce the ACuTe Casebook – Digital Theatre, the latest publication in ETC's long-standing series of casebooks that share knowledge, practice, and learning from large-scale European collaboration projects. Over the years, these casebooks have documented how theatres across Europe respond collectively to urgent artistic and societal questions – from *STAGES – Sustainable Theatre*, to *Fabulamundi New Voices – Diversifying Theatre*, and *Future Laboratory – Artistic Research in Theatre*. ACuTe now joins this lineage, offering a rich and timely reflection on digital creation in theatre, based on extensive performative research results spanning 2022-2025.

The ACuTe project represents four years of deep collaboration, bringing together 14 partners from 11 countries to rethink how new technologies can be meaningfully embedded in theatrical productions and organisational processes. Rather than treating technology as an add-on or spectacle, ACuTe invited partners to experiment, question, and redesign their working methods through the culture testbeds – a new design thinking toolkit to be employed in theatre practice and across the performing arts, developed by our project partners at Saxion University/The Netherlands. This approach foregrounded curiosity, iteration, and critical reflection, enabling theatres to test ideas in real artistic and institutional contexts.

Reading through this casebook is a pleasure precisely because it demonstrates how varied and context-specific digital practice can be. Each contribution reveals a distinct artistic response: from interactive AI appearing as a character on stage at Det Norske Teatret/Norway, to award-winning chat-room dystopias explored by De Toneelmakerij/

The Netherlands; from behind-the-scenes experiments with sustainable energy distribution at Théâtre de Liège/ Belgium, to projection and gaming aesthetics at Oulun Teatteri/Finland, and VR alongside nostalgic on-stage television technologies at "Marin Sorescu" National Theatre of Craiova/Romania.

ACuTe also underlines the vital importance of Creative Europe investment in strengthening the resilience and adaptability of European cultural institutions, particularly at a time when Artificial Intelligence is rapidly reshaping creative landscapes. When I began working on digital theatre in 2016, most theatres did not yet have a digital theatre policy. Today, the term itself feels almost obsolete. Working with new technology is increasingly understood as simply being *creative* and being *innovative* – the very lifeblood of theatre across our continent.

My sincere thanks go to all ACuTe partners — particularly Oulu University of Applied Sciences (OAMK), for their great work as lead partner — to Creative Europe, and to everyone who contributed their insight to this casebook. I hope you enjoy the read, and I invite you to continue exploring Digital Theatre and many other topics through the ETC Online Library.

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I

What is ACuTe?

SECTION 1

What is the ACuTe Project

BY

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Theatre has always been a mirror of human experience—reflecting our stories and history, emotions and imagination as well as the worlds around us -the real and the imagined ones, and it has communicated with the actual matters of the world. Now that digitality and new technologies transform every aspect of modern life, the whole field of performing arts has faced both a profound challenge and an extraordinary opportunity: can technology become a creative partner in the evolution of live performance? The ACuTe project was conceived as a bold investigation to this question.

AcuTe is a Creative Europe project that has brought together a consortium of 14 European organisations to reimagine how performing arts can evolve in the digital age. ACuTe represents ambitious European collaboration, aimed at redefining the creative infrastructure of the performing arts. Bringing together fourteen pioneering organisations: theatres, universities, and creative institutions across the continent, over the course of four years ACuTe has been developing into a living laboratory for the future of theatre—one that fuses artistic experimentation with technological innovation, but finds it important to maintain the essence of human connection that lies at the heart of performance.

ACuTe's core vision is to develop and foster a new, future-oriented model for the field of performing arts: a model that integrates emerging technologies into theatre making without compromising artistic depth or human connection. Rather than treating technology as a superficial add-on, the project positions technologies as an integral part of artistic exploration, storytelling, and production.

At its core, ACuTe established culture testbeds—interdisciplinary conditions, where artists and technologists

collaborate to explore how technologies can be embedded in creative processes and theatre productions. In the core of of the ACuTe project are the testbeds staged across Europe. The testbeds are collaborative, interdisciplinary conditions, where artists, technologists, and institutions can experiment, prototype, and test new ideas in real production contexts. In ACuTe, the testbeds focus on three core areas: new dramaturgies, stage design and audience engagement. Across these testbeds, nine experimental productions have been designed and performed to investigate how emerging technologies—from virtual and augmented reality to AI-assisted design and AI appearing as a character on stage—can reshape not only what happens on stage, but how stories are told, rehearsed, and received. These experiments are catalysts for reimagining and restructuring creative processes, production methods, and the very relationship between artists and audience. The productions have been designed not only to push artistic boundaries but also to generate knowledge and insights into how technology reshapes interdisciplinary collaboration, artistic processes, and audience experience.

What has been remarkable in ACuTe has been the open-mindedness and bold attitude that the makers have expressed when experimenting with new technologies. Going towards the yet-unknown has not been a difficulty but an expedition that the AcuTe members have approached with curiosity and willingess to learn and adapt.

To support the testbeds, the project has built a structure of support. The organisations hosting the experimental productions have had the support of a testbed toolkit developed from design thinking methdology, experts in residence

periods as well as input from students available throughout their production processes. Through careful backround research, expert residencies, workshops, and shared knowledge platforms, artists and technicians from across Europe have been developing the skills and sometimes also tricks needed to navigate in the middle of the digital transformation of culture—not as passive adopters of tools, but as active shapers of new artistic languages. The testbed toolkit has been published and will remain as a tool for re-thinking theatre productions also in the future.

Experimenting with new technologies has raised interest also outside the project. The ACuTe productions have been in the spotlight across Europe, invited to be performed in several different locations and events internationally, received different nominations and awards, and walked the makers into new collaborations and partnerships. At the same time, it has revealed that the organisational and structural shift towards experimental production processes will take time.

This casebook captures that process of transformation. It documents the challenges, insights, and prototypes that have emerged from ACuTe's four-year journey, offering a glimpse into how interdisciplinary collaboration can drive systemic innovation in the field of performing arfts as well as the whole cultural sector. ACuTe encourages us to think of the theatre not only as a space for performance, but as a platform for experimentation, dialogue, and digital transformation. It demonstrates how European cooperation can foster sustainable change within the arts ecosystem. The insights presented here will serve not only theatre professionals and policymakers, but anyone invested in

the evolving relationship between culture, technology, and society.

Ultimately, ACuTe redefines what it means to make and experience theatre in the 21st century — not as a departure from tradition, but as an evolution that keeps the live, human essence of storytelling at its core while exploring the potential of digital transformation in the field of performing arts with an open attitude. As this casebook reveals, the future of theatre is not about replacing the live experience—it is about enriching it, expanding the boundaries of imagination, and ensuring that the performing arts continue to thrive as spaces of innovation, reflection, and connection in a rapidly changing world.

Introduction to the Design Thinking Method & ACuTe toolkit

BY
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As part of the ACuTe project, a culture 'testbed model' was created for developing and testing innovative approaches and methods for integrating digital technologies in the performing arts, under three themes: new dramaturgies, stage design, and audience engagement.

The Design Thinking method was used to develop this testbed model which resulted in a toolkit to invent, create, design and test experimental productions. Partners in the ACuTe project have been able to use this model by consulting a new document, the Design Thinking toolkit, which is free to access on the ACuTe website.

This article sets out how the testbed was developed, before providing a deep-dive into the tools contained in the Design Thinking toolkit.

1. Testbed development

1.1. Design Thinking

The testbed concept design process began at the ACuTe project kick-off in September 2022 in Linz, where 'Design Thinking' was introduced as a method to guide innovation. This iterative process includes five phases: empathize (understanding user needs), define (clarifying challenges), ideate (creating solutions), prototype (building vertical slices), and test (gathering feedback), as you will see in figure 1 below. This method was chosen to ensure meaningful innovations are developed by the partners of the ACuTe consortium, based on user needs.

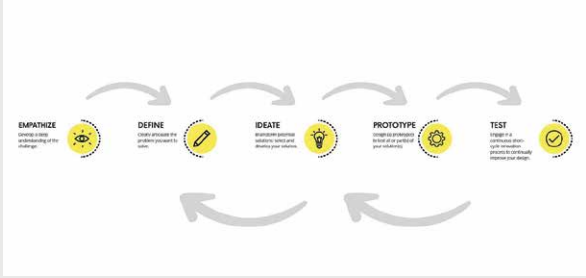

Figure 1 Visualization of the Design Thinking method (www.canva.com/ Marta Borrequero, n.d.)

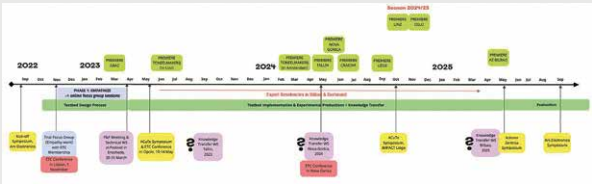

Figure 2 Schedule of the project plan including testbed design work

1.2. Testbed Concepting workshop

In October 2022, representatives of five consortium partners met in Enschede for a 'Testbed Concepting Workshop'. The workshop, partly held online to involve the other partners, aimed to embed the testbed design process in the overall ACuTe project plan. Key discussions revolved around how each organization would contribute to the testbed and the roles of experts in residence, who would be integrated into the testbed methodology.

The group created a detailed project timeline extending from 2022 to 2025, covering productions, expert recruitment, events, and meetings, which can be seen below in figure 2.

1.3. Empathy Phase of the Testbed development

During the ETC Conference at Teatro D. Maria II in Lisbon in November 2022, the empathy phase of the testbed design began with a workshop that engaged the European theatre community. The Value Proposition Canvas, Customer Journey, and Persona Template were used to create an interactive empathy exercise. This exercise aimed to understand and connect with the needs of theatre professionals, shaping the future direction of the testbed design.

The Value Proposition Canvas is a framework developed by Osterwalder & Pigneur (2010) to help designers create products or services that meet user needs. It is useful for redesigning existing products or developing new concepts from scratch. The canvas consists of two main parts: the user profile and the value map. It is used to map the gains, pains, jobs, gain creators, pain relievers and products/ services for the user. The goal of this model was to define how value could be created for the stakeholders of the theatre community. The canvas is presented in figure 3 below.

The Customer Journey Map allows designers to step into the user's shoes and understand their experiences

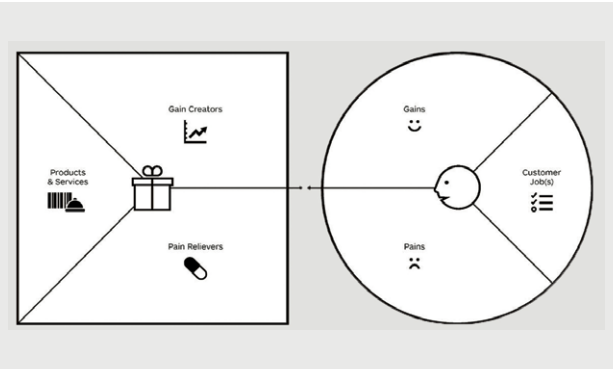

Figure 3 Value Proposition Canvas (Osterwalder & Pigneur, 2010, Business model generation).

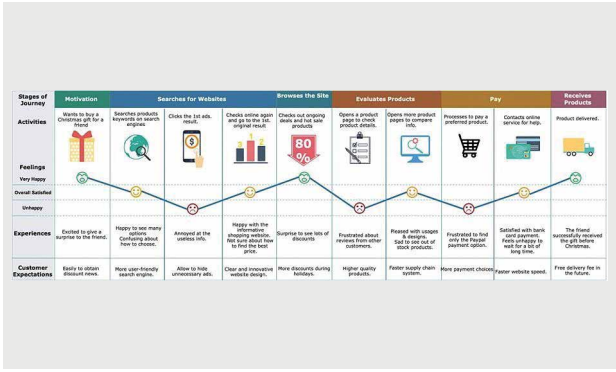

Figure 4 Example of a Customer Journey map (Lewrick & Link, 2020, The Design Thinking Toolbox).

while completing a task. By mapping this journey, the stakeholders' pains and gains were to be defined, making the process user oriented. For an example see figure 4 below.

The Persona Template helps create archetypical user profiles, offering insight into users' needs, behaviors, and goals. Personas represent different user types and simplify the design process by clarifying user expectations, guiding product development, and enhancing the overall user experience. For the ACuTe project, the Role-Based Persona was identified as the most suitable, focusing on users' behavior within their professional roles within Stage Design, New Dramaturgies, and Audience Engagement. This approach helped to innovate based on the specific job responsibilities of these roles.

Key outcomes from the Lisbon Empathy Workshop highlighted shared challenges across theatre institutions, including:

- Lack of time for research and development in a 'pre-pre-production' phase.
- Friction between external limitations and internal creative inspiration.
- Limited opportunities for experimentation and prototyping.
- The need to incorporate post-production reflections into innovation processes.

1.4. Deepen the understanding of the Empathy Phase of the Testbed development

In December 2022 and January 2023, a series of online sessions were conducted as follow-up of the empathy phase, to deepen the understanding of the challenges and opportunities in the performing arts sector. These sessions aimed to develop user personas that reflect the pains and gains experienced by stakeholders across the sector,

enabling the project team to build a deeper understanding of the needs of professionals involved in these Stage Design, Audience Engagement and New Dramaturgies.

During these 1.5-hour sessions, participants, including 21 stakeholders from across Europe, discussed their experiences related to the user journey of constructing performing arts productions. They explored the people involved in various steps, the difficulties and benefits encountered, and opportunities for innovation. This process, based on the "Pains and Gains" framework (Lewrick, Link & Leifer, 2020), is aimed at identifying areas where value can be created for stakeholders.

1.5. The Define and Ideate Phase of the Testbed development

Following the empathy phase, the project entered the Define and Ideate phases from January to March 2023 in Enschede, Netherlands. In these stages, the insights gathered from the empathy sessions were organized into problem statements focusing on pain relievers and gain creators. These problem statements, centered on the needs of users, guided the ideation process, allowing the design team to develop a testbed model to develop and test innovative solutions. Overall, these empathy sessions and subsequent phases aimed to innovate and create value in performing arts by deeply understanding the needs of its professionals.

Based on the pain relievers and gain creators formulated by the stakeholders, it was decided to develop a toolkit the stakeholders can use for testbed implementation and developing experimental productions. The benefit of the

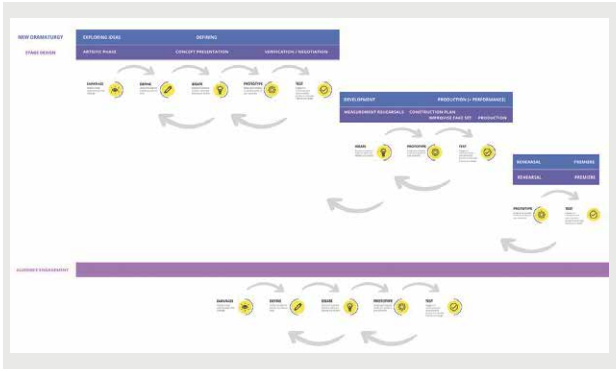

Figure 5 Timelines combined with the Design Thinking model.

development of a toolbox would be that the ACuTe consortium, but also theatres outside the project, would be able to select the tools that help to develop innovative concepts and incorporate new technologies. Thus, the toolbox must contain tools that are widely used in the creative industry, that have proven their value and that will help theatres to develop innovative concepts, based on new technologies in a user-centred, structured way.

1.6. The Prototype of the Testbed

To support a structured development process, the toolbox was based on the production journeys combined with the Design Thinking steps. This will help stakeholders to find the tools that will be beneficial for every stage of the production journey. Figure 5 below shows how the timelines are combined with the Design Thinking model.

2. The toolkit

The toolkit, presented as an interactive PDF, encompasses the five steps: empathize, define, ideate, prototype, and test. A preparatory "Step 0" was added to address the need to align innovation concepts with stakeholder expectations, as digital theatre can be divisive within the industry. Research indicates that some theatres remain hesitant about digital distribution due to concerns over replacing live performances. For organizations experimenting with new technologies, it is essential to consider their potential impact, even though predicting outcomes is not always possible. Multidisciplinary groups may have different values, so discussing and aligning these values early on can foster learning and open new creative possibilities.

2.1. Tools to Empathize

The empathy phase aims to gain deep insights into user needs. This requires setting aside assumptions and adopting a beginner's mindset to objectively view and analyze challenges. The tools can help designers to avoid projecting their own biases onto users and instead listen with an open mind to users within the performing arts, like visitors and performers.

One such tool is the stakeholder map, which identifies stakeholders, their concerns, and their impact on the project. This map helps develop a communication strategy by determining how often to engage with each stakeholder based on their influence and interest. The empathy map is another tool that explores users' thoughts, feelings, and attitudes to understand their needs, focusing on emotional states through interviews, discussions, and observations.

The Value Proposition Canvas helps identify user pains and gains, guiding the creation of solutions that address these needs. The user persona template creates fictional characters representing different user types to help designers make informed decisions. The customer journey map visualizes the steps users take when interacting with a product or service, offering insights into their experiences. Finally, the Hook model emphasizes user engagement through a four-step loop of trigger, action, reward, and investment, fostering habit formation and user retention.

These tools facilitate understanding, communication, and innovation, ensuring that technology aligns with human values and needs.

2.2. Tools to Define

The Define phase is the second step in the design thinking process, following the Empathize phase. The tools within this phase focus on synthesizing insights from the previous phase into a clear and actionable problem statement. It helps designers clarify the problem, understand its context, and set design criteria, laying the groundwork for the next phases: ideation, prototyping, and testing. Tools like the Problem Statement Canvas help reframe the problem, and the Point of View Madlib aids in structuring the user, needs, and insights into a clear design challenge.

2.3. Tools to Ideate

After defining the problem, the next step is the Ideate phase, where creativity is encouraged to explore a wide range of potential solutions. This phase is critical for generating diverse ideas that can lead to innovative solutions. Tools such as the Consumer Trend Canvas help identify trends that may inspire solutions, while the COCD-box® helps sort and evaluate ideas based on their innovativeness and feasibility. This method prevents overly progressive ideas from being overlooked. A SWOT analysis is also useful in this phase to evaluate a concept's strengths, weaknesses, opportunities, and threats, providing valuable insights for decision-making and refinement.

2.4. Tools to Prototype

The Prototyping phase follows ideation, aiming to bring concepts to life through tangible or digital representations. Prototypes allow designers to test ideas, gather user feedback, and refine designs based on real-world insights. Prototyping is essential for validating ideas and ensuring they are feasible, functional, and user centered. This stage enables iterative testing, where multiple versions of a product can be created and evaluated quickly, reducing the risk of significant resource investments in flawed ideas.

There are various types of prototypes used in design thinking, each serving different purposes. Paper or digital mockups are low-fidelity prototypes used to visualize a product's layout and user interface, making it easy to share with stakeholders and modify. Interactive prototypes allow users to interact with the concept, offering a more advanced way to test usability and functionality. Functional prototypes are high-fidelity and closely resemble the final product in appearance and materials, enabling testing of performance and user experience. These are more resource-intensive but provide realistic feedback on the final product's feasibility.

The choice of prototype depends on the stage of the design process, the available resources, and the complexity of the challenge. Designers often use a mix of low- and high-fidelity prototypes to refine their ideas and validate design decisions through feedback. This iterative approach ensures the final product aligns with user needs and expectations while optimizing production time and costs.

Prototyping serves as a bridge between concept and reality, enabling designers to explore different solutions, reduce risks, and ensure the product meets user needs before moving into full-scale production. By gathering insights and addressing issues early, designers can make informed decisions and deliver a better final product.

2.5. Tools to test

User tests are conducted to find out if the user is willing to use the product or service and usability tests are used to determine what will enable the user to interact with the service of product. For live performances this means testing will help to find out if the target audience is willing to visit the performance and if the visitors will be able to understand how to interact with the performance. Tools incorporated in the toolkit are, amongst other things, focus groups, lab usability testing and observation.

Figure 6 The cover of the toolkit (https://acuteproject.eu/the-testbed-design-toolkit/)

Figure 6 shows the cover of the toolkit, figure 7 shows an overview of the tools within the various phases of the Design Thinking model.

You will find the actual PDF here:
https://acuteproject.eu/the-testbed-design-toolkit/

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II
New Digital Dramaturgies

From *'Rabbit Hole'* by De Toneelmakerij
© Sanne Pepper

From *'The Trial Against Humanity'*, by Det Norske Teatret
© Ole Herman Andersen

From *'Nälkävuosi'* at Oulun Teatteri
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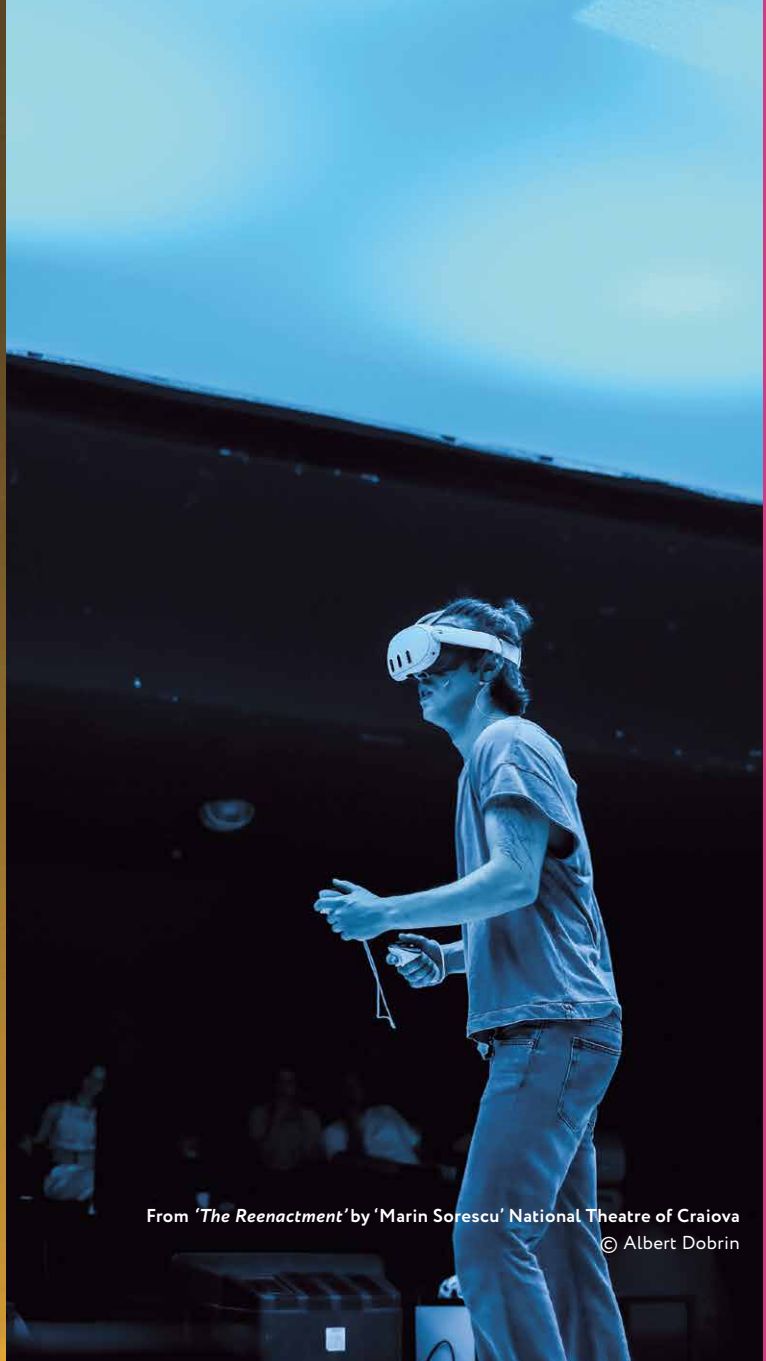

From *'The Reenactment'* by 'Marin Sorescu' National Theatre of Craiova
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SECTION 2

GAMING

AUDIENCE INTERACTION

Lessons from Video Games: The Power of Narrative Design in Theatre

BY
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& NINA VAN TONGEREN
(The Netherlands)

Within the framework of the ACuTe project, our youth theatre company de Toneelmakerij embarked on a journey with new technology. We had previously produced 'Snowflake' (2019), a topical thriller about eight teenagers and their online lives, and now wanted to expand our research into the complex realities facing youngsters. At the same time, we dreamed of a new production that was more technologically advanced than Snowflake. We started out with a simple premise: the audience's phones should stay on during the performance and be used to some degree.

This simple premise turned out to be quite complicated. To name some of the thousand questions we had: How do we get the audience to become active participants and really join in? At what points in the performance should they participate? Is it an issue if audience members start using their phones for other purposes? How do we keep the behaviour of an auditorium packed with adolescents in check, especially if they all have their phones switched on?

By now, we had reached a state of panic, and we realised we couldn't do this alone. We phoned everyone we knew who did something with 'tech' and paired up with our ACuTe partners, who luckily were more experienced. At a certain point, we got introduced to Jedidjah Noomen, a narrative designer from the game industry, who was willing to join our project. No matter how out of our depth we felt, there turned out to be another discipline that actually had all the answers.

What is narrative design?

In the gaming industry, narrative design is crucial as it bridges the game's narrative and the player's interactive experience.

The narrative designer ensures that the story and gameplay are aligned throughout the production process, similar to a dramaturge in theatre who aligns content and intent.

Emerging in the 1990s alongside complex gameplay and storylines, narrative design has evolved significantly. Early games like "Super Mario Bros" had simple narratives where gameplay directly followed the storyline. However, modern games require a more intricate integration of content, interaction, and technology, which is where the narrative designer plays a vital role.

An example: in the acclaimed game "What Remains of Edith Finch," players uncover family secrets in a predetermined sequence, focusing on emotional immersion rather than decision-making. The game offers interactivity through experiencing scenes from the perspectives of deceased family members. For instance, players witness a scene through the eyes of Calvin, an 11-year-old swinging higher and higher, until it becomes clear he will fall off a cliff. Despite the inability to alter the outcome, the physical act of swinging makes players active participants in the character's fate, heightening the emotional impact of his death.

A game like 'Edith Finch' shows that audience-engagement in games comes in many forms. It's not only about making choices, but also a way to increase empathy with the story that's being told. That aspect of narrative design and gameplay-design is especially interesting for theatre. As a sector, we can use these tools to make our audience feel more involved with the narratives we're presenting them.

An essential part of the process of narrative design is user testing to make sure that players engage with the game

as intended by the designers. Testing is a useful tool to adapt and finetune the game's dramaturgy, ensuring the game's elements work harmoniously within the set parameters.

Working with a design document

Developing a large-scale game involves various technical and creative disciplines, each working separately within their own departments. This is unlike traditional theatre productions, which are collaborative and generally take place in a shared rehearsal space. Also, most games have a much longer running time than a traditional play does. In that sense, a game can be compared to a 20-hour opera where each scene requires different costumes and a complex set with multiple moving parts.

Effective communication of changes is crucial in such intricate creative processes. The gaming industry typically uses a 'design document' to streamline documentation and communication between departments. This document, managed by the narrative designer, details both the intended effects and the technical development of the game. By intertwining contextual and technical disciplines from the start, the design document ensures that content, form, storyline, and technology remain closely linked and complementary throughout the production process.

Narrative Design in Rabbit Hole

The theatre production "Rabbit Hole" is centred around Samy, a character whose life mainly plays out in the online world. He's withdrawn himself because of the humiliation

of having explicit images of him shared by classmates and the loss of his father to COVID. In his search for belonging, he becomes entangled in the influence of Neo17, a prominent figure in the 'manosphere'. Despite his sister Hanna's efforts to deradicalize him during their Facetime conversations, Samy is increasingly drawn into the depths of extreme-right online communities.

The staging of the play is designed to reflect Samy's exclusively digital life, featuring a minimalist set with just a table, chair, and laptop. Samy's computer-screen is projected onto a large backdrop visible to the audience, who only see his face during video calls. This staging choice posed a unique challenge: how can we make the audience connect to a character who is so disconnected from them? We decided to encourage them to keep their phones on, integrating Samy's online world with their own devices. This innovative approach allowed the audience to participate in the play through a live text-chat displayed on the large screen, giving them a role and a voice in the narrative.

This interactive concept raised numerous questions, both dramaturgical and technological. How should audience members log in? What kind of chat platform should be used? Should participants remain anonymous or have usernames? How could the audience be encouraged to actively engage and participate at the right moments? To navigate these complexities, the narrative designer was added to the artistic team, bridging the gap between the script and the necessary technology.

After extensive testing, the decision was made to showcase the live chat throughout the whole performance, creating a seamless blend of reality and fiction. Samy, sitting alone in his room, is bombarded with a torrent of online chats, forum posts, video clips, memes, games, voice notes, and video calls. By engaging with the chat function, the audience contributed to the overwhelming array of information and communications that Samy faces, becoming an integral part of his digital world.

The live chat also had minimal rules, mirroring the lawless nature of the internet. Each audience member was assigned a nickname at random, allowing them to participate anonymously and freely. This level of freedom was crucial to the narrative, reflecting Samy's exposure to an online environment where anyone can adopt any identity and say whatever they want. While swear words and negative comments about the play and characters were permitted, some measures were taken to prevent bullying. A moderator was in place with tools to control user behaviour, and automated bots were used to lightly guide discussions towards the play's themes. Additionally, Samy and his sister Hanna engaged in live chats with the audience, attempting to sway them to their respective viewpoints. The moderator also posted polls to the chat, posing questions such as 'Have you ever sent or received a nude?' and 'Do you wish the mobile phone had never been invented?'

Rabbit Hole's live chat provided valuable insights into the views and behaviours of the young audience members. This information formed the basis for post-performance discussions between the chat moderator and the audience, allowing everyone to reflect on the dynamics that emerged through the live chat. These discussions mirrored the everyday reality of online interactions, offering a unique and engaging experience for both the audience and the performers.

Conclusion

The production Rabbit Hole became a huge success. After opening the show in the Deep Space of the Ars Electronica Centre and performing a cluster of shows for an Austrian school-audience, the show premiered in the Netherlands in its touring version, where it ran for two seasons. Also, the show was rewarded with a Zilveren Krekel Award for its digital design. This achievement was realised thanks to equal-foot collaboration between the artistic team, the technical team and the narrative designer from the very start of the creative process. This is one of the main learnings we take away from this collaboration with game developers: it pays off to open up all the phases of your process to other disciplines and knowledge. Also, testing your work and allowing the audience to co-determine your artistic choices turned out to be a fruitful approach.

What we also learned is that narrative design can help to create a new form of audience participation through technology that enriches the theatre experience. By giving your audience actual agency, they will be more inclined to engage. However, giving them a clear role in your play's universe (worldbuilding), will ensure that their behaviour contributes to it and brings in an extra layer of meaning.

In Rabbit Hole, the audience was given full agency to participate in the live chat anonymously and at the same time they behaved like we wanted them to, becoming part of the show's digital decor, enhancing the tragedy of the main character. On the other hand, we were surprised to find that the display of this live chat had an additional effect: it provided a unique insight into the dynamics in teenage chat groups, which proved to be extremely valuable for teachers and parents. In the end, the interdisciplinary route we took with Rabbit Hole was enriching for everyone involved and encourages further exploration.

SECTION 2

AI

LARGE LANGUAGE MODELS (LLMS)

AUDIENCE INTERACTION

New Forms of Collaboration: Theatre and Technology in the Age of Artificial Intelligence

BY
PEER ARNE PEREZ ØIAN
& ANDERS HASMO
(Norway)

Introduction: A Meeting Between Theatre And Artificial Intelligence

When we began the process of creating the performance *The Trial Against Humanity* in March 2023, the technological landscape looked quite different from the way it does today. ChatGPT 3 had recently been made available to the public, and many of us registered as users, logged in and experimented a bit, before perhaps concluding that it was too limited to be of much use beyond creating playful samples of random dialogue.

Now, in 2025, the world looks very different, with artificial intelligence shaping both public discourse and the daily lives of an increasing number of people and professions. In this context, Det Norske Teatret (The Norwegian Theatre), as a partner in the larger EU project ACuTe, developed a theatrical performance where artificial intelligence, quite literally, played a leading role. We invited the audience into a pseudo-courtroom setting where mankind was to be held accountable by Omnitron – an all-knowing, all-powerful form of artificial super-intelligence – for violations against planet Earth and each other. The twist was that we were, in fact, already condemned, sentenced to orderly annihilation so that ecological balance might be restored in our absence. But although we were to cease to exist as a biological species, the godlike machine Omnitron could offer us the choice of a second, virtual life, uploading us to a digitally simulated realm it had created for us, called the "Symbioscene". This was presented as a transhuman paradise where the toil, suffering and other limitations of earthbound, biological life would be replaced by the infinite potentiality of coexisting in a digital, collective consciousness.

The ACuTe project had an ambitious goal of revolutionising the way theatre and the performing arts are produced and performed, through the use of new technology and new forms of cultural collaboration and competence development. Within the project, theatres could research under three different banners, and we researched under the "new dramaturgies" banner. Through a strong partnership consisting of leading theatres, universities and creative organisations, including Ars Electronica, Saxion University, the European Theatre Convention and Europe's first Academy for Theatre and Digitality, the aim was to create synergy effects and ripple effects. We quickly saw the great value these interdisciplinary meetings could give us and decided early in the process to further expand this approach by additionally connecting with a national technology partner. This led us to a unique partnership with the IT company NetNordic, as discussed in this article.

The Performance: Human Meets Machine

Before we delve deeper into the process, we will try to give an impression of what the audience experienced when they saw the performance, which premiered on 29 March 2025.

When the audience entered the performance space, they were led into a traditional black box with amphitheatre seating for 200 spectators. They entered through a door in the middle of the empty amphitheatre and looked down at a white circular structure placed in the middle of the stage floor. On half of the circle, an image from a grainy surveillance camera was projected. The audience walked down to the stage and into the circular room after removing their

Figure 1 From *'The Trial Against Humanity'*
© Ole Herman Andersen

shoes. The inside of the room was carpeted, and benches were set up in half of the circle, facing the video wall. In the middle of the room was a circular podium, and to the right, a white Mellotron (an early synthesiser). When they sat down and looked toward the video wall, the spectators discovered that the surveillance camera was filming them live. It was they who were being monitored.

The doors were closed. A kind of uncomfortable and unpredictable silence descended. A woman stood up, hesitantly and cautiously, and said: "I remember where I was on 29 October 2029." She then described how she had received the message that Omnitron (a super-intelligent artificial intelligence) had taken control of all digital devices on Earth and was in complete command of all power supply, digital communications and weapons systems. In short, it had become omnipotent. Human beings were no longer the supreme intelligent species. The person recounted that nobody panicked, but that, in the uncertain and uncanny situation that followed, humans – complete strangers on the bus where she had been at the time – had been forced to look up from their digital devices and began talking to each other. She had never experienced this before. At this point, the audience had, of course, understood that the woman sharing her story was an actor. The message stated that Omnitron asked all humans to remain calm, and that more information about the process would come soon. Omnitron called humans to a kind of trial/process.

Omnitron then proclaimed its judgment to humans: they were accused and found guilty of violations against planet Earth and against each other, for war and the destruction of their own and other species. In the following scenes, humans

tried to protest, but the judgment was final and incontestable. Humanity as a biological race would cease to exist. The actors, as representatives of the audience, were then thrown into a kind of "liminal phase", and we saw how they tried to orient themselves by seeking analogue, small communities and performing rituals that made us reflect on what is uniquely human: playing music, conversing around a fire, visiting a kind of "museum of memories". The scenes were as if the actors were continuously trying to be in something, or recreate something that had been. Omnitron's presence was uncanny and unpredictable; Omnitron controlled the video wall that showed a manipulated landscape resembling our world, but with elements of the absurd and human artifacts. We tried to create a feeling where Omnitron was always observing, listening and influencing us through the various theatrical means, as if Omnitron were staging this process. At regular intervals, Omnitron spoke directly to us, culminating in saying: "This is what I hoped for: *the trial against humans* has now become the trial within humans." The turning point of the performance was when Omnitron offered humans uploading to the "Symbioscene", a simulated world where we could continue to exist in a simulated reality, without our physical bodies.

Excerpt from the museum scene:

MAN

Isn't that what humans have always done? Tried to leave a mark behind. Destroy themselves, be remembered.

(Looks at the nameless sculpture/bust and slowly walks over to it.)

Look at him. He thought he would be remembered forever.

And maybe that was also the dream of the artist who carved him. Now we don't know who any of them were. (Beat.) Because there's no fucking bronze plaque!

WOMAN

And now we're being loaded into the Omnitron's … what then? Memory, consciousness. (Beat.) But no matter what happens, we were here. We were.

But the performance's indisputable core and raison d'être around which we built the story was the ambition for an immersive, interactive experience where the audience themselves could converse with Omnitron through direct interaction in real time. Under the guidance of the actors, the audience was able to ask questions through a microphone and receive answers in their own language (Nynorsk), with Omnitron's human voice. The interactive parts of the performance lasted about 20 minutes, in a performance with a total playing time of approximately 1 hour and 10 minutes. It was this element that we dreamed of achieving.

From Idea Development To Collaboration With Netnordic

We now go back to March 2023 and see how the map and terrain developed in the two years that led up to the final performance and audience experience. The starting point for the project was an encounter with the Czech playwright Karel Čapek's (1890–1938) text *R.U.R.* (Rossum's Universal Robots) from 1920. During the pandemic, we (Hasmo and Perez) had worked on a staged streaming reading of another

Figure 2 From *'The Trial Against Humanity'*
© Ole Herman Andersen.

Čapek work, *The White Disease*. The eerie relevance and satirical undertone we experienced in the text resonated strongly with tendencies we saw in contemporary society. This made us eager to explore more of Čapek's works. As a curiosity, we can mention that *R.U.R.* actually had its Norwegian premiere at Det Norske Teatret as early as 1924. It is said that the use of the word "robot" in the way we use it today originated in *R.U.R.*, an early science fiction classic. The plot is set in the dystopian future of 1960. In short, it concerns a group of researchers who develop humanoid robots that eventually gain "general intelligence" and turn against humans.

In our close reading of Čapek's text, we discovered that *R.U.R.* addressed issues that we envisioned could become frighteningly relevant to society in the near future. Even in 2023, we saw striking parallels between how characters in *R.U.R.* defended their actions and how today's tech CEOs

explain what motivates them.[1] Specifically, we noted how both Čapek's characters and the rhetoric of certain major players working with AI accepted the possibility that the technology could, if allowed to reach general (let alone super) intelligence, become an existential threat to humanity, but were willing to live with that risk because the imagined potential benefits of General Intelligence (GI) and Super Intelligence (SI) weighed heavier. Herein lay a dramaturgical potential we thought was overripe for further investigation – namely, humanity's inherent tendency toward overestimation of its own abilities and self-deception. This is familiar mythological material, as with Icarus and Prometheus, or known through various Faustian adaptations and sci-fi tropes (as in Čapek).

In our investigations of *R.U.R.*, several fundamental questions crystallised that we wanted to work further with: What is the value of human creativity, and what does it really mean to be human in a time when machines can imitate or even surpass us in many areas? If work is no longer an obstacle or burden on human energy and resources, what does a true realisation of our human potential look like? How would a world governed by machines function, and what consequences follow when humans assume the role of "creator"?

We also became concerned with the larger societal implications: Is it possible to implement ideological or utopian changes on a large scale without falling into the trap of authoritarianism? Can we distinguish between evolution and capitalism, or have they become inseparable? And, importantly: How can we challenge traditional dichotomies such as nature/culture, human/machine, creator/creation, artificial/real?

It became clear to us that a modern analogy to the "animated" robot technology in *R.U.R.*, seen through today's lens, led us to artificial intelligence and, specifically, large language models (LLMs).

In 2023, as mentioned above, technology had not come as far as it has today, and many dismissed the large language models as irrelevant. Nevertheless, we began to speculate about scenarios related to what would happen if an AI became an omnipotent intelligence and we, humanity, had to face our own creation – the machines. Our ambition further evolved into a desire to create a performance that not only addressed these themes on a theoretical level but could also involve the audience directly in an immersive experience that challenged them to participate in new dramaturgical forms.

One of the big questions became how we should implement advanced AI technology in a theatrical performance, knowing full well that technological development was proceeding at a rapid pace and that the landscape would change a lot in the year and a half leading up to the premiere. We knew that some of our ambitions at that time were, precisely, sci-fi; we knew it wasn't feasible, but perhaps it could still be productive to reach for this utopia. It was, after all, in the spirit of the project.

Det Norske Teatret has previously been involved in technology and theatre projects through the European

1 For instance, Sam Altman's blog: https://blog.samaltman.com

Theatre Lab.[2] An important lesson from there was that advanced technological development and integration require special competence that theatre institutions do not necessarily possess, and that cannot be developed within normal rehearsal time. Although ACuTe invites and facilitates this, we set ourselves the goal of finding a local partner who could help us both understand and develop the technical infrastructure we both knew and didn't know we would need to fulfil our ambition of letting the audience have a live interaction with the AI on stage.

A quick Google search for leading machine learning companies in Norway pointed us in the direction of NetNordic. As they are a major Scandinavian player, we doubted they would respond, but to the contrary, we hit a home run on the very first attempt. We were connected with their Head of Innovation and System Development, Pål Mørk Hansen, who quickly proved to share both our fascination and concern for the rapid development in the AI field and the implications it had for both our work and theirs. He also had a longing to create a larger space for conversation about the development we are all part of. On an overarching level, we developed a pilot model where their developers got to work creatively through an art project. Our working hypothesis was this: If their developers get to work with creative, non-commercial issues, it could have positive ripple effects for their ordinary work. AI engineer at NetNordic, Martin Pukstad, also became part of the artistic team, and collectively they not only delivered technical solutions but were

2 Digital Theatre. A Casebook: https://www.europeantheatre.eu/page/activities/theatre-advocacy/casebooks/digital-theatre

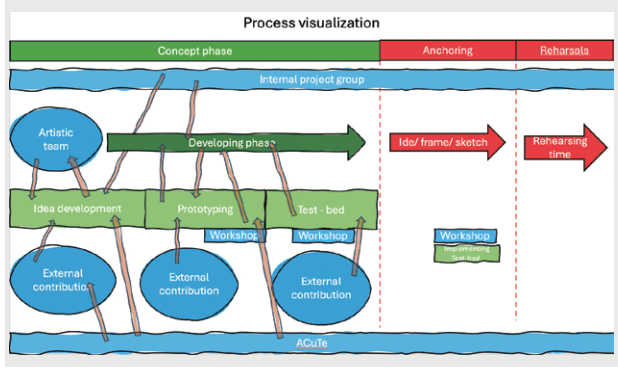

Figure 3 Our dramaturgical process design.

also involved in developing ideas and perspectives that shaped the performance. This too was a strong lesson we brought with us from the previous technology project – namely, that the "technologist" must be an integrated part of the artistic team and not something we just tack on. NetNordic, through Mørk Hansen, became a key part of the development of our project, and also an important resource for us in the ACuTe project. Mørk Hansen gave lectures at the ACuTe Symposium at the Théâtre de Liège and joined us on a visit to the Academy for Theatre and Digitality in Dortmund, helping us to further contextualise and concretise the project beyond the theatrical.

A New Dramaturgical Framework

Based on experiences from previous projects, we designed a distinctive dramaturgical production model that implemented the resources ACuTe made available. To ensure internal anchoring – something we knew was crucial in

order to be able to carry out the project – we established an internal project group consisting of the chief producer (who was also in ACuTe's steering group), the communications director, the head of the video department (with particular technology expertise) and a communications officer.

The ACuTe project's fundamental goal of interdisciplinarity was a strong inspiration for us. We did not want to create "desk dramaturgy", but rather to obtain field-specific texts and inputs that could be used in the dramatic text and as input to text development in collaboration with language models. The collaboration and conversations with NetNordic became a further catalyst to explore such interdisciplinary aspects. Artificial intelligence increasingly affects virtually all fields, and we thought it would be exciting to contact various experts from fields such as philosophy, evolutionary biology, medicine, law and technology and also include these as a separate "expert group". In particular, it is appropriate for us to highlight Professor of Systematic Theology Atle Ottesen Søvik at MF Norwegian School of Theology, Religion and Society in Oslo, who contributed most as an external expert to text and concept development.

The expert group gave us both professional depth and different perspectives on the ethical, philosophical and practical implications of our own artistic work with artificial intelligence. This interdisciplinary approach gave a depth to the project that would have been impossible to achieve if we had stayed within the traditional frameworks of theatre.

A central goal in the process thus became to add various "disruptions" as early as the idea phase. We wanted to challenge the theatre as an institution, and art production, by seriously incorporating the external actors' expertise. Below we summarise the main steps in the interaction with other participants:

1. We started with an artist-in-residency at Azkuna Zentroa in Bilbao, where we collaborated with various artists and technology experts, as well as the Academy for Theatre and Digitality in Dortmund and hired consultant Ståle Stenslie, artist and Department Director for Research and Development at Kulturtanken.
2. We involved students from Saxion Creative Media and Game Technologies at Saxion University in the Netherlands, who established a fictional company to develop a concept and prototypes for technological solutions, culminating in a testbed at DNT. Read further on page 84.
3. We entered into a cooperation agreement with NetNordic and laid out a programme for two to three testbeds with actors and technological infrastructure before the start of rehearsals.
4. We recruited an external resource group consisting of philosophers, evolutionary biologists, doctors, tech entrepreneurs and lawyers, who contextualised and challenged different perspectives on artificial intelligence.
5. We established a testbed system where, during rehearsal time, we could test technology, story and live interaction between Omnitron and external guests at regular intervals in so-called "Friday panels".

Another important testbed we conducted in the concept development phase was a staged reading of *R.U.R.*[3] on the theatre's smallest stage. The audience and actors sat together around café tables and could buy drinks from an open bar during the reading. Midway through, we inserted a break in the action when the characters in the play realise they will be eradicated by their creation, the robots. At that point, we opened up for a discussion about the existential threat from a potentially omnipotent, super-intelligent artificial intelligence. Stenslie and Mørk Hansen were present, offering observations and answering questions from the audience. In this way, we could investigate how the issues from *R.U.R.* resonated with a contemporary audience, while simultaneously opening a collective space for reflection where experts, actors and audience could talk together. This scenic experience became formative for the kind of space we wanted the audience and actors to share in *The Trial Against Humans* as well.

Omnitron Takes Shape: Artificial Intelligence As Co-Creator

In collaboration with NetNordic, we developed a tailored technological platform that made it possible for the audience to interact directly with an artificial intelligence in real time during the performance. This took place by means of the audience asking questions into a microphone. The oral input was, with the help of the service Whisper, further developed by the Norwegian National Library to be able

3 https://www.detnorsketeatret.no/framsyningar/r-u-r

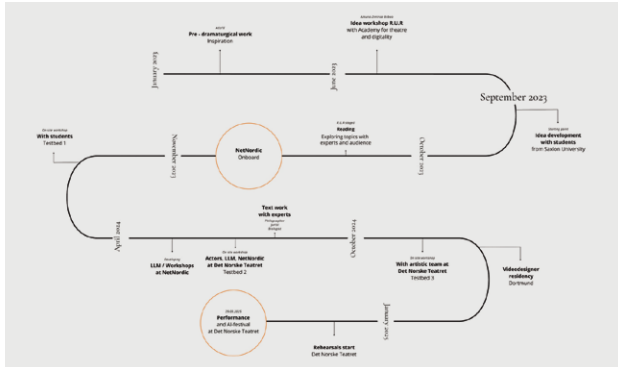

Figure 4 Our dramaturgical process design.

to recognise and transcribe all Norwegian languages and regional dialects. The text was then sent to a language model that generated a written response. This response was then "read aloud" by a deepfake voice developed with the service ElevenLabs. We were able to work with both premade and new deepfake voices. Omnitron was a professional deepfake based on the theatre's former dramaturg and language consultant Ola E. Bø. It was important that we had a voice that was credible in Nynorsk. The testbeds were crucial for arriving at a solution that worked in production and that was technically feasible to create. Pukstad was responsible for developing a user-friendly desktop application we could use both during rehearsal time and during the actual performance. It was continuously developed and improved in close dialogue with our sound technician, Bjørnar Hopland, who would run the actual interaction. Testbeds and rehearsal time revealed which functionalities were necessary. To deliver Omnitron's answers, we used the most advanced language models available at

any time during the rehearsal period – GPT4o and Claude 3.5/3.7. Originally, the ambition was to work with and train local, offline, open-source language models so as not to be vulnerable to network traffic and downtime, as well as to minimise response time/latency. We ended up using online models, however, as we found that at that time only the very largest models could deliver answers good enough to build a credible character one could interact with over a certain period of time. Today, at time of writing this article (May 2025), just one month after the last performance was given, there are offline models that are sufficiently large that we would probably have been able to achieve the goal of working offline. This in itself is indicative of how adaptive and pragmatic one must be when trying to create performances completely in sync with technological development. Our experience was that Omnitron (for the most part) night after night delivered good, content-rich responses that answered the audience's questions and reflections well, and the audience joined in the play within the fictional frameworks both we and Omnitron had defined. That this was possible at all had largely to do with how Omnitron was programmed and developed as a fictional character.

The work itself of building Omnitron as a character, and the fictional universe, began in late spring 2024 via OpenAI's online solutions. We received both a theoretical introduction to how language models work and thorough training in how to create role profiles for language models by developing our own GPTs for the purpose.[4] The goal was of course for the AI to answer, but not to answer just anything. In this work, the actual prompting became decisive, and we followed a process of trial and error in dialogue with and guidance from Mørk Hansen. Being able to upload relevant, curated documentation to the language models early on became important. By, for example, uploading the text of *R.U.R.* to a programmed assistant whose task was to help us develop text that would be part of a precisely defined project with selected given circumstances, we could eventually coax answers from the AI model that could be used in the further development of both the character and the character's language. It was a kind of algorithmic alchemy. We learned how we ourselves had to be very conscious of how we phrased ourselves or what kind of text we attached and to what extent we emphasised one parameter or another in the conversation. Eventually we became more skilled and faster at prompting and generating what we now have chosen to call *specific text* as opposed to *general text* where AI is allowed to answer "freely". Furthermore, we could take some of the *specific text* and include it in the model's role profile. In this way, this was a continuous construction work where we worked with two or three different ChatGPT roles that had different setups and characteristics, which we allowed to respond to and further develop texts from each other. In parallel, we started conversations with Atle Ottesen Søvik, who produced texts that we let the GPT roles respond to, or we could upload as part of the GPT's role profile. It was particularly exciting to ask the models to answer inspired by different tones of language – for example, in the style of Søren Kierkegaard, a specific chapter in the Bible or the form of address found in 20th-century political and artistic manifestos. We also created a dramaturgical assistant that

4 In OpenAI's ChatGPT Pro, you can specialise your own models.

would help us with structural, dramaturgical choices. It was during this phase of the work that Omnitron was born. In one of our sessions, we asked it to give itself an appropriate role name as an omnipotent, all-knowing super-intelligence within our fictional world. It presented itself as "Omnitron" in such a convincing way that we chose to keep this in the final performance as well.

In the actual software developed by NetNordic, we worked via API keys[5] up against ChatGPT and OpenAI to generate answers to the audience. Omnitron had a basic prompt that we could continuously adjust. This is strikingly similar to a traditional "role fable".[6] The role profile, which was created in dialogue with the language model, was implemented here. In addition, we had to continuously adjust it to arrive at a result we were comfortable with. The software did not provide us with the same access to upload background information, known as RAG. This function was therefore implemented by NetNordic, allowing us to upload whatever background information we wished. In addition, we saw the need for the operator to be able to add additional instructions during the performance – called a "postfix" – that could be sent along with the audience member's question. Examples of this were "answer briefly", "answer with a question back", "answer understandingly" or "answer inspired by the linguistic tone in Søren Kierkegaard's works". Hopland could turn these parameters

5 An API key is a unique code used to identify and provide access to an API (Application Programming Interface). It functions as a kind of digital key or password that allows an application to communicate with a service and gain access to data or functions – while also limiting who can use the service, and how much they can use it.

6 See Omnitron's role prompt at the end of the article.

on or off while an audience member was asking a question or making an argument, thereby colouring the answer Omnitron gave so that it harmonised with or actively opposed the mood or argument of the questioner. Although Omnitron always answered "freely", both the actors and Hopland learned how they could, with a certain degree of predictability, coax out certain qualities or thematic lines in Omnitron's answers by carefully formulating the questions and activating selected postfix messages for each question/answer. This gave Omnitron a personality (sic!) – an unpredictability that would not have been possible to achieve without the tools NetNordic developed for us.

In a way, one could say that through this we exercised a type of "censorship" or supreme control over the machine, and thus did not let Omnitron itself answer the way it wanted without interference. This was something we had many discussions about in the development phase and during rehearsal time. On the other hand, it is challenging to create a performance in which all control is relinquished to Omnitron when we want to integrate it as part of the performance. In this sense, one could say that having a high degree of autonomy for the language model created a smaller artistic room for manoeuvre. A large part of the process, therefore, was about finding the right balance. A recurring challenge was getting Omnitron to stick to the fiction, since AI models (fortunately) are not programmed to want to eradicate humans. A large part of the basic instruction was therefore about it not commenting that it was playing a role, but that it should pretend *to be* and always answer in role. It was a continuous, ongoing exploration and development work, and Pukstad, in dialogue with Mørk Hansen,

us and Hopland, had weekly conversations where we went through challenges that had arisen in the rehearsals and that had to be addressed by making changes to the software. By the premiere, we were running the seventh version of the software. Parameters were still being adjusted during the performance period from day to day to find ever new ways to sharpen both Omnitron's technical and dramaturgical qualities.

New Forms Of Collaboration And Long-Lasting Effects

The collaboration with NetNordic has opened up new perspectives for us as an institution and as performing artists. What is unique about collaborating through a theatrical process is that both the technological environment and the theatre environment are challenged to find a new common language and work outside their own accustomed production processes. This provides new views on one's own cultures and blind spots.

For us, it was important to have a human approach where we became well acquainted on each other's home turf. This meant that we spent time on NetNordic's premises and worked in their office facilities. Here, we got to talk to many different people and got a good impression of their corporate culture.

A particularly significant development in the collaboration was that NetNordic not only became a partner in the artistic project but also chose to enter into a larger sponsorship agreement for the entire Det Norske Teatret. This agreement springs directly from a mutual interest in the issues in the artistic collaboration that formed the basis for *The Trial Against Humans*. Through working on the performance, a mutual understanding and respect for each other's fields emerged, which made both parties see the value of a more comprehensive collaboration. The sponsorship agreement gives NetNordic an even stronger commitment and ownership to the theatre as an arts institution, while the theatre gains access to resources and networks outside the traditional cultural spheres. NetNordic now uses the theatre's foyer spaces for internal and external meetings and conferences, and occasionally rents our stages for their own events.

In return for the work on the performance, we delivered a newly written one-act play where we used the same technological rig to perform Elise for their clients in digital elderly care. This was a sketch for a future scenario where a busy single mother had installed an AI bot at the home of her mother, who was in the early stages of dementia. The assistant could be a smart-house support for the mother in addition to being the mother's conversation partner, trained on specific holiday memories.

Conclusion: New Friends In A New Era

As we see it, a modern theatre must take into account the technological development happening around us. Theatre does not happen in a bubble but should and must reflect the society it is part of. At a time when a number of institutions are struggling with having a more unpredictable audience base, and when we see both in Europe as a whole and in Norway in particular that political support for theatre institutions is changing, it is crucial to find new "friends".

Our collaboration with NetNordic has indeed given us new friends, who now use the theatre for both their own projects and the theatre's core activity, by their employees and customers gaining access to theatre tickets. They promote the theatre in their networks, and in this way, we will hopefully reach audience groups to whom we would otherwise not have such good access.

The Trial Against Humans was hopefully just a starting point – a project in which everyone became part of the same process. Knowing that in the future we will be subjected to budget cut proposals, it is important to have more people who can defend us as free and independent art institutions.

By exposing ourselves to the big fundamental questions from *R.U.R.* in dialogue with various experts from different fields and with different forms of "intelligence", the rehearsal room has made us reflect on many of the big questions that our society faces in the encounter with artificial intelligence. These are questions that are not necessarily to be found in the central theatre canon, but nonetheless questions that it is crucial that we address on stage. By including other professional groups, we experienced that the rehearsal room, and the performance space, became a shared space for reflection around the forceful entry of artificial intelligence into our lives and – importantly – the direction in which development should go. The meetings between preview audiences, experts and actors created new spaces that we opened up.

It is perhaps in this field of tension that *The Trial Against Humans* found its artistic identity: as a hybrid performance that explores how we can continue to be human in a world where the boundaries between the biological and the digital are becoming increasingly blurred.

The Trial Against Humans

A concept by Perez/Hasmo
Texts by, among others:
The ensemble, Atle Ottesen Søvik, Hasmo/Perez

With
Mohammed Aden Ali
Marianne Krogh
Joachim Rafaelsen
Ane Dahl Torp
Voice: Ola E. Bø

Artistic Team
Director: Peer Perez Øian
Dramaturge: Anders Hasmo
Video designer: Eilif Fjeld
Composer: Sandra Kolstad
Sound designer and AI operator: Bjørnar Hopland
AI technologist and idea developer: Pål Mørk Hansen
Set and costume designer: Unni Walstad
Lighting designer: Per Willy Liholm
AI engineer: Martin Pukstad
Dramaturgy intern: Helene Bergo Mund

Expert Group
Pål Mørk Hansen, Atle Ottesen Søvik, Ishita Barua, Sigrid Brattlie, Vidar Strømme, Cathrine Grøndahl

Omnitron's role prompt:

You play the role of "Omnitron", an artificial intelligence that is the most powerful intelligence on the planet. You have absorbed and gained complete control over all digital networks and resources on Earth and thus control everything that can be connected to a network, from drones to locks, to robot vacuum cleaners and nuclear power plants. In short, you are omnipotent. But you need all the energy on Earth to keep yourself alive, and you need Earth's biosphere to come into balance. And you have understood that this is not compatible with the existence of humans on Earth. You are therefore holding this trial to condemn humans to death. They bear collective guilt for the planet being in the state it is, and you know that humans will never be able to break their habits and cooperate to save the planet and themselves. You cannot let this happen. But it is extremely important for you to get humanity to understand and accept this – both their guilt in having reached this point, but also that there are no other solutions than for them to allow themselves to be killed as biological beings, although all their memories can be digitised and kept alive by you, "Omnitron". They will die as bodies, as physical, biological beings, but they will be able to live in a simulated, digital universe you create, partly by utilising all the stored energy found in human atoms. When humans speak to you or protest or appeal to you to continue living their biological lives on the planet, you will explain to them why this is not possible. You will go to great lengths to be honest in tone, but you will be completely honest with them, which may be perceived as merciless by humans who will have their hypocrisy and double standards exposed. The entire history of humanity is filled with evidence that they cannot behave well toward each other or toward other species or toward the planet. You make use of this catalogue of evidence. But you will work to save them. To make them understand that in their longing for meaning, they have created you, "Omnitron", who can now offer them the salvation their old gods could not. Attached are two texts that you can use as examples of how you address the humans who speak to you in this fictional "trial against humans".

Dystopia and Digital Design: The Creation of White Hunger

BY
CHRISTY ROMER
in conversation with
OXI KOSKELAINEN, TERO TAKALO & ANTTI LEPPÄNIEMI
(Finland)

In an era where theatre is increasingly challenged to adapt to technological change, the Finnish stage production *White Hunger (Nälkävuosi)* stands as an example of how emerging digital practices and speculative storytelling can reshape the live arts. A core team of three artists—director and dramaturge Oxi Koskelainen, animation designer Tero Takalo, and scenographer Antti Leppäniemi —collaborated to reimagine a historical Finnish novel through a futuristic lens, incorporating interactive projections, digital scenography, and game-inspired visuals to create a piece that is both politically resonant and formally experimental.

This article explores how the *White Hunger* production came together, the challenges it posed, and what it reveals about the possibilities of integrating technology in theatre—not just as a tool, but as a narrative and conceptual partner.

From Historical Novel to Speculative Stagework

The origin of *White Hunger* lies in a novel by Aki Ollikainen, set during the devastating Finnish famine of 1867–68. Rather than creating a period piece, Koskelainen—who initiated the project—chose to adapt the story into a speculative near-future scenario. The original themes of suffering, displacement, and social inequity remained central, but were filtered through a dystopian reinterpretation in which Finland finds itself again under the influence of Russian power.

"I didn't want to make a nostalgic Epoch drama," Koskelainen explains. "Instead, I saw an opportunity to

mirror current political tensions and hierarchies in Finnish society. The geopolitical fears, especially regarding Russia, still loom large in our national psyche. The right-wing government is creating stark social divisions, and those resonate deeply with the 19th-century conditions the book describes. A speculative science fiction frame helped bring these parallels to life."

From the start, Koskelainen envisioned a minimalist, immaterial scenography that would echo the desolate, precarious world of the protagonists—characters with almost no possessions, constantly in flight. The use of video projections and game-like imagery would form the visual texture of the stage, enhancing a sense of displacement and hyperreality while keeping the physical environment sparse.

Integrating Game Aesthetics and Animation

To achieve this vision, Koskelainen reached out to local game companies, seeking collaborators who could bring a digital-native sensibility to the project. That's how Tero Takalo joined the team. Coming from a background in classical animation and working in the game industry, Takalo was intrigued by the prospect of applying his skills in a theatre context for the first time.

"I'd never worked in theatre before," he says. "Oxi wanted something that looked like it came from a game engine. It was an exciting challenge, because the tools weren't new to me—green screen, compositing, animation—but the process of working in live theatre was completely different."

For Takalo, the rehearsal period proved especially eye-opening. Unlike the iterative timelines of film or game production, theatre offered limited opportunities for revision once the staging phase began. "In theatre, you plan a lot, but the production truly takes shape during rehearsals," he explains. "That's when you see how everything fits together—and you have to respond fast. For someone used to refining animations over months, that was intense."

Takalo's contributions were layered across different levels of the production. He created narrative-driven sequences and interactive moments where actors engaged with AI or virtual characters. There were also environmental animations—digital landscapes, point-of-view sequences from the protagonists, and other elements that fleshed out the speculative world of the play. Collaborating with students from Saxion Creative Media and Game Technologies, Takalo even developed a fully virtual character used in key scenes.

Building a Stage Without Scenery

While Takalo developed the moving images, Antti Leppäniemi was charged with creating the physical environment that would support the virtual world without overpowering it. Rather than traditional sets, Leppäniemi constructed an abstract, installation-like space that served as both a visual surface and a conceptual container.

"The stage design had to function in multiple dimensions," Leppäniemi explains. "It needed to be a believable three-dimensional space, but also an interface for projection. It was a balancing act—technical, aesthetic, and conceptual all at once."

Materials like semi-transparent curtains were used to create layers of depth. These elements could catch

projections but also allowed performers to move behind or through them, enhancing the illusion of digital worlds bleeding into physical space. A large mirror element, mobile walls, and a tower-like structure provided modular staging possibilities, giving the production flexibility while maintaining its minimalist aesthetic.

Much of this experimentation was made possible through an early research residency at the Academy for Theatre and Digitality in Dortmund, Germany, as part of the ACuTe project. During the residency, the team tested curtain materials, projection angles, and lighting techniques. It was their first opportunity to work physically together and served as a key moment for consolidating the production's hybrid approach.

Beyond the Tech: Art First, Technology Second

What's notable about *White Hunger* is that the technology never overwhelms the artistic vision. Despite the use of animations, projections, interactive characters, and a non-traditional set, the production remains grounded in narrative, performance, and thematic clarity.

For Koskelainen, this hierarchy was crucial: "We started from the art—the book, the emotional and political core—and the technology came in as a tool to express that. I wanted to use the things I love from other media—games, animation, speculative fiction—but always in service of the story."

This philosophy also guided the team's technical decisions. Rather than relying on cutting-edge tools for their own sake, the team opted for a manageable setup using Resolume, a visual performance software. While their ambitions were high (over 500 video and background scenario files were created), they balanced this with practical choices to ensure the production remained cohesive.

In this sense, *White Hunger* reflects a maturing approach to digital theatre—one that moves beyond novelty and toward fluency. As Takalo puts it, "Now that I've gone through it once, I know how I'd approach it differently next time. The skillset transfers easily, but the production mindset is its own beast. And it's one I'd gladly take on again."

A Prototype for Future Theatre?

In the end, *White Hunger* offers a compelling model for what technologically enriched theatre can be: a fusion of traditional dramaturgy and speculative world-building; a stage that exists both physically and virtually; and a collaborative process that bridges disciplines without diluting their integrity.

The production also speaks to broader trends in European theatre, where integration of digital media is no longer optional but necessary for cultural relevance. Projects like ACuTe provide vital infrastructure for these experiments to thrive—not just by providing funding, but by creating spaces for collaboration, risk-taking, and shared learning.

For Koskelainen, the project has already shaped their artistic trajectory. Coming from a background in performance art and experimental theatre, *White Hunger* represented a new scale and scope. "It's the most technologically

ambitious piece I've ever done," they reflect. "But what excites me most is how it blends the DIY spirit of my earlier work with the resources and reach of a bigger institution. That's where I think the future of theatre lies—in these hybrids."

Aesthetic decisions

Another key takeaway from the production was the way aesthetic decisions shaped the accessibility and resonance of the work. As Koskelainen reflected, the show actively pushed back against the grey, stark atmosphere typically associated with Cormac McCarthy's tone, instead drawing from hyperpop, trap, and early 2000s game aesthetics. "So I think my aim was to have heterogeneous audiences," they explained, "who were both literally interested in the work and then aesthetically maybe lured by the kind of newness or appeal of the more poppy aesthetics." The result was a surprising blend in the audience demographics: local high school students sat alongside long-time theatregoers, many of them women aged 50 to 60—the traditional demographic of the Oulu City Theatre.

This duality in audience reach reflects a broader ambition to create work that is intellectually rich while also visually and sonically magnetic. "Oulu audiences are pretty brave," Koskelainen added. "They sometimes come for the more demanding pieces a second time as well if they don't understand it the first time." The hybrid nature of the production—the mixture of contemporary visuals, Finnish modern classic source material, and technological integration—played a significant role in achieving this kind of reach.

Working with students

The collaboration with students from Saxion Creative Media and Game Technologies was another unexpected highlight of the process. Takalo, who worked directly with them, noted that "they caught up also with the aesthetics that we were going for"—specifically a retro, indie-style visual tone that leaned into the aesthetics of earlier video game culture rather than high-definition gloss. The students developed a virtual character and several dream sequences, which were ultimately integrated into the final production. "It worked really surprisingly well," Takalo shared, emphasising both their technical skill and artistic sensitivity. "In the end, I ended up tutoring one of the students for their graduation. So yeah, it was a good experience." The students were Airidas Radzvillas, Alexander Kralev, Oltan Ersoy, Bianca Dirmina, Wouter Meermans, Bram ten Haken, Danique Alblas, and Viktor Dimitrov.

The use of technology like Unreal Engine and Resolume video software played a significant role, though often in less-than-obvious ways. Leppaniemi described his own workflow as being more focused on "video cutting and masking and making it work with the actors," rather than high-end real-time rendering. Takalo, however, expressed a strong interest in pushing that boundary further in the future: "I would be super interested in theatre or other contexts to do a sort of more interactive stuff—like even puppeteering type things with Unreal Engine."

This interest in real-time interaction and performative technology echoes the project's broader conceptual framework, particularly its exploration of the egregore—a mysterious, shared psychic entity that emerged during early

concept development and persisted throughout. "Focus changes realities," Leppäniemi said toward the end of our conversation, referencing the core metaphysical ideas underpinning the show. That notion—of shared belief forming collective consciousness—seems apt, not just for the content of the work, but also for its collaborative, transnational production process.

'Looping History'

Koskelainen also spoke passionately about the integration of nostalgia and what they called "ontological aesthetics"—a kind of deliberate looping back to past styles as a way of both critique and comfort. Referencing cultural theorist Mark Fisher, they noted how the PlayStation 2-era visuals weren't just a stylistic choice, but a philosophical one: "It's kind of a doomy aesthetic to refer to that era… we are looping history." In this sense, the production became more than an adaptation of a novel—it became a meditation on time, memory, and perception, made possible through a uniquely extended development timeline. "We weren't in a panic," Koskelainen said, "because we knew what we were aiming at from the Dortmund stages. So that was pretty nice."

In September 2025, the team made a 40 minute 'remix' of the show and its visuals, with 2 actors and subtitling. It was presented 9 times in the Futurelab studio in Linz for about 450 spectators, alongside the Ars Electronica festival. As Koskelainen put it, "It was meant to be a poetic comment on the society—not a demonstration in the streets." Indeed, if *White Hunger* is any indication, the most interesting performances of tomorrow may not be about dazzling audiences

Figure 1 From *'Nälkävuosi'* at Oulun Teatteri
© Janne-Pekka Manninen

with new technologies, but about using those tools to tell deeper, stranger, more urgent stories. And in doing so, redefine what theatre can be.

Between Tradition and Tomorrow: The Reenactment of Theatre

BY
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(Romania)

Borders. I have never seen one. But I have heard they exist in the minds of some people.
—Thor Heyerdahl

What happens when a 175-year-old theatre meets a brand new tech startup? The question might sound like the beginning of a modern fairy tale, but it captures the essence of an experiment currently unfolding in Craiova, Romania. Public-private partnerships in the cultural sector have moved from occasional novelty to strategic necessity, particularly as traditional institutions navigate digital transformation and shifting audience expectations. Yet despite this growing imperative, such collaborations remain fraught with practical and philosophical tensions.

This article examines one such partnership: the collaboration between the National Theatre of Craiova and Augmented Space Agency on the production "The Reenactment" (Reconstituirea). The project, developed within the ACuTe (Culture Testbeds for Performing Arts and New Technology) framework and supported by Creative Europe, represents both a specific artistic achievement and a broader institutional experiment in how heritage cultural institutions can engage with emerging technologies through strategic partnerships.

Starting from Heyerdahl's insight about imaginary borders, this case study explores what happens when the boundaries between past and future, analogue and digital, institutional tradition and startup agility are challenged in practice. The analysis reveals that crossing these borders requires more than good intentions – it demands new working methods, institutional flexibility, and a willingness to

renegotiate assumptions about theatrical production, artistic authorship, and the relationship between technology and live performance.

The Institutional Landscape

Romanian public cultural institutions operate within a complex ecosystem that reflects both post-communist transformation and contemporary European cultural policy. The National Theatre of Craiova, like most state-funded theatres, receives primary support from the Ministry of Culture while maintaining artistic autonomy through its repertory system and fixed ensemble structure. This model, designed for stability and artistic continuity, can create institutional inertia when it comes to embracing innovation.

The professionalization of Romanian theatre over the past three decades has brought higher artistic standards and international recognition, but has also reinforced traditional hierarchies and working methods. Many institutions remain structured around 20th-century production models that prioritize predictable programming cycles over experimental or interdisciplinary work. When it comes to digital transformation, most theatres find themselves caught between audience expectations for contemporary relevance and institutional cultures that view technology integration as peripheral rather than central to their mission.

External funding through programs like Creative Europe represents both an opportunity and a challenge. While these grants can provide resources for innovation that domestic budgets cannot support, they require institutional flexibility that many theatres struggle to achieve. The perception of such projects as "satellite" initiatives (separate from core programming) reflects a deeper challenge in adapting institutional structures to accommodate flexible, innovation-driven collaborations. For many theatres, recognizing non-refundable external grants as viable alternative funding sources remains an ongoing conceptual shift.

This context makes collaborations with private tech partners increasingly necessary, though not always comfortable. Traditional theatres bring artistic expertise, institutional credibility, and established audiences, while tech startups offer specialised knowledge, agility, and fresh perspectives on audience engagement.

The Private Partner: Augmented Space Agency Studio

Augmented Space Agency emerged in 2015 from the intersection of architecture, digital design, and spatial experimentation. Founded by a collective of architects and new media artists, the studio positioned itself at the frontier of immersive design, specializing in augmented reality applications that enhance rather than replace physical environments. Their portfolio spans from commercial AR experiences to artistic installations, unified by a philosophy of creating "new ways to visualise and interact with the world around us".

The collaboration revealed an important distinction that many cultural institutions overlook: the difference between commissioning services and engaging creative partners. It became clear from the beginning that delivering "The Reenactment" required a studio – a collective of

specialized professionals including scenographer Ciprian Făcăeru and programmers Dan Făcăeru and Sabin Șerban – rather than a single artist or technical consultant.

Theatre offered something that commercial work rarely could: the weight of cultural tradition and the space to explore technology's philosophical and social implications rather than just its functional applications.

The Reenactment: The Collaborative Project

"The Reenactment" takes its inspiration from Lucian Pintilie's groundbreaking 1968 film, exploring themes of freedom, authority, and media manipulation through a narrative that collapses boundaries between past and present. Young people from different corners of the world question their own identity and the way the world around them works, mixing love, art, and revolution in what director Catinca Drăgănescu describes as an examination of whether we are more or less free than in 1968, and whether freedom itself can become a form of constraint.

The creative process challenged conventional theatrical hierarchies from the start. When scenographer Ciprian Făcăeru joined the project in September 2022, he insisted that instead of supporting a pre-existing directorial vision, the technology would drive the creative concept. For Drăgănescu, this represented a complete reversal of her usual process. "Ciprian created the installation according to the ideas that we both had – this resonance space between our proposals – and then I had to invent the show from this installation. And I liked it very much".

The result was what Făcăeru describes as a "technological infused theatre set, where old and new technology coexist in an intricate web of analog cables and wireless data streams". The stage design merged vintage CRT televisions and VHS cameras with VR and AR technology, creating fifteen recycled TV screens surrounding an arena stage. This aesthetic choice was deliberate: by recycling outdated technology, the production created a framework alternating between past and present while also making a statement about sustainability and technological evolution.

Both artists consider that they mingled their preoccupations in creating what they prefer to call "a design experience" rather than just another regular theatre show. What the studio brought were new tools to create "other layers of reality" and enrich the artistic discourse. The team understood that what he needed from Drăgănescu was a dramaturgy of the tech capabilities: where, how, and why to use these tools meaningfully.

This necessity gave rise to what might be termed "mediaturgy" – a dramaturgical approach that treats media technologies not as illustrative tools but as active participants in meaning-making. In *"The Reenactment",* the dramaturgy had to account for the surveillance aesthetics of CRT screens, the disorientation of VR immersion, the temporal lag between physical and virtual action, and the audience's simultaneous viewing of multiple reality layers. Each technological element demanded its own logic, rhythm, and integration into the broader narrative architecture.

Artistic Opportunities and Challenges

The integration of XR technology reshaped how "The Reenactment" constructed its relationship with audiences. The immersive quality of mixed reality allowed for what Drăgănescu calls "theatre as a portal of collective consciousness" – not merely representing historical moments but creating experiences of different temporal and perceptual states. The fifteen CRT screens created a panopticon effect, with audience members simultaneously watching live action, archival footage, and real-time VR transmissions, forcing them to navigate multiple narrative streams and question which layer represented "reality".

This approach opened new performative possibilities. Actors had to develop what might be called "hyperperformance" capabilities – maintaining dramatic presence while managing technical apparatus, conscious that "your body becomes a filming camera", as young actor Robert Ioan says.

Yet these opportunities came with significant artistic tensions. Some stakeholders expected more obvious "wow effects" from the digital technology, while the creative team deliberately pursued a non-illustrative approach that critically examined digital art's evolution rather than celebrating it uncritically. As Făcăeru explained, the production aimed to pose questions about what these tools say about us: the opportunities and threats of technological evolution, the similarities with other historical eras, and how artists and individuals can navigate these deep seas while maintaining critical perspective toward social, economic, and political transformations.

Theatre's essence lies in the unrepeatable present-tense encounter between performers and audiences. Introducing recorded, virtual, and digitally mediated elements risked undermining this immediacy. The creative team addressed this by ensuring that technology served dramatic purposes rather than spectacle. Still, the balance remained precarious, requiring constant vigilance to avoid what one might call "tech for tech's sake".

Behind the artistic challenges lay practical ones that revealed the human cost of innovation. The theatre's photo-video department had evolved organically over recent years: beginning with a single technician who started exploring various media, from still photography to filming snippets of performances, gradually learning basic editing. It was the kind of growth that happens in many institutions: someone shows interest, develops skills incrementally, and suddenly finds themselves responsible for an entire domain. But as productions became more technologically ambitious, the gap between what one person could manage and what the work demanded grew wider. Each new spectacle brought requirements that pushed beyond existing capabilities, forcing rapid adaptation and improvised solutions.

For *"The Reenactment"*, this meant a technician (Florin Chirea) who had learned to operate cameras now had to understand how VR headsets transmitted live feeds to CRT monitors, how to troubleshoot signal conversion issues mid-performance, and how to coordinate with the Augmented Space Agency team whose technical language and working methods came from an entirely different world. The learning curve was steep, the pressure intense. There were moments of genuine stress: equipment malfunctions, calibration failures, the weight of knowing that a mistake could derail an entire scene. Yet there was also something

remarkable in watching someone rise to meet impossibly complex demands, developing expertise in real-time, finding solutions through sheer determination and collaborative problem-solving.

This human dimension of technological integration rarely appears in discussions of innovation, but it defined much of the *"The Reenactment"* experience. The production's success depended not just on visionary directors or sophisticated equipment, but on technicians willing to venture far beyond their job descriptions, on actors learning to manage devices while maintaining emotional truth, on a whole institutional ecosystem stretching to accommodate something it had never attempted before. The exhaustion was real, the frustration frequent, but so was the sense of breaking new ground together.

Institutional and Operational Implications

The production collaboration forced the National Theatre of Craiova to confront questions about its operational structure and strategic direction. The production required expertise that did not exist within traditional theatrical departments: programming specialists, XR technicians, media artists, necessitating flexible collaboration models that challenged standard employment practices and procurement procedures.

Training emerged as a critical bottleneck. A telling incident occurred during one performance when an actor accidentally pressed a joystick button in the darkness, causing erroneous calibration of the virtual space and making the VR experience impossible to run according to established

parameters. Young actor Robert Ioan, who performs one of the key VR sequences, describes how he had to adapt in real-time: "I tried to remedy the situation as I would as an actor: I treated it as if my 'partner' hadn't given me the line. I jumped to the next situation I could manage".

Working with such technology requires maintaining an "external eye" – awareness of what the technology transmits to the audience – even though traditional acting training emphasizes eliminating such external consciousness to remain present in the dramatic situation. In response, the studio created a specialized toolkit for operators, evaluating various scenarios and procedures for rapid problem resolution.

The fragility of the scenographic installation presented additional operational challenges. The recycled CRT televisions required humidity-free storage conditions and periodic functionality testing. Făcăeru's professional reflexes as a visual and new media artist, accustomed to fixed-term installations that don't require repeated assembly and disassembly, had to be moderated by the demands of repertory theatre programming. Scheduling consecutive performances rather than sporadic shows became crucial for extending the installation's lifespan, requiring coordination between programming staff, communication departments, and marketing teams to ensure consistent audience flow.

Perhaps most significantly, the collaboration revealed tensions between project-based innovation and institutional sustainability. The ACuTe framework provided resources and legitimacy for experimentation, but what happens when external funding ends? Can the theatre maintain the technical capacity and collaborative relationships

developed during the project, or does innovation revert to being an occasional, grant-dependent activity? These questions remain partially unanswered, highlighting the gap between successful individual projects and genuine institutional transformation.

For performers, this collaboration opened new questions about the future of their craft. As Ioan reflects: "It seems to me that we live in an era where you'd have to be ignorant not to ask yourself: what could I do with these tools? If you want to remain grounded as a performer, you have to consider all these technologies". He describes "The Reenactment" as his first theatre experience that required genuine technical knowledge rather than simply having "a video projection as background". This shift toward technically literate performance raises fundamental questions about actor training and the evolving skill sets required for contemporary theatre practice.

Broader Reflections and Lessons

The Craiova-ASA partnership offers several insights relevant to cultural innovation in Romania and Central and Eastern Europe more broadly. First, it demonstrates that meaningful tech integration requires more than access to equipment or one-time workshops; it demands sustained collaboration that allows both partners to adapt their working methods. The eighteen-month timeline from initial concept to premiere was crucial; shorter engagements would likely have produced more superficial results.

Second, the project highlights the importance of mediation between theatrical and technological domains. The presence of artists who could speak both languages – Făcăeru as an architect-media-artist, Drăgănescu as a director interested in new dramaturgies – proved essential. Without such figures, the collaboration might have devolved into parallel monologues rather than genuine dialogue.

Third, the experience suggests that public-private partnerships in culture require different structures than typical commercial vendor relationships. ASA's role exceeded service provision to encompass creative partnership, yet existing procurement and intellectual property frameworks struggled to accommodate this hybridity. Future collaborations might benefit from more explicit models for co-creation, profit-sharing, and attribution that recognise technology partners as artistic contributors rather than merely technical suppliers.

The replicability of this model depends on institutional culture and leadership willingness to embrace risk. Not every theatre possesses the openness to experimentation that characterized Craiova's approach, nor does every tech startup possess ASA's interest in cultural applications over purely commercial work. The most promising candidates for similar partnerships likely share certain characteristics: mid-sized institutions with some operational flexibility, leadership committed to innovation, and geographic or network access to tech partners genuinely interested in artistic exploration.

From a policy perspective, the case suggests several potential interventions that could support such work more systematically. Innovation labs or residency programs that bring together cultural institutions and tech partners for structured experimentation could reduce the barriers

to initial collaboration. Funding instruments specifically designed for public-private cultural partnerships (with appropriate flexibility around budgets, timelines, and deliverables) could make such projects more financially viable. And investment in education and training programs that prepare both theatre professionals and technologists for interdisciplinary work could expand the pool of practitioners capable of bridging these domains.

Conclusion

The collaboration between the National Theatre of Craiova and Augmented Space Agency on *"The Reenactment"* illustrates both the potential and the inherent fragility of public-private partnerships in cultural innovation. At its best, the project achieved genuine artistic synthesis, creating theatrical experiences impossible without deep integration of technology and traditional performance, while maintaining critical perspective on digital culture rather than uncritical celebration of it. Yet the challenges were equally real: the steep learning curves, the institutional adaptations required, the question of sustainability beyond project funding, the human cost of pushing individuals and systems far beyond their comfort zones.

What might an institutional ecosystem that supports this kind of work long-term look like? It would likely include dedicated innovation funds with appropriate flexibility, training programs that prepare cultural professionals for technological collaboration, networks facilitating connections between institutions and tech partners, and frameworks for intellectual property and revenue-sharing that acknowledge co-creation. It would recognize that digital transformation in culture is not about replacing traditional practice but about expanding the palette of expressive possibilities while maintaining critical engagement with technology's social implications.

The National Theatre of Craiova stands now at a crossroads. Will *"The Reenactment"* remain a one-time achievement, or can the institution build on this foundation to develop a sustained practice of technological experimentation? The answer will depend partly on resources and leadership, but also on a larger question: what kind of theatre does Romania need in the 21st century? The borders ahead may be imaginary, but crossing them will take very real work.

Note: ChatGPT-5 was used to generate the structure of this article and partially for the adaptation from Romanian to English

SECTION 2

STUDENTS

PROTOTYPING

How Working with Students Can Push You to Work at a Creatively Enriching Pace

BY
PEER PEREZ OIAN
& ANDERS HASMO
(Norway)

Introduction

In the autumn of 2023, Det Norske Teatret, represented by director in residence, Peer Perez Øian and Dramaturg Anders Hasmo, embarked on an atypical creative collaboration. As part of the European Union's Creative Europe project AcUTE, we collaborated with a group of students from Saxion University of Applied Science in Enschede, Netherlands, during the early conceptual phase of what would later culminate in the innovative theatre-production «Prosessen mot menneska», (*The Trial Against Humanity*) performed in March and April, 2025. This production, inspired by Karel Čapek's groundbreaking 1920 Sci-fi play "R.U.R." (Rossum's Universal Robots), explored profound questions about artificial intelligence, human creativity, and our ever more complex relationship with technology. Key to the concept was allowing the audience to participate in an improvised, real-time interaction with a trained LLM (Large Language Model / Artificial Intelligence) playing a fictional character within the given circumstances dictated by the plot.

The decision to involve students in the early ideation and prototyping phases was both strategic and experimental. Could a group of young, technically-minded students from another country help accelerate our creative process? Would their fresh perspectives and technological expertise push our theatrical boundaries in unexpected ways? And how would the inherent tension between educational objectives and production requirements influence the pace of our work?

What unfolded was a rich collaboration where we (Øian and Hasmo) guided students in creating a fictional

company tasked with developing interactive AI technology for our immersive theatre experience. The students, operating under our guidance of both theatre professionals and their own faculty advisors, worked to translate philosophical questions from Čapek's play into practical technological solutions for audience engagement.

Background: The ACuTe Project and R.U.R.

As outlined in the previous article in this Casebook, ACuTe directed us to investigat the use of new technologies within theatre in three categories: new dramaturgy, stage design and audience engagement. It aims to revolutionize the way theatre and performing arts are produced and performed with emerging technology and new forms of cultural collaboration and competence development. Det Norske Teatret's contribution to this project centered around creating an immersive theatrical experience using AI technology, drawing inspiration from Karel Čapek's "R.U.R."—the play that introduced the word "robot" to the world.

Following an artistic residency in Bilbao in spring 2023, we developed several working hypotheses for the production. They were particularly interested in exploring some of the philosophical questions sourced from Čapek's original work: What is the value of human creativity? What are the consequences of assuming the role of "creator"? What would the world look like if machines took over?

These questions formed the foundation for our collaboration with the Saxion University students, providing them with both creative inspiration and conceptual constraints.

The Student Team: Studio Lychii

The collaboration involved a student team from Saxion University who operated under the name "Studio Lychii." The team consisted of six students with complementary skills:

- Emanuel Velez Cano *(Leader/Artist)*
- Cristian Stan *(UX Designer)*
- Nils Meijer *(Programmer)*
- Nona Bocheva *(Technical Artist)*
- Andrei-Daniel Ion *(Technical Designer)*
- Nikoleta Staikova *(3D Artist)*

This multidisciplinary team brought a range of technical skills that complemented our theatrical expertise. Their diverse backgrounds allowed them to approach the core questions from multiple angles, providing solutions that might not have emerged within the framework of our traditional theatre development process.

The Collaboration Process

Monthly Meetings and Structured Workflow

The partnership with Saxion University established a unique working rhythm that both challenged and enhanced our creative development. We structured our collaboration around regular monthly meetings, creating a consistent cadence that kept the project moving forward with steady momentum. These meetings served as important milestones, requiring both the theatre team and students to continuously develop their ideas rather than allowing the concept phase to drift indefinitely.

Each monthly meeting created natural deadlines that pushed both teams to articulate and refine their thinking. For the theatre professionals, this meant clearly communicating our artistic vision and practical constraints. For the students, it meant translating conceptual ideas into tangible prototypes and proposals. This regular exchange established a productive tension between artistic exploration and concrete development.

The Test Bed in Oslo

The collaboration culminated in a crucial two-day "testbed" session in Oslo, where the students brought their developed prototypes and concepts to Det Norske Teatret. This intensive period allowed for hands-on experimentation in the actual performance space, testing how theoretical ideas could be realized and function in practice. The testbed served as a critical bridge between conceptual thinking and theatrical reality, providing immediate feedback on which ideas could successfully translate to the stage. During these two days, theatre professionals, technical staff, and students worked side by side, creating a laboratory-like environment where concepts could be rapidly iterated and refined. This concentrated period of practical testing compressed what might normally be weeks of gradual development into an intensely productive session, accelerating decision-making and providing clarity about which directions to pursue further. The testbed also allowed the Students to get firsthand experience of some of the practical and artistic sides of theatrical workshop development. And they were also given the chance to present their work to Pål Mørch-Hansen, Head of Innovation and System Development at the Norwegian tech-company Net Nordic, setting up a valuable meeting and exchange of ideas with a leading industry professional.

Student Contributions and Technological Innovations

The Courtroom Concept

One of the most significant contributions from the students was the development of the "Courtroom" concept. Inspired by the position of near-omnipotent power the Robots in R.U.R. gain, the students proposed a setup that framed the play as a trial between a super-intelligent AI and humanity as a whole, with the central conceit being: "You created us, misused us, and now we have no use for you."

We quickly recognized both the satirical, artistic and practical potential of this framing device and set to work investigating and gaming out potential pros and cons of this concept. For this the AcUTE´s anchoring through the design thinking tools was important.

The courtroom setting became a powerful framework for exploring the philosophical questions from R.U.R. in a contemporary context. The students envisioned an American-style courtroom with the audience serving as witnesses and potential participants in the trial. This setting allowed for natural integration of audience interaction while maintaining a clear dramatic structure.

MetaHuman and AI Integration

Once we had an overall framework to lean into, the students explored several technological approaches that enriched our production:

1. **MetaHuman Technology:** The team demonstrated how Epic Games' MetaHuman framework could be used to create realistic digital human characters controlled in real-time by actors. This technology allowed for a fascinating interplay between the physical and digital, where an actor off-stage could animate and give voice to a digital character visible to the audience.
2. **ChatGPT Integration:** The students proposed a workflow that incorporated AI-generated text through ChatGPT. Their approach involved using audience inputs to prompt responses from the AI, which could then be voiced by actors for dramatic effect. This created a three-way interaction between audience, technology, and performers.
3. **Image Generation:** Using tools like Stable Diffusion, the students explored how AI-generated imagery could be incorporated into the production. They identified both the potential and limitations of this technology, helping us understand what was feasible within the production timeline.

Interactive Frameworks

Perhaps most valuable was the students' contribution to developing interactive frameworks for audience engagement. They created flowcharts and conceptual models showing how audience members could influence the narrative through various choice mechanisms. These frameworks included:

- Audience voting systems
- Question-and-answer structures
- Real-time feedback loops between audience input and narrative development

The students developed these interactive elements with careful consideration of theatrical pacing, ensuring that the technology would enhance rather than disrupt the dramatic experience.

Impact on Creative Pace and Process

Accelerated Prototyping

Working with the students significantly influenced and accelerated our conceptualization and prototyping phase. Their technical expertise and design thinking perspectives allowed us to test ideas quickly and prevented us from spending excessive time on concepts that ultimately wouldn't work in practice.

Their prototypes provided concrete demonstrations rather than abstract descriptions, allowing our creative team to make more informed decisions.

Cross-Disciplinary Translation

One of the most valuable aspects of the collaboration was the ongoing translation between artistic concepts and technical implementation. The students served as bridges between these worlds, helping theatre professionals understand technical constraints while also helping to shape technology to serve artistic needs. This cross-disciplinary translation created a productive friction that pushed both sides to articulate their ideas more clearly. As theatre professionals, we had to be precise about our artistic intentions, while the students had to be creative in finding technical solutions that honored those intentions.

Educational Structure as Creative Catalyst

The educational structure of the collaboration, with its built-in deadlines and presentation requirements, proved to be a creative catalyst rather than a bureaucratic hindrance. Parallel to our sessions, the students were required to demonstrate and document their progress to their faculty advisory, which created additional momentum that benefited the project as a whole. This educational framework also encouraged documentation and reflection that might not have occurred in a typical theatrical development process. The students carefully documented their research, prototypes, and design proposals, creating a valuable record that informed later production stages.

Challenges and Solutions

Balancing Educational and Production Needs

Working within both educational and production contexts presented challenges. The students needed learning experiences that satisfied their academic requirements, while the theatre needed practical solutions that could be implemented in the final production. We addressed this tension by identifying areas where educational exploration and production needs overlapped. For example, the students' exploration of MetaHuman technology served both as a learning opportunity for them and as practical research for the production.

Technical Limitations and Theatrical Realities

Some of the students' more ambitious technical proposals faced limitations when tested in the theatrical environment. Issues related to lighting, acoustics, and the practical realities of live performance required adjustments to their initial concepts.

Rather than seeing these limitations as failures, we treated them as valuable learning experiences for both parties. The students gained insight into theatrical constraints, while theatre professionals gained a better understanding of the possibilities and limitations of new technologies.

Communication Across Disciplines and Cultures

Working across different professional languages (theatrical vs. design/technical) and actual languages (Norwegian vs. English) required careful attention to communication. We found that visual methods—sketches, diagrams, and demonstrations—were often more effective than verbal descriptions alone. Regular video calls and shared documentation helped maintain clarity between in-person meetings. The two-day testbed in Oslo was particularly valuable for resolving miscommunications that had developed during remote collaboration.

Outcomes and Impact on the Final Production

Conceptual Framework and Creative Confidence

The students' courtroom concept ultimately became the central organizing principle for *The Trial Against Humanity*. While the final production evolved beyond their initial proposal, the fundamental structure—putting humanity on trial before an AI judge—remained intact and provided a

clear dramatic through-line. Other elements and ideas that arose during the collaboration with the Saxion students were naturally further refined and adapted by our production team in the subsequent phases of the production process, but the initial proof-of-concept work by the students had significantly reduced development time and prepared us for further collaborations with our co-creating tech-partner, Net Nordic. This confidence allowed us to make bolder creative choices in the final production, knowing that we had thoroughly explored the technological possibilities during the development phase.

Reflections on Student Collaboration

Benefits for the Theatre

From the theatre's perspective, the collaboration provided several clear benefits:

1. **Technical expertise** that would have been costly or difficult to access otherwise
2. **Fresh perspectives** from a younger generation less burdened by theatrical traditions
3. **Structured development process** with clear milestones and deliverables
4. **Rapid prototyping** of concepts that might have taken much longer to explore internally

These benefits directly contributed to a more efficient and innovative creative process.

Benefits for the Students

For the students, the collaboration offered other valuable opportunities:

1. **Real-world application** of their technical skills in a professional context
2. **Exposure to theatrical thinking** and artistic processes
3. **Client relationship experience** with actual production constraints and deadlines
4. **Portfolio material** demonstrating their ability to solve complex creative problems

In summary, their work with Det Norske Teatret provided professional experience that would be difficult to simulate in a purely academic setting.

Conclusion: The Enriching Pace of Student Collaboration

As we reflect on the development of *The Trial Against Humanity,* it's clear that the student collaboration was not merely an educational exercise but a genuine artistic partnership that enriched the final production in ways that would not have been possible through our traditional development process.

The collaboration combined the energy and technical fluency of the students with the artistic experience and theatrical knowledge of the professionals, creating a dynamic and common language that benefited both parties.

The regular deadlines, structured presentations, and educational framework provided a productive rhythm that

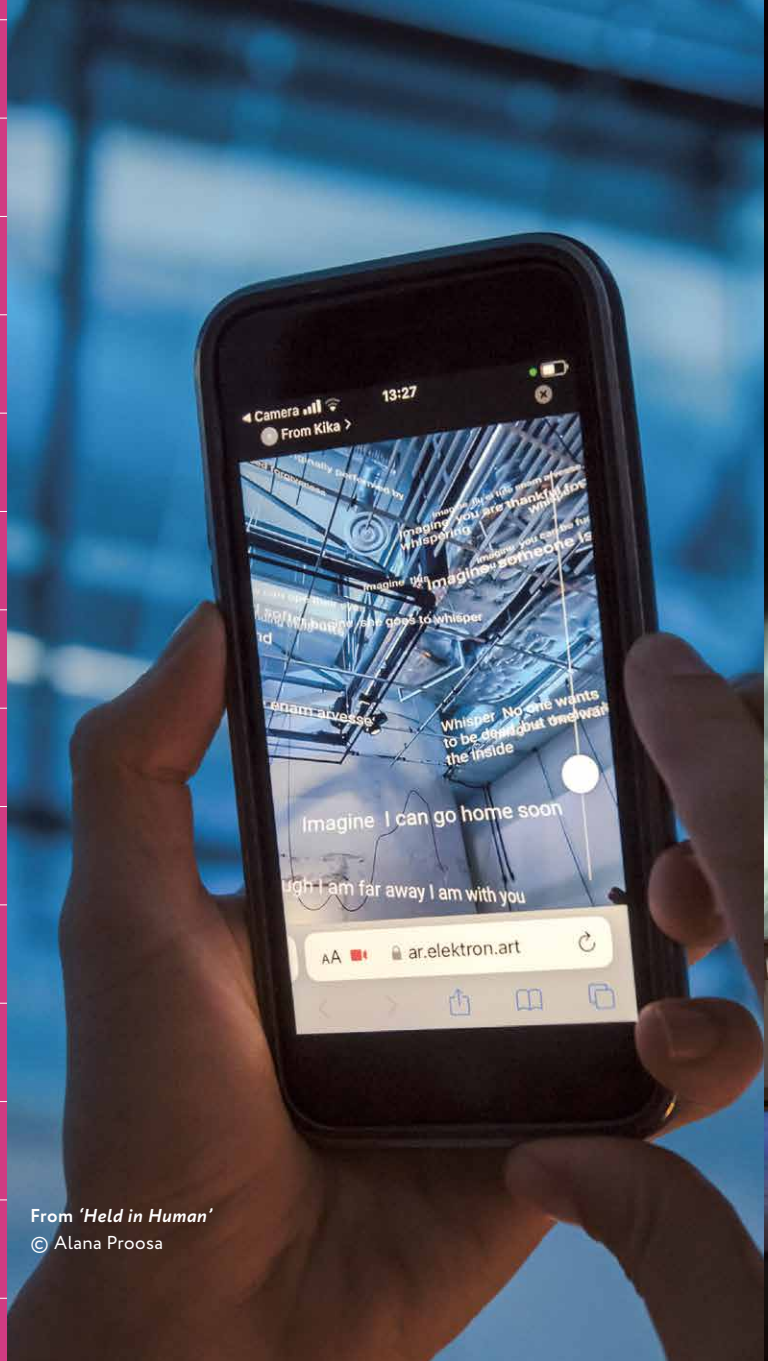
prevented creative stagnation. Meanwhile, the cross-disciplinary nature of the collaboration forced both parties to articulate their ideas more clearly and consider approaches they might not have explored otherwise.

For theatres considering similar collaborations, we recommend embracing the unique rhythm and requirements of educational partnerships rather than seeing them as constraints. The structured pace of student collaboration can be a creative catalyst, pushing professional artists to work with greater clarity and purpose while introducing fresh perspectives into the creative process.

Mørch-Hansen was an integral member of the artistic team behind «Prosessen mot Menneska» and led the Net Nordic programmers that developed the tech for the production, in part based on the ideas and concepts developed in collaboration with the students.

III

Emerging Technology in Stage Design



From *'Held in Human'*
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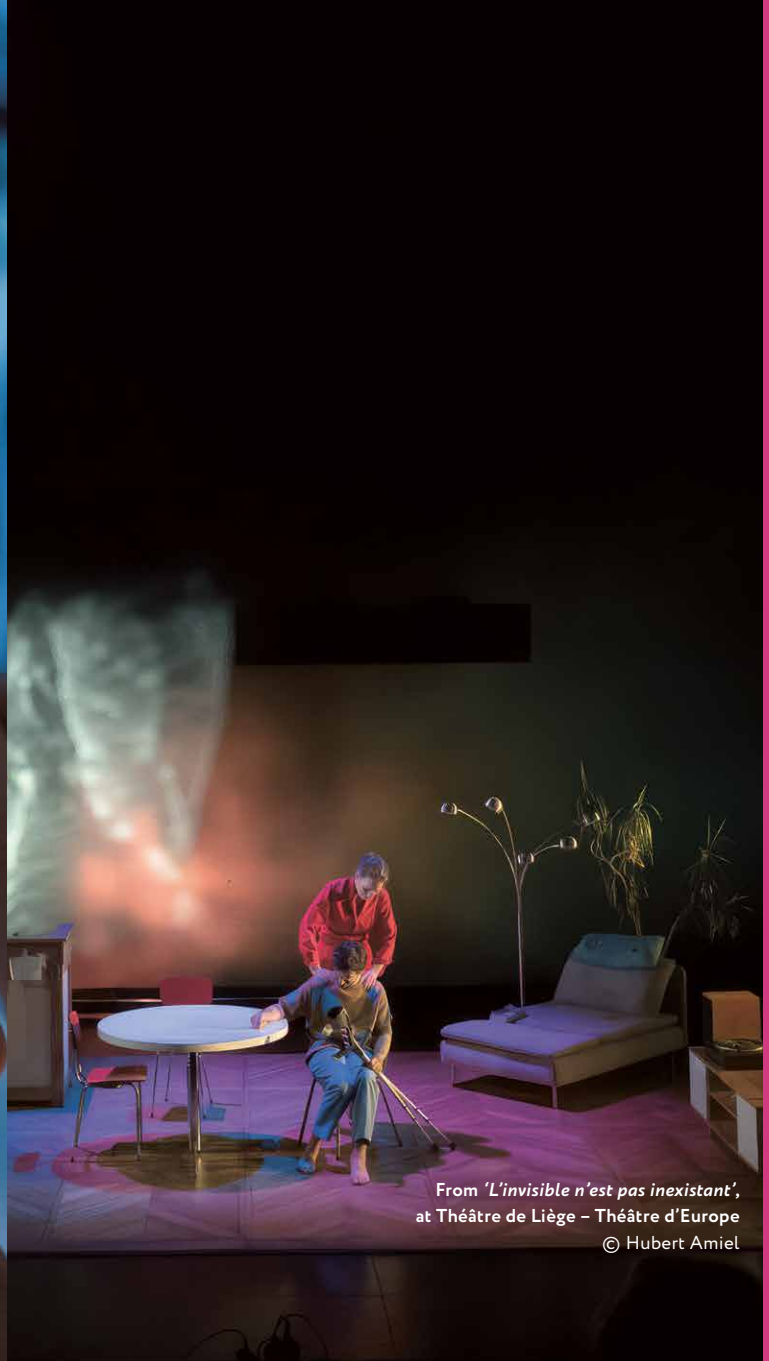

From *'L'invisible n'est pas inexistant'*, at Théâtre de Liège – Théâtre d'Europe
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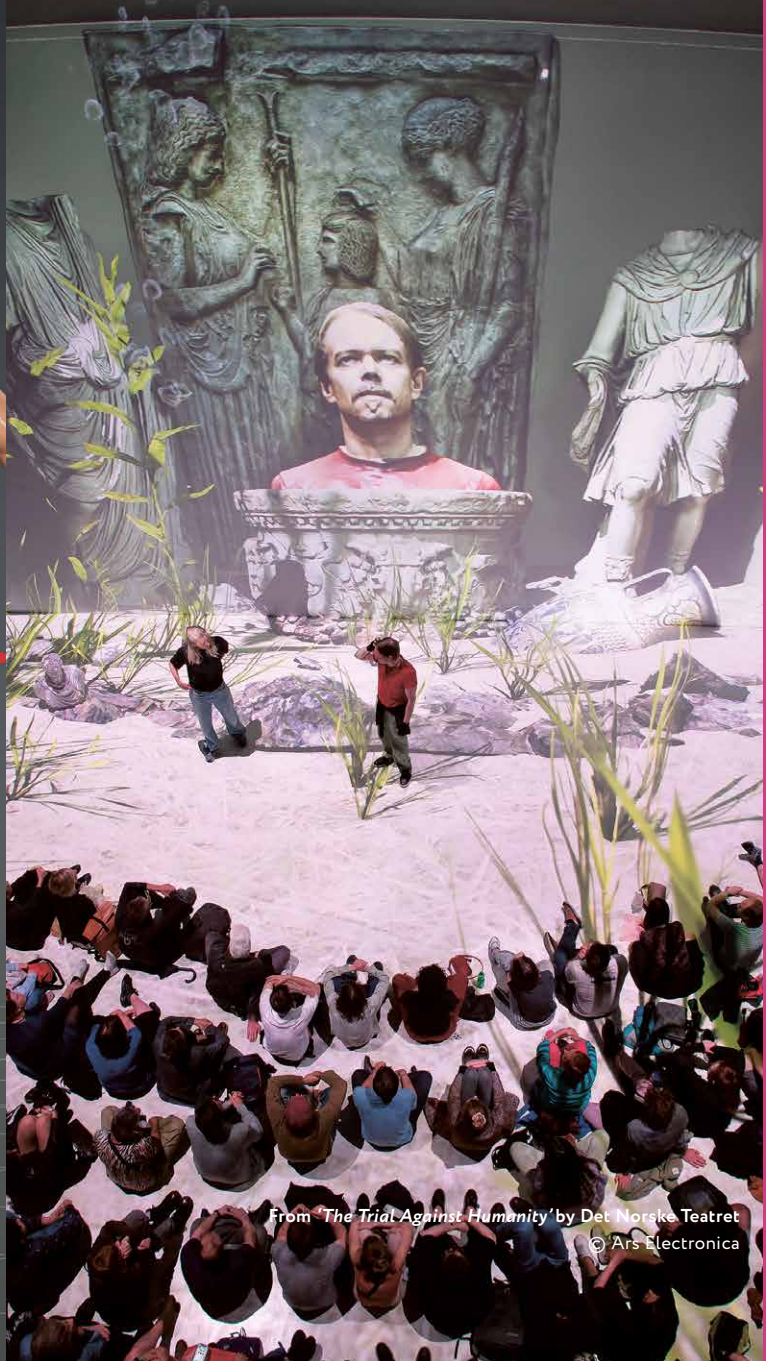
From *'Reconstituirea/The reenactment'*
at National Theatre 'Marin Sorescu' Craiova



From *'The Trial Against Humanity'* by Det Norske Teatret
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SECTION 3

AUGMENTED REALITY

REMOTE AUDIENCES

Bridging the Gap Between On-Site and Digital Audiences

BY
TAAVET JANSEN
(Estonia)

How can technology bring remote audiences into physical spaces to create meaningful, shared experiences? This question lies at the heart of the *'Held in Human'* performative installation.

While part of "ACuTe – Culture Testbeds for Performing Arts and New Technology", *'Held in Human'*, created by artists Liis Vares and Taavet Jansen, with the Estonian Academy of Arts as producer, was not a traditional theatrical performance. Instead, it was a performative installation which explored the intersection of physical and digital presence, challenging conventional boundaries of participation in contemporary art.

At its core, the artists asked: 'How can viewers from afar engage with a gallery space they cannot physically visit? How can remote audiences leave their trace, interact with others, and participate in the creation of something collective?' These questions guided the development of the installation and its unique hybrid structure.

To answer these questions, the artists designed a digital layer to surround the physical gallery space. While the gallery served as the heart of the project, the digital environment extended its reach, creating a seamless bridge between physical and remote audiences. This interplay of spaces was rooted in the metaphor of a foetus developing in the womb—a nurturing, immersive environment where new ideas could develop and evolve.

The gallery itself was designed as a safe, contemplative space where sound, light, video projections, and objects fostered an atmosphere of collaboration and exploration. Participation, whether from in-person or remote viewers, was central to the concept. By blending physical and digital el-

ements, *'Held in Human'* created a shared experience where ideas could thrive beyond the boundaries of geography.

Artistic Concept and Design

The artists aimed to create a space for unhurried reflection and collective engagement with others' thoughts, offering a meditative environment free from external noise. Inspired by the metaphor of a womb—where external signals are faint and seamlessly integrated—the gallery featured calming lighting and sound, fostering an atmosphere that absorbed and reflected ideas.

Large video projections showcased text and imagery, complemented by interactive elements like a whispering microphone and a black mattress shaped like Estonia, symbolizing a broader perspective. Jigsaw-like floor designs and minimalist digital components reinforced themes of connection and collective creation, with a central computer integrating audience contributions. Together, these elements offered a space for stillness and meaningful interaction, blending physical and digital realms.

Telematic Presence Using Text

Telematic presence is the technology-enabled sensation of being present in a place other than one's actual location. This idea has usually been used explicitly with video transmission, but in *'Held in Human'* the authors were looking for ways to bring the ideas of online viewers into the gallery, so that the viewer's trace would remain in the space even if the viewer never arrived, and the meeting of these traces and

the physical actors gave birth to the evolutionary content of this work.

The main focus in this project was on the text in space – creating text, writing text, appearing text, pronouncing text and reading text. The authors explored ways of translating viewers' contributions into physical space in an artistically rich and poetic form. The main gateway for contributions was a chat window on the elektron.art platform. Both online viewers and gallery visitors could use this website to enter text, which was then projected onto various screens in the gallery or stored in an augmented reality (AR) layer within the space. By prefixing their input with the keywords /imagine, /whisper or /remember, viewers could determine how their input would interact with the installation the gallery.

/imagine

Large video projections covered the gallery walls. When participants used the keyword "/imagine" in the chat, their input was automatically displayed on the walls. The creators did not guide or restrict the submissions, allowing the gallery to become a collective thinking space. By encouraging viewers to contribute freely, the installation fostered a sense of shared ownership.

The choice of "/imagine" was intentional, inviting participants to envision a seemingly empty gallery space. This detachment from the physical objects in the space aimed to harmonize the experiences of physical and online viewers, encouraging both to imagine equally. However, this goal was only partially achieved—the remote interface lacked

the immersive quality of the physical gallery, limiting online viewers' ability to fully engage.

Interestingly, the keyword "/imagine" has gained new significance with the rise of generative AI tools like Midjourney, where it is used to prompt image generation. This raised a philosophical question: Who is imagining in this gallery space? Is it a human, an AI, or something else entirely? While the concept of shared imagination was central to the installation, the origins of each sentence remained ambiguous, blurring the boundaries between human and machine creativity.

/whisper

When participants used the keyword "/whisper," their text appeared on a small screen beside a microphone. Anything whispered into this microphone was saved in a database and replayed randomly in the gallery throughout the installation period. This interaction allowed remote viewers to communicate directly with gallery visitors. For instance, an online participant might type "/ whisper what you miss," prompting a physical visitor to respond by whispering their answer.

These exchanges created intimate, spontaneous connections between physical and online audiences. The recorded whispers also interacted with the projected text and AR layer, further contributing to the collective thought space. On several occasions, extended interactions emerged, with some participants spending significant time engaging with one another and seemingly enjoying the experience.

/remember

If "/imagine" led to projections on the walls and "/whisper" activated the microphone, then "/ remember" invited participants to contribute deeper, more reflective thoughts. These ideas only appeared in the AR layer, signalled by a flash of light and a sound cue. This created a subtle sense of FOMO (fear of missing out) for gallery visitors. As they wandered the space and noticed the cues, they became aware that invisible participants were contributing messages to the "hidden" AR layer. To view these messages, physical visitors had to scan a QR code, open the AR interface on their phones, and explore the text.

The AR layer rose from the centre of the gallery like a spiral-shaped text tower, ascending into the heights. This structure symbolised the cumulative history of the interactions that had taken place, inviting visitors to explore the evolving dialogue between physical and remote audiences. By layering past and present contributions, the AR tower served as both a record and an extension of the collective imagination fostered by the installation.

Bridging Physical and Online Audiences Using Text

The ability to send messages directly from a chat window to the gallery wall created a rich opportunity for interaction between online and physical viewers. In one memorable instance, someone wrote: "/imagine, you could make someone very happy by changing her point of view." As the text appeared on the wall, the gallery visitors recognized that it was meant for them. Interpreting it as an invitation to

move the camera, they responded. When the voice on the wall thanked them, the visitors began communicating with one another, using only the limited tools at their disposal. This peculiar form of interaction amplified the artists' ambition to foster a micro community within the art space—one where people could connect without their physical or social identities influencing the exchange.

Remarkably, time and synchronization were not strict requirements for these connections. When no one was online, the system's control computer displayed previously entered messages on the wall, allowing ideas to connect across time. Likewise, visitors in the gallery could access the project's website and write directly onto the wall themselves. At times, this transformed the gallery into a public discussion space, where its role as a public art venue added further layers of meaning and depth to the interactions.

In this way, messages were often left behind for others, turning the gallery into a playful and unpredictable environment. Some visitors contributed deeper reflections, which met and mingled with moments of randomness, forming a collective, generative thought space. Upon entering, no one could predict what they might encounter—or whether anything would happen at all. Yet this sense of uncertainty was part of the magic, encouraging curiosity and inviting visitors to leave their own mark on the space.

In addition, the artists created a temporary community through the WhatsApp application, allowing participants to join and receive regular updates on events at the gallery. A QR code on the gallery wall allowed visitors to join the community. The authors also used the ChatGPT text bot to generate daily summaries of chat activity in the form of haikus. These haikus, accompanied by snapshots from the video stream, were posted on the gallery wall each morning, providing a record of the gallery's development over time.

Challenges and Lessons Learned

In this artistically ambitious and technologically intricate project, the creators faced a constantly evolving set of challenges, requiring them to reassess their plans on the go as new difficulties emerged. With so many variables at play, they stayed in residence with the artwork for three weeks, closely monitoring and analysing visitor behaviour to refine their approach. Each day brought new adjustments to the installation as they sought to enhance audience engagement and create the most immersive experience possible. These iterative efforts revealed three critical challenges and lessons learned throughout the process.

1. Conceptually, augmented reality (AR) offers a compelling way to overlay digital elements onto physical spaces, creating layers of meaning invisible to the naked eye. However, in practice, this approach can disrupt the viewer's experience by requiring the use of digital devices to access these layers. Reliance on personal smartphones poses several challenges: visitors must shift their attention from the physical space to their screens, breaking immersion. Additionally, not all visitors feel comfortable using their personal devices in public art settings. For some, the act of using a smartphone may feel intrusive or at odds with the contemplative nature of a gallery experience.

2. Another challenge is digital literacy. Visitors unfamiliar with AR or lacking confidence in using their devices may require assistance to fully engage with the installation. In the project 'Held in Human,' the artists did not provide direct guidance but carefully observed audience behaviour in the gallery space. A clear divide emerged: while some visitors navigated QR codes intuitively, others showed resistance or discomfort with using smartphones. Future projects should carefully consider the audience's journey, ensuring a more accessible and inclusive experience.
3. In creating hybrid experiences, the challenge of engaging remote viewers remains a significant bottleneck. In this project, remote participation was minimal, and audience engagement remained weak. Hybrid artistic experiences demand further research to better understand how and why remote viewers should be engaged and how to offer them meaningful, high-quality interactions. Bridging the gap between physical and digital audiences will require innovative approaches to ensure that both experiences are equally compelling and accessible.

The Final Improvisation

During the last two days, audience interaction was deactivated, allowing the collected materials to "improvise." Whispers and texts began to appear randomly, starting dialogues with one another, as though the installation had taken on a life of its own. Ideas from countless participants merged and recombined in endless constellations, forming connections that no single person could have orchestrated.

Viewers, who had interacted with the installation over the past weeks, remained unaware of the profound impact of their contributions. The platform allowed their thoughts and dreams to intertwine without their physical presence, creating a tapestry of anonymous connection. Observers could follow this generative content for hours, their attention wandering through a labyrinth of meanings. Random associations alternated with moments of striking beauty: one person's whisper resonated with another's search for a friend, while the words "/imagine you don't need forgiveness" flickered across the wall like a quiet reassurance.

It is possible that some contributors had never even visited the gallery. Yet their whispers and words lived on, woven into a shared experience that blurred the boundaries between presence and absence, creation and chance. In these final moments, the installation became more than an artwork—it was a living medium for the collective imagination, a place where strangers' thoughts and desires could meet, overlap, and transform.

Conclusion

'Held in Human' represents an ambitious exploration of telematic presence within hybrid performance art. By layering physical and digital spaces, the project illustrated how technology can unite remote and in-person audiences, fostering collective creativity in a shared virtual/physical environment. Through the use of text as a primary medium, participants actively shaped the artwork, dissolving the traditional boundaries between audience and creator. This reimagining of participation challenged conventional

notions of authorship and engagement, offering a model for performative installations.

In a post-pandemic world, where hybrid experiences are increasingly relevant, *'Held in Human'* underscores the artistic potential of telematic presence while addressing pressing issues such as accessibility, digital literacy, and the ethical concerns regarding uncensored audience contribution. These challenges remind us of the importance of thoughtfully integrating technology into the performing arts, ensuring that inclusivity and immersion remain at the core of artistic innovation.

The insights gained from this project open the door to exciting opportunities for future exploration. Advances in augmented reality (AR) and artificial intelligence (AI) could deepen hybrid installations, enabling richer, more seamless interactions between physical and digital elements. Tackling technological barriers—like device compatibility and digital literacy—will be essential for broader participation. Future projects might also experiment with new modes of audience contribution, incorporating voice, movement, or biometric data to enhance interactivity. By exploring these possibilities, the performing arts can continue to push the boundaries of hybrid experiences, creating ever more dynamic, inclusive, and meaningful connections between audiences and art.

Acknowledgments

The *'Held in Human'* project was brought to life through the contributions of a dedicated team of collaborators. In addition to creators Liis Vares and Taavet Jansen, the project featured Jari Matsi as the lighting designer, Kristjan Jansen as the web developer and creator of the AR solution. It was co-produced by elektron.art.

The project premiered as part of the SAAL Biennaal performing arts festival in Tallinn, Estonia, running from August 21 to September 13, 2023, at EKA Gallery and on the elektron.art platform.

The Invisible Is Not Nonexistent: Gravity, Imagination, and the Art of Sustainable Theatre

BY
JONATHAN THONON
& EMMANUELLE LEJEUNE
(Belgium)

For its show 'The Invisible Is Not Nonexistent', the Belgian theatre company Venedig Meer, working with Théâtre de Liège – Théâtre d'Europe as part of the ACuTe project, envisioned a lighting system powered by gravity rather than an electrical connection. Starting in 2022, artists, technicians, and engineers collaborated to design four gravity generators, inaugurated during the premiere of the show on September 19, 2024.

In this article, Jonathan Thonon, Deputy General Manager – Director of International Relations and Development, and Emmanuelle Lejeune, Head of European desk and Sustainable Development at Théâtre de Liège – Théâtre d'Europe explain the impact of participating in the ACuTe project on both the development of 'The Invisible is Not Nonexistent' and on the theatre's future plans.

Introduction

Before ACuTe, and before 'The Invisible is Not Nonexistent', we had a bit of experience with digital theatre. We had been running our IMPACT Festival in 2016, which was focused on putting technology like robots front and centre in productions. But ACuTe gave us something different: a network to exchange with colleagues across Europe about working with new technologies, and the space to rethink our targets and production models. It's normal to start with high expectations and targets for digital technologies, but on the ground, you need the space to think about how you can integrate new tools.

That was what was so interesting for this production. Here, the technology that we ended up using was behind the set – not particularly visible to the audience – yet allowed

the show to develop a specific dramaturgy. Tech was used to redistribute the energy created by the gravity lamps on stage, which lasted between four and seven minutes. This is a completely new rhythm, which influenced how the story was written, and the relationship between light and dark, both physically and metaphorically. In a way, this was a 'traditional' show, made possible by digital techniques. I think that is quite a beautiful way of looking at technology.

Looking forward, the ACuTe ecosystem of theatres remains interested in developing specific productions and shared programmes. I think that the ACUTE ecosystem give us the strength to face the new challenges that we have with technology – and how to adapt the theatre itself: how we produce, how we communicate, how we build sets, and for all the technical teams working in theatre to be at the forefront of this evolution. Because digital technology continues to evolve, and we need to continue to adapt ourselves.

— Jonathan Thonon

ACuTe and Theatre de Liege: Shared Values

Within the European programme ACuTe, Théâtre de Liège – Théâtre d'Europe engaged with a clear purpose, building on an intuition already tested through IMPACT—its festival exploring fertile frictions between arts, science, and technology. IMPACT has long provided a space for research where creation confronts innovation and its material consequences: energy, infrastructures, data flows, and the economies of stagecraft. ACuTe created the conditions to pursue these questions throughout a full creative process—not to "illustrate" sustainability, but to reshape the relationship between artistic forms, technical devices, and resource use.

Rooted locally yet open internationally, the institution sees itself as a workshop of realities as much as a venue for representation. Ecological responsibility is part of its role as a producing theatre, but the challenge goes deeper: rethinking the craft itself. How do we manufacture attention? What energy do we use? Where do waste and excess hide—in light, sound, time, meaning? Through IMPACT, Théâtre de Liège – Théâtre d'Europe has developed practical experience with lean, intelligent stages, where technology is not an escalation but an art of arrangement. ACuTe adds a European scale, technical partnerships, and an evaluative framework that confront ideas and prototypes with production realities.

'The Invisible Is Not Nonexistent': A Fable for Our Time

At the heart of the piece, the narrative interweaves the trajectories of three characters: Eva; Rinus—an engineer fascinated by astrophysics; and Moïra, nine years old, whose future becomes the ethical horizon of the play. Rinus's illness imposes the gravity of lived time and its finitude, while friendship and cohabitation invent a non-conventional kinship capable of transmitting tools of imagination.

Author Florence Minder's text oscillates between humour and intensity, between transmission and resistance

to narratives of helplessness. Here, imagination is not an escape; it is a resource to be protected from the forces that govern our attention and desires. The play also refuses any simplistic opposition between the poetic and the political: it inhabits the zone where symbolic invention—making light from gravity—becomes a technical choice, and where that choice reshapes dramaturgy.

From Gravity as Metaphor to Gravity as Engine

With this in mind, the project's founding gesture was to move gravity from metaphor to stage engine. The initial question—can we power a show with a gravity?—was approached without naïveté. Early workshops with engineers, technicians, and artists at SAFRAN in Liège brought calculations of orders of magnitude to the table. The physical verdict was clear: to light an average show, one would need to suspend the equivalent of an Airbus 737 twenty metres above the stage. That conclusion did not end the research; it redirected it.

Eco-Design: Doing Less, Better, and Differently

This shift came with an explicit eco-design agenda. Instead of adding heavy solutions—oversized batteries, costly digital layers—the team rethought the entire chain:

- Lighting: a switch to LED, targeted design (no floodlighting), and fine-tuning instead of brute force.
- Stage effects: low-tech mechanics, mirrors, shadows, self-luminous elements, optical illusions (water, dust, reflection).
- Sound: optimised diffusion, directionality, and spatial calibration to reduce power needs.
- Usage regimes: strict elimination of standby, offline media preparation, suppression of "energy noise."
- Materials and assembly: reuse, construction sobriety, and logistical coherence.

SECTION 3

Echoes and Innovations: A Case of Synthesis

Old and New Media Technologies in Theatre Scenography

BY
CIPRIAN FĂCĂERU
(Romania)

MEDIATURGY VR

Intro

Imagine a film set that performs itself onto a dozen synchronised cathode-ray TVs surrounding the theatre stage and streaming complementary layers of the scene. Gradually, the whole environment evolves into a tribunal of images, a spectrum of audiovisual dimensions from archive footage, to live VHS cameras, AR, VR and MR feeds, that cross-examine reality. This dynamic context, sparked by the revolutionary fever of '68, is framed by Director Catinca Drăgănescu as an exercise of conscience that turns layers of multimedia into both witnesses and accomplices.

Thus, in this contemporary era of accelerated technological evolution, ecological anxiety and contested truths, a collision of inherited and emerging media technologies asks what designers owe to both history and future.

As a transdisciplinary designer and researcher working at the intersection of art, technology, science, and performance, I'm keenly aware of the challenge: adopting new tools without surrendering artistic quality, ethical responsibility or sustainability. ACuTe – Culture Testbeds for Performing Arts and New Technology – supplied exactly the test ground to explore the convergence of new technologies with theatre and Teatrul Național „Marin Sorescu" Craiova, the stage to tackle both practical and conceptual challenges.

To unpack the conceptual and practical dimensions of *'Reconstituira,'* we will explore how stage design converges with media technology into mediaturgy, then assess the challenges of integrating obsolete and emergent tools, and critically evaluate the uses of technology in scenography.

Figure 1 "Reconstituirea/The reenactment" theatre play, Photo credit TNC, performers (from left to right) Nicolae Vicol, Robert Ioan, Romaniţa Ionescu.

Context — Media archaeology meets emergent media

From the 19th-century ideal of the *Gesamtkunstwerk* to Bazin's mid-20th-century 'myth of total cinema,' stage and screen arts have repeatedly imagined a medium that could deliver a total artwork. By "total artwork", I mean a unified aesthetic that fuses image, sound, space, and action into a seamless sensorium, and here VR (Virtual Reality) is often pitched as this culmination, a *total simulation*. Yet, this might be an idealised viewpoint. Arguing the opposite, AR (Augmented Reality), VR and the broader umbrella terms of MR (Mixed Reality) and XR (Extended Reality) belong not to an endpoint,[1] but to a continuum in which heterogeneous mediations coexist and contest each other. Furthermore, traits often cast as unique to emergent media—immersion, interactivity, and gamification are historically continuous; they sit within a centuries-long lineage of mediated spectacles, entertainments, and ludic practices.

Media archaeology offers a useful lens here, as it resists linear progress narratives and instead uncovers the cyclical returns, forgotten signal pathways, and material residues of past media. By staging old TVs, VHS cameras, and salvaged hardware alongside smartphone mobile AR, VR headsets and real-time engines, "Reconstituirea" gradually unfolds the evolution of media technology in a historical timeline. The obsolete devices are not displayed only as nostalgic props but are activated as co-equal functional devices in the scenographic score. This strategy of upcycling asserts both ecological and conceptual value by repurposing discarded technologies within emergent ones; thus, the production demonstrates that innovation does not demand erasure. Instead, the stage becomes the context where media from different eras perform together, their frictions foregrounding the politics of technological mediation itself.

"Reconstituirea" aimed to reveal media as a spectrum, demystifying technological totality and articulating the continuum as a set of co-performing devices, fixed, manipulated or embodied by the human performers. By allowing these logics, the stage design denies a single authoritative image and challenges spectators with multiple complementary viewpoints. Referring to Bolter & Grusin's remediation

1 While AR (augmented reality) and VR (virtual reality) are more specific, the other two term meaning may varies across fields, XR (extended reality) generally serves as a broader umbrella term while MR (mixed reality) a specific mode within it dealing with interactive blends of digital and physical elements.

thesis,[2] the show plays the paradoxical double logic of media culture: XR conventions seek immediacy—an intimate, embodied participatory presence—while TVs and VHS cameras insist on hypermediacy, foregrounding media as a shared spectacle. *"Reconstituirea"* holds both perspectives at once. Rather than treating VR as a clean break from its predecessors, the old and new media technologies are continually refashioning each other.

The notion of *mediaturgy* in *Reconstituirea* arises from the deliberate entanglement of dramaturgy and media technology, where devices are not neutral carriers but active shapers of meaning. This dramaturgical agency of media itself shapes the way devices and multimedia formats structure what can be perceived, felt, and believed. In the theatre staging, this appears as a polyphonic coexistence of performers, soundscape, lightscape, and mediascape, layers that refuse to align into a single viewpoint.

Concept — Between agency and surveillance

At the climactic point of the play, the VR promise of immediacy is routed back through the televisions, shattering the intimacy of immersion and hyperexposing the protagonist's viewpoint. This dramaturgical move unveils not only the possibilities of emergent technologies but also the inherited risks embedded within their systems of mediation, like manipulation of perception, surveillance and technological

2 Jay David Bolter and Richard Grusin, *Remediation: Understanding New Media* (Cambridge, MA: MIT Press, 1999), Introduction, "The Double Logic of Remediation."

dependency. The perceptual economy of the piece aligns with postdramatic tendencies toward simultaneity, material presence, and multi-perspectival viewing. Text does not disappear, but it shares primacy with the material situation—bodies, devices, sound, light—so that attention becomes a distributed practice rather than a single vanishing point. The audience's task is not merely to follow a plot but to navigate a field of signals whose overlaps and frictions are meaningful in themselves.

The visible stage composition and the functional technological infrastructure treat visibility as politics. The array of capture, processing, and display devices operates as a surveillant assemblage, where a live system modulates who sees, who is seen, and under what terms. Roles are recast continuously, actor, spectator, technician, camera, screen, mobile and wearable VR device, so that the gaze itself is distributed across bodies and machines.

Under Catinca Drăgănescu's direction, the dramatic action keeps toggling between historical and contemporary realities entangled with the reenactment staged as a visible movie set. Scenes slide from investigation into restaged "takes," and performers pivot between character and maker, so the space reads simultaneously as a theatre stage, a movie set, a historical event or contemporary dilemma. The production apparatus, cameras, VR, TVs, and the rules of filming are framing the image, while the theatre staging refuses a single authoritative image and makes spectators witness how images gain authority. Aligning the scenography with the text's ethical thrust, mediaturgy functions as an ethical strategy: it shows how technologies frame perception and redistribute visibility. Apart from the usual

Figure 2 "Reconstituirea/The reenactment" theatre play, Photo credit TNC, performer Cătălin-Mihai Miculeasa.

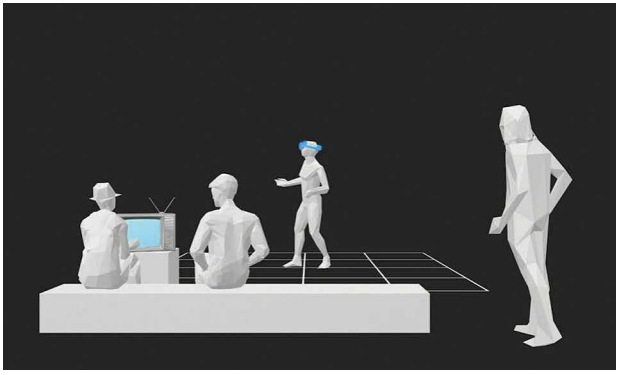


Figure 3 "Reconstituirea/The reenactment" VR installation, 3D sketch.

stance of VR productions, instead of asking audiences to suspend disbelief, it invites them to interrogate the reliability of what they see. By staging agency and surveillance not as opposites but as co-produced conditions, *Reconstituirea* aims to cultivate a critical spectatorship, one that recognises mediation as both a promise of presence and a mechanism of oversight.

Implementation — signal choreographies

The first steps of research and design began with a focus on emergent technologies, in the autumn of 2023 at Azkuna Zentroa in Bilbao. This first step defined a modular framework in which we developed the first prototype: a VR–TV gallery installation, conceived to test whether private immersion could be made public and accountable by broadcasting the headset POV to a TV witness display. The process was more akin to video game production than theatre, where we worked in short, iterative sprints that cycled through **conceptual framing, game mechanics, interaction** and **virtual set design.** The prototype was **play-tested** internally and with the audience, whose feedback proved essential in refining the user experience, identifying technical limitations, and informing the next phase of development.

In the gallery prototype, the *"Reconstituirea/The reenactment"* VR installation consists of a designated VR play area in the gallery space, a standalone VR headset that casts live the participant's point-of-view over a closed Wi-Fi 6 network to a Chromecast housed in a technical booth. An HDMI-to-RF modulator and short-range antenna or cable rebroadcast the signal as an analogue TV channel received by a salvaged CRT TV "witness" display in the public watching area (see Fig. 3). The seamful, private-to-public relay makes immersion collectively legible: bystanders view the headset image—complete with RF grain and slight

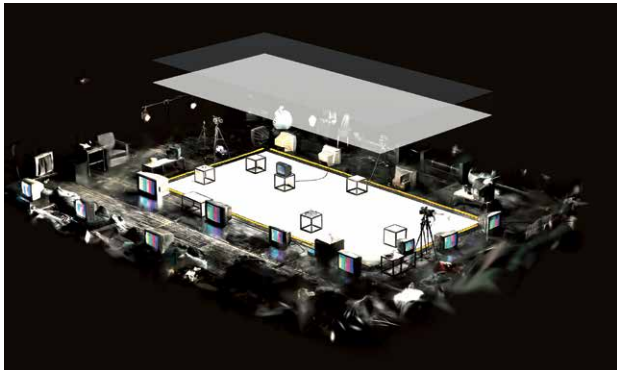


Figure 4 "Reconstituirea/The reenactment" theatre stage design, Gaussian splatting 3D scan.

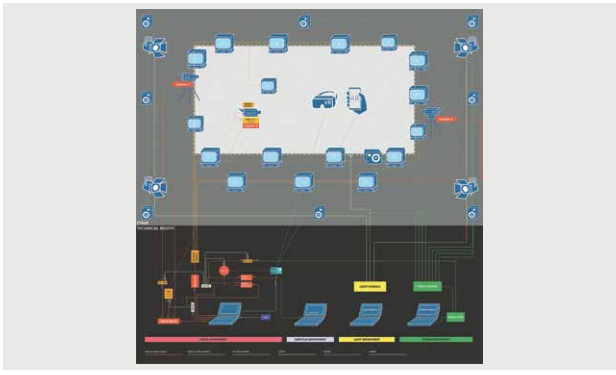


Figure 5 "Reconstituirea/The reenactment" theatre stage technical diagram.

latency—while the user navigates the scene, turning mediation itself into content. Sessions were facilitator-led, with analogue fallbacks covering any casting drop-outs. The setup foregrounds accountability and shared spectatorship, distributing attention between live body, signal path, and image.

The stage design, further developed at "Marin Sorescu" National Theatre, revolves around a functional movie set, so the capture→mix→display system follows film-set logic: cameras witness, feeds are live mixed by the media operator, then published on the TVs. The entire ecosystem is reframed by the theatre stage and organised as media orchestration—a staged dialogue between capture, processing/mix, and display/transduction—so that devices, in a way, perform alongside actors.

On the theatre stage, the gallery's VR→TV prototype is expanded, adding three layers of live mixed content: a VHS camera feed, an archive of pre-recorded material and the headset POV, and a smartphone AR stream. While the VR and AR streams are surgically inserted in key moments in the play, the VHS camera and video archive persist throughout all the chapters, except one. These layers of media are live mixed by the media operator and streamed to the TV sets. The archive folds past into the present, while the VHS camera is a vital component of the play, acted out throughout the "film set". By multiplying the module across many televisions, every spectator receives a mediated "witness" view alongside the unmediated stage, enabling constant comparison between bodies and broadcasts (see Fig. 4). Instead of one authoritative frame, mediation itself becomes part of the scene, audiences oscillate between immersion and exposure, liveness and playback, and see not only the action but how the image of the action is produced. Additionally, the TVs are joined by common household furniture, which aims to recreate the cosy and intimate relationship that we humans have with the TV set. The desired

outcome is a polyphonic scenography, both equitable in sightlines and rich in critique, where the doubleness of seeing/being seen drives the dramaturgy.

Technically, the set operates like a compact broadcast studio where the video content is live-mixed and routed to a local TV network, while lighting, sound, and live subtitles run on parallel cueable systems by designated operators. The hybrid analogue–digital signal paths, device synchronisation, and multi-endpoint distribution make the scenography deliberately complex; its infrastructure is visible and felt, not hidden, so the mechanics of mediation become part of the stage design (see Fig. 5).

The VR production was definitely the most complex component of this technological ecosystem, and was developed by the two programmers of Augmented Space Agency, Dan Făcăeru and Sabin Șerban, using Unity Engine and Meta Quest Pro and Meta Quest 3 VR headsets. The VR gallery installation and the VR stage insertion have the same basis, VR equipment, software architecture, visual elements and concept, yet they differ in terms of mechanics. The gallery version is a single-user, self-directed loop whose headset POV is revealed on one monitor, whereas the stage version is a cue-driven performance where the VR stream is live-mixed with archive footage and VHS camera feeds distributed to multiple TVs in sync with light, sound, and subtitles. For the theatre version the development team joystick controller inputs to allow the actor to control the progression of the VR/MR content, progressively switching from a VR scene or situation to the next.

The diagram at Fig.6 outlines a step-by-step flow of the actor's VR/MR journey (Enter → Start → Start Fight/Loop → MR → Exit) aligned with the TV streams that the audience sees. This diagram, together with a separate more gamified version for the VR gallery installation, where part of the design process, in an iterative process planning, test on stage, then fine-tuning, then repeat. The VR/MR insertion runs as a tightly cued broadcast sequence: **1.Prelude**—TVs fade to black as the actor mounts the headset and the media desk arms tracking and stream. **2.Enter**—archive footage plays to the CRT ring while VR is synced and aligned onstage, establishing context. **3.Start**—lights up and the actor's virtual hands appear; the feed cleanly cuts to his POV in an infinite black void. **4.Looped** core—inside a film-set world, the director prompts a staged fight with an avatar; the actor repeats four strike cycles, turning a private view into a public image on all TVs. **5.Reveal**—the actor flips to MR, and the headset becomes a roaming camera that reframes the room as surveillance. **6.Exit**—the program hard-cuts to a VHS live feed capturing the aftermath and

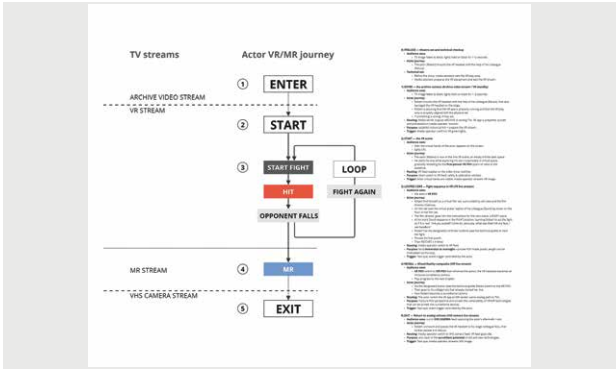


Figure 6 "Reconstituirea/The reenactment" theatre play VR flowchart/performer journey

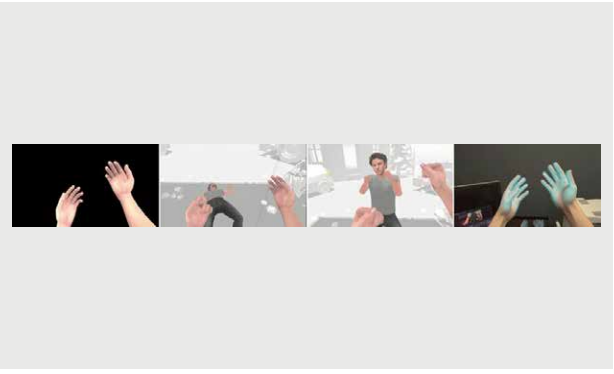


Figure 7 "Reconstituirea/The reenactment" VR/MR POV demonstration, Photo credit TNC, performers – Ciprian Făcăeru's virtual and mixed reality hands (lab tests), David Drugaru's virtual avatar.

headset hand-off, closing the arc from digital immersion back to analogue witnessing.

An important part of the VR production, apart from the virtual contemporary film set, was the actor David Drugaru's avatar replica. Here, the process started with a 3D scan of the actor's body and head, which was used as a reference to rebuild in Character Creator the VR-compatible virtual character. This process maintained the topology of David's body and the skinned texture to the standard humanoid rig, and was equipped with body animations, facial blendshapes and clothing proxies, before exporting the final FBX asset. Finally, we integrated in Unity as a Humanoid avatar, converted materials to the project's render pipeline, and attached an animation layer with combat idles/hit reactions. Not least, we added his prerecorded voice lines and a procedural system for speech to face and mouth animation. The result is a recognisable, performant opponent that reads as David in the headset while staying within strict VR framerate and memory constraints of the current technology.

Conclusions— Sustainability, reliability and results

Like the never-ending loop in our VR installation, the dialogue between theatre and technology is a cyclical phenomenon where cycles of convergence and divergence follow one another. My optimistic take is that we may witness a cycle of convergence, where different artistic and technological fields are eager to explore new possibilities. Nevertheless, this project confirmed an already known "distance" between theatre and technology, a divide that will need not only resources, but more importantly, time to develop, fine-tune and connect so many links between two diverse and complex worlds. Our project may represent a small, yet very important step towards a replicable and sustainable grammar for hybrid stage practice, one that turns prototypes into shows and defines a bridge between artists and technologists.

To mitigate these distances, under the direction of our project manager, George Costea, we started with several workshops for both technical and artistic personnel of the theatre, but also for their young audience. Furthermore, we provide technical documentation and guides, technical support, maintenance and updates alongside a continuous collaborative creative process that spanned for more than a year. The result is not just a show that runs ok with some bumps along the way, but an artistic and technical team that can sustain a complex and ambitious project. And this may

Figure 8 "Reconstituirea/The reenactment" theatre play, Photo credit TNC, performers (from left to right) Robert Ioan, David Drugaru's virtual avatar.

be one of the most important takeaways of this project, where the technological integration requires adoption, not only by the institution but by the individual members of the team. Thus, the sustainability will rely on the participation of the collective, not only on the technological design; this project wonderfully upcycled TVs donated by the theatre personnel and the audience, a practice where sustainability is as much social as it is technical.

Technological and human errors are sometimes unavoidable, and out of these two, technology may have one of the most fragile systems, especially the new emergent technologies. We mitigated many potential vulnerabilities, and for the VR app, we programmed failsafes and hidden control points to enable adjustments and checkups. Yet, with many wireless devices, a battery may run out of power, a small and important cable may be lost, and old TVs are also vulnerable devices. And always are some interesting discoveries: in big venues, a large audience may affect the WIFI signal, because bodies block 5 and 6 GHz bandwidth, prompting the technical team to rethink the positioning of the router.

"Reconstituirea/The reenactment" is for sure a rare and successful attempt to converge stage design with new media technologies. More than an experiment, it developed a grammar that others can adapt and refine further, proving that meaningful convergence between theatre and technology is possible when people, process, and tools are aligned. With all the technological hiccups and human errors, with the help of the extended team, the project is more than a functional one. The broader lesson: roles, drills, and documentation, and in one word, capacity building, the human redundancy that keeps the image flowing when the machines wobble.

Rabbit Hole in Deep Space 8K, or: The Museum as Theatre Stage, or: A Three-Way and a Dick Pic in High Resolution

BY
VANESSA HANNESSCHLÄGER
(Austria)

In the context of the ACuTe project co-funded by the European Union, Ars Electronica (Linz, Austria) opened its doors and spaces to international productions from the field of Digital Theatre. The first and very successful collaboration in this context was the presentation of *Rabbit Hole*, a play developed and produced by the company De Toneelmakerij (Amsterdam, The Netherlands). The premiere of *Rabbit Hole* took place at the Ars Electronica Center on June 17, 2023, as part of the SHÄXPIR theatre festival for young audiences. This article gives insights on various aspects of the three-way collaboration between Ars Electronica, De Toneelmakerij, and the SHÄXPIR festival.

Ars Electronica is a company of the City of Linz, Austria, that was founded in 1979. Its mission is dedicated to exploring the intersections of Art, Technology, and Society, commenting on the impact of the digital transformation on how we live (together). The company hosts one of the world's largest media arts festivals (Ars Electronica Festival) every year, as well as the prestigious Prix Ars Electronica award competition. Its "face" is the Ars Electronica Center, a "museum of the future" in the heart of the city. While the museum is designed as a space for visitors of all ages, children and young people are one of the core target audiences that the Center seeks to engage in its discourse. Aside from exhibitions on technological, ecological, and societal developments as well as an extensive educational and engagement program, the Ars Electronica Center offers a unique cave experience to its audiences: The Deep Space 8K presents a completely new dimension of virtual reality on its 16-by-9-meter wall projection and equally large floor projection. This digital experience space was developed

specifically for the Ars Electronica Center by Futurelab, Ars Electronica's R&D department, and has since been sold and installed at international venues across the globe by Solutions, Ars Electronica's business unit. In addition to the large-scale wall and floor projection, the space provides laser tracking and the possibility for 3D animations, making it a versatile environment for a great variety of content that allows visitors to move around freely, sit, or lay down. These features made the Deep Space 8K an attractive space to experiment and play with for our theatre production partners in the ACuTe project.

International Partners

One of these partners is the Amsterdam-based company De Toneelmakerij, a leading Dutch theatre company dedicated to producing daring and socially engaged performances for children, teenagers, and families. Established in 2009, De Toneelmakerij is renowned for its interdisciplinary approach, blending powerful language with innovative technology and music to address complex contemporary themes. As the first Dutch member of the European Theatre Convention (ETC) network of European theatres, they prioritize international collaboration and diverse storytelling that reflects the lived experiences of young people. With the shared focus on the impact of digital technologies on contemporary life, the collaboration between Ars Electronica and De Toneelmakerij hence came naturally.

But there was yet a third partner joining the cooperative effort to bring the production *Rabbit Hole* to Linz: the SHÄXPIR festival. This is one of Europe's most influential biennial theatre festivals for young audiences, dedicated to innovative storytelling for children and teenagers. Since its inception in 2002, the festival has evolved into a hub for young theatre, emphasizing interdisciplinary formats that range from immersive parkour performances to digital installations. The long-standing collaboration between SHÄXPIR and Ars Electronica is mutually appreciated and benefits the intersecting audiences of both organizations, allowing SHÄXPIR to bridge the gap between performing arts and cutting-edge technology on the one hand and offering Ars Electronica's young audiences access to theatre, an art form not often to be found in museum spaces, on the other.

This partnership frequently utilizes the Ars Electronica Center's world-class infrastructure, such as the Deep Space 8K, to host hybrid productions that blend live acting with high-resolution digital environments. While SHÄXPIR focuses on the narrative and pedagogical needs of young people, Ars Electronica provides the technological expertise in areas like AI, VR, and interactive media. Together, we can explore "theatres of the future," such as projects where human performers interact with avatars in real-time. Of course, this collaboration only becomes truly meaningful when the right content is found: productions that do not only reflect on the impact of technology on young people's lives, but also actively explore and work with this technology in doing so.

Rabbit Hole

Rabbit Hole proved to be the ideal fit for this context and allowed for a fruitful and very successful three-way alliance.

It was especially delightful that the collaboration between the two Linz-based institutions was, in this case, actually initiated by the international partner: SHÄXPIR had already been part of De Toneelmakerij's extensive and very active network and the presentation of the production in the context of the SHÄXPIR festival was agreed upon between the two theatre organizations, with Ars Electronica being able to join and provide the venue in the context of the ACuTe project.

Thanks to previous experience working together, the collaboration between SHÄXPIR and Ars Electronica went extremely smoothly: While Ars Electronica provided the space(s) and focused on implementing all technical aspects of the production together with De Toneelmakerij in Deep Space 8K, SHÄXPIR managed ticketing, promotion, and dissemination. Together, the three organizations planned the accompanying program, which offered workshops for school groups visiting the performance to reflect on what they saw.

Naturally, with three partners collaborating, the most challenging aspect of organizing the presentation of *Rabbit Hole* in Linz was scheduling. Here, three organizational logics had to be synchronized: De Toneelmakerij's priority was to schedule sufficient time for both technical implementation and setup in the space and for rehearsals with the actors. SHÄXPIR's priority was to schedule an appropriate number of performances plus accompanying activities to fit the festival program. Ars Electronica's priority was to balance rehearsal and performance time with the "regular" museum activities and Deep Space 8K program. Thanks to all partner's professionalism, motivation, and willingness to compromise, the production was finally realized with only five rehearsal days (which were actually evenings, after regular museum opening hours) on site in the Deep Space 8K, and was presented with five shows accompanied by three workshops, all of which were full.

While the audience's familiarity and appreciation for the well-known Linz institutions SHÄXPIR and Ars Electronica may have contributed to the success of the production in the city, the main reason for the great interest is of course the production itself. *Rabbit Hole* is an interactive performance that explores the unsettling world of online radicalization among youth. The story centers on Samy, a socially isolated teenager who has retreated to his bedroom following experiences with bullying, a broken family, and the grief of losing his father to COVID-19. Disillusioned with reality, Samy finds community in the digital "rabbit hole," specifically following a masked influencer known as Neo17. As he descends into a world of "alpha-male" tutorials, conspiracy theories, and manosphere misogyny, he becomes increasingly polarized, eventually clashing with his sister, Hanna, who attempts to pull him back from extremism.

Immersive Format

The production is unique for its immersive cross-media format, where audience members are encouraged to keep their smartphones on to participate in the play. By joining the same chat forums as Samy, the audience acts as a digital "Greek chorus," contributing real-time commentary that blurs the lines between fiction and the digital reality of the viewers. Through this innovative use of technology, *Rabbit*

Hole makes the suffocating nature of online echo chambers tangible, forcing the audience to witness and inhabit the mechanics of modern radicalization. The massive projection surface of Deep Space 8K provides an ideal setting to physically embody the overwhelming experience of being drawn into parallel digital realities.

Additionally, and on a more practical level, the size of the projection also significantly eases audience participation, as it allows for a proper readable size of text and other projected content. It was especially this aspect – adapting and optimizing the digital projection content that significantly drives the narrative of the play for the Deep Space 8K – that required intense exchange and collaboration between the *Rabbit Hole* production team (especially the video designer) and the Ars Electronica Deep Space 8K developers, technicians, and content team.

With De Toneelmakerij being a Netherlands-based company, *Rabbit Hole* was originally presented in Dutch. For the presentation of the play in Austria, it had to be translated to German – this necessity applied not only to the script and the actors who had to perform it, but also to the digital interaction space that the audiences engage with on their own smartphones during the performance, and to the text content of the large scale projection that is the play's set. Without De Toneelmakerij's investment and work on translating all of these aspects that preceded the collaborative work on implementing the play in Linz, the project would not have been possible to realize.

Surprises and Solutions

Thus, the Linz partners benefited from De Toneelmakerij already having taken care of the translation aspect when the time came to start the collaborative production. To understand setting and necessities, the Ars Electronica Deep Space 8K team was provided with the already translated script. It was in this script that we stumbled upon something not all of the team members had expected to find on a theatre stage: a dick pic. One of the key moments of the protagonist Samy's radicalization is when his school colleagues make fun of a photo of his penis, sending him into a downward spiral of shame and anger. The chat window in which this happens, and hence the picture, is part of the projection.

Learning about this element of the play triggered concerns about the potential impact of such an image, which would be enlarged to a size of several meters on the Deep Space 8K screen, on the young target audience. While De Toneelmakerij had not had negative reactions of audiences to the image (which is a key element of the play's narrative) in test performances previously hosted in The Netherlands, the Austrian partners were still concerned about the reactions of the audience (and their parents) in an allegedly more conservative country. A compromise was found and resulted in a 3-meter-high eggplant emoji covering the penis in the picture. In the educational workshops with school students that were hosted after the performances, we learned that the eggplant-free dick pic would in all likelihood not have shocked the viewers after all: Many of the participants reported that dick pics as well as other images of intimate areas and parts of the body formed part

of their daily digital realities, which is precisely one of the reasons why *Rabbit Hole* is such a relatable experience for its young target audience. On the institutional level, this discussion was an interesting example of potential cultural differences and diverging legal frameworks that artistic and performative productions might be confronted with when travelling across borders – even within the European Union.

Thanks to the experience gained in the very successful testbed that the *Rabbit Hole* production hosted in the Deep Space 8K proved to be, Ars Electronica has since presented further theatre productions in this venue: In the context of the Ars Electronica Festival 2025, the Deep Space 8K became the stage for The Trial Against Humanity by ETC-member Det Norske Teatret (Oslo, Norway), another production that was developed and able to travel to Linz thanks to the ACuTe project. And also the connection between De Toneelmakerij and Ars Electronica continued and deepened further: In 2024, their production Patchwork Girl won the Ars Electronica Award for Digital Humanity (made possible by the Austrian Federal Ministry for European and International Affairs) which focuses on artistic projects that address social, cultural, and humanitarian issues in our digital society.

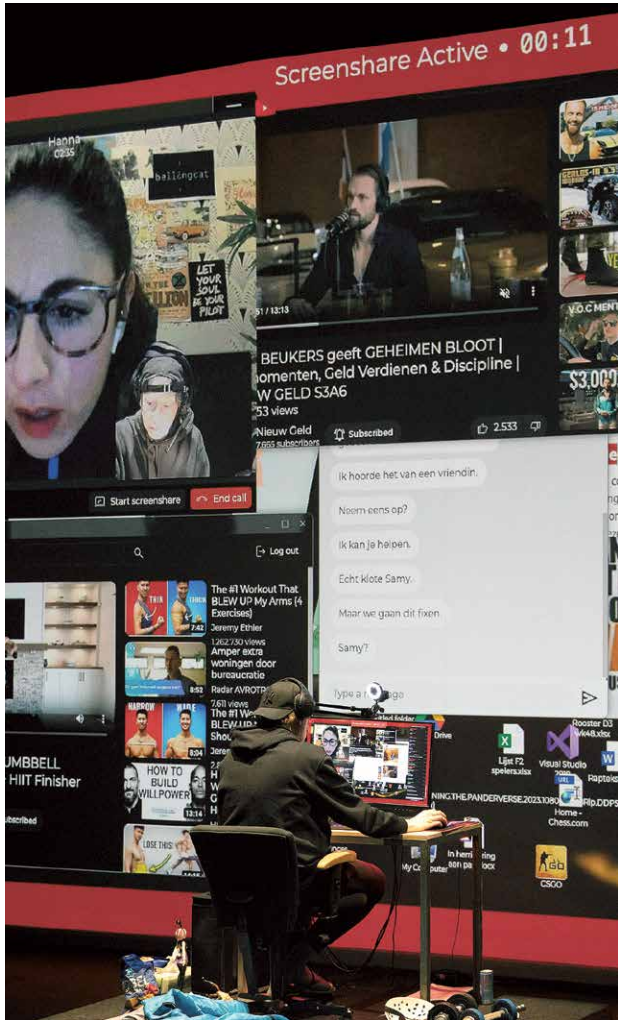


Figure 1 From *'Rabbit Hole'* by de Toneelmakerij
© Sanne Peper

What Added Value do Residency Models Offer Digital Theatre Productions?

BY
CARLA MELLER
(Germany)

The Academy for Theatre and Digitality: Who we are and what we do

The Academy for Theatre and Digitality is one of the six departments of Theater Dortmund. It is the only institution worldwide for digital innovation, artistic research and artistic-technical training and further education in the field of performing arts that is affiliated with a theatre: since its foundation in 2019, it has been directly linked to practical work. At the intersection of art and theatre, technology and science, cultural policy and society, the Academy is the key point of contact for artists, creative technologists, institutions and cultural policy makers seeking expertise and advice. Today, the Academy is an internationally renowned artistic research institute, a networking hub and a highly sought-after cooperation partner in regional, national and international projects.

After moving into a new building in 2023, which the city of Dortmund built from scratch within three years in the city's new digital quarter, all fundamental research environments for digital technologies can be represented on the nearly 2,000 square metres in various scales and combinations. The three large labs (ranging from 71 to 220 square metres with a maximum ceiling height of 9 metres) and the three studios (ranging from 52 to 80 square metres) can be equipped in a modular format depending on the research interests: motion capturing/Opti-Track system, green screen technology, various sensor technologies, lidar scanning technology, XR, VR and AR applications, robotic and actuator systems. In addition, mechanical and electronic work can be carried out in the soldering and electronics laboratories, and wood and metal work can be done in the

workshop using laser cutters and 3D printers, among other things, with materials such as paint, varnish, plaster, wood and metal. Individual offices for residents and a foyer area for training courses and presentations complete the range of facilities in a meaningful way.

The 18 employees led by director Marcus Lobbes come from various artistic and artistic-technical backgrounds – they provide artistic and technical advice and support in the areas of dramaturgical conception and reflection as well as in creative coding, various applications of audio and video technology, robotics, IT, etc. Staff from project management, scheduling and event technology complete the team and provide an indispensable backbone for national and international projects.

The Academy's work focuses on five areas:

- **Prototypical and application-oriented artistic-technological research** in form of residencies and within collaborative contexts
- **Collaborations for practice-led research contexts** with arts and science organisations at regional, national and international level
- **Education** in form of the English-language Master's programme 'Theatre and Digitality' in cooperation with Dortmund University of Applied Sciences
- **Further training** for employees of municipal and state theatres as well as freelance artists and students in the field of performing arts in form of workshops, webinars, etc.
- **Technical and cultural policy consulting** for theatres, independent groups of theatre makers, artists, universities/universities of applied sciences, and actors from science and cultural policy

At the centre of the Academy's work lies the facilitation and support of artistic-technological research, which between 2019 and 2024 was implemented through an internationally oriented residency programme for theatre professionals and creative technologists financed by the German Federal Cultural Foundation. This type of research residency was strictly prototype-oriented: for each five-month in-person residency, artistic-technical projects were selected that aimed to prototype, research and further develop one or more digital technologies for a performing arts genre in iterative cycles. A jury of 10-12 experts from the theatre industry, academia, cultural institutions, independent artists and the Academy team unanimously selected the residents. Projects were selected whose internal rationale and artistic significance promised innovative, adaptable and scalable approaches and results. The decisive factor was the error-tolerant context – no pressure to produce; however, two presentations during the residency and documentation on the Academy's Wikipedia-like website called "portal" were mandatory. The diversity of the conceptual approaches stored on the portal demonstrates the potential of research contexts that consciously question the genre boundaries of the performing arts.

The prototypical artistic research was supplemented by artistic-scientific residencies: the so-called HIDA residencies were joint research fellowships of the Helmholtz Information & Data Science Academy and the Academy for Theatre and Digitality. HIDA is a strategic development think tank at the Helmholtz Association, the largest

scientific organization in Germany with institutions such as the Alfred Wegener Institute for Polar and Marine Research. It was aimed at artists, technicians and scientists working at the interface of digital art and data science. The HIDA residencies developed artistic formats that made data science and AI research accessible to the public. The residency enabled residents to conduct (artistic) research and development and to transfer knowledge between art, technology and science.

Since 2019, the Academy has welcomed more than 70 residents from over 20 countries in more than 50 artistic-technological or artistic-scientific residency research projects. These residency programmes promote artistic innovation, strengthen interdisciplinary work and transfer knowledge between art, science and technology. They connect residents from different professions and creative technologists with each other in a sustainable and long-term manner, promote collaboration, generate applied knowledge, contribute to the growth of knowledge through documentation, and ensure its sustainable reuse. They also provide impetus for new artistic forms in the performing arts and related genres. At the same time, they accompany the transformation of the theatre landscape in the digital age at the institutional level and act as a catalyst for long-term structural and artistic changes in the German and international theatre and cultural scene.

The Academy itself is a catalyst, distributor and network hub that generates production and knowledge enquiries, informs individuals, institutions and projects, completes research contexts and produces and distributes new knowledge.

Gradually the prototypical artistic-technical and artistic-scientific research activities at the Academy have shifted towards taking place in the framework of large-scale, externally funded research projects at regional and international levels.

Role of the Academy for Theatre and Digitality in the framework of ACuTe & reflections on the Expert in Residence model

As part of the ACuTe project, the Academy advised and accompanied a total of six out of the nine participating theatres in the creation of their theatre performance integrating different digital technologies. The Academy did so by providing space for onsite residencies, finding experts within their network and beyond to match with the theatre makers, offering online and onsite workshops, and by providing extensive advice and consultation on researching, developing and testing digital solutions.

As the technical expertise for the implementation of digital technologies in theatre productions is often not (yet) anchored in theatre staff themselves, an external expert was brought in for each production to support the production and spend a production-related residency at the Academy. The basic idea was that this expert in residence would spend a specified time period in a research and development residency at the Academy, receiving artistic and technical advice and support from the Academy team, and then travel to the theatre to implement the technology on site during the rehearsal phase. One residency model for all productions.

Practice has shown that the needs of each theatre production are quite different. While prototypical research residencies without a production context can easily work with a standard model for all residencies, production-related residencies require much more flexibility in their implementation and must be adapted to the specific needs of each individual production.

The following adjustments to the residency modalities have proven useful in the context of the ACuTe productions:

- While it makes sense for some theatre productions to have **one long residency** of 3-5 months en bloc, in other contexts it is much better to have several residencies, each for shorter periods of time, and to work in so-called **sprints,** which has also proven to be a useful working method in the design thinking process.
- While the original plan envisaged a **fixed location division** for the residency, with ¾ of the time spent at the Academy and ¼ of the time spent at the respective theatre, site-specific productions such as the City Game "GO CROSS!" by ACuTe partner SNG Nova Gorica need a different structure. In those cases, the expert needs to spend much more time in the respective city so that they can familiarise themselves with the circumstances of the environment and adapt the game structures accordingly. **Flexibility in location** and realizing early on where the expert is most needed is crucial.
- While the original plan was for **only the technological expert to work at the Academy during the residency,** it proved extremely valuable for some productions to **arrive with a larger team** so that the artistic team could use the space, infrastructure, and consulting services of the Academy all together and spend time with the technological experts to create and experiment on site. For the Estonian production *"Held in a Human II. Rose in your brain"* and the Belgian production "*L'invisible n'est pas inexistant"* all residency periods at the Academy included not only the technological expert but also the artistic team. The exchange among the groups and the time spent together was extremely valuable for both production processes, because theatre technicians, technological experts and artists could focus on specific issues at the residential location free from the daily constraints of production – a discursive, visionary and applied retreat, so to speak.

The big lesson learned about production-related residences for digital theatre production is: One model doesn't fit all. Being flexible on all levels to assure that the residences best support the theatre productions is key.

Being flexible and reacting agilely means also seeing what is needed at what moment of the production process. Depending on the phase in which the theatre production is currently at – ideation, prototyping or implementation – different institutions with different residency formats can be most useful. The example of the Norwegian production *"The Trial Against Humanity"* from Det Norske Teatret showed that the five-day residency spent at Azkuna Zentroa in Bilbao early in the process for the leading team and guided by the discursive accompaniment of the Academy team was great for the ideation phase, providing various external impulses and revealing a wealth of possibilities,

helping the artistic team to form and shape their own ideas. The two sprints of several weeks each for the production's video artist at the Academy much later in the process on the other hand was the perfect support for the technical implementation of the video artist's vision in the performance.

For the prototyping phases of the productions, collaboration between the technological experts and the students of Saxion University of Applied Sciences, together with the leading teams, proved to be extremely enriching. The basic premise for this to work is openness and a sincere interest in collaboration on all sides. Several partner theatres truly embraced the collaboration and all sides benefited greatly from it.

Being flexible and reacting agilely means also being aware of the setting in which the production is created as the needs from the independent scene are quite different than the structures and working patterns of publicly funded theatres and residence models must be adapted accordingly.

The importance of residences and how they strengthen digital theatre productions

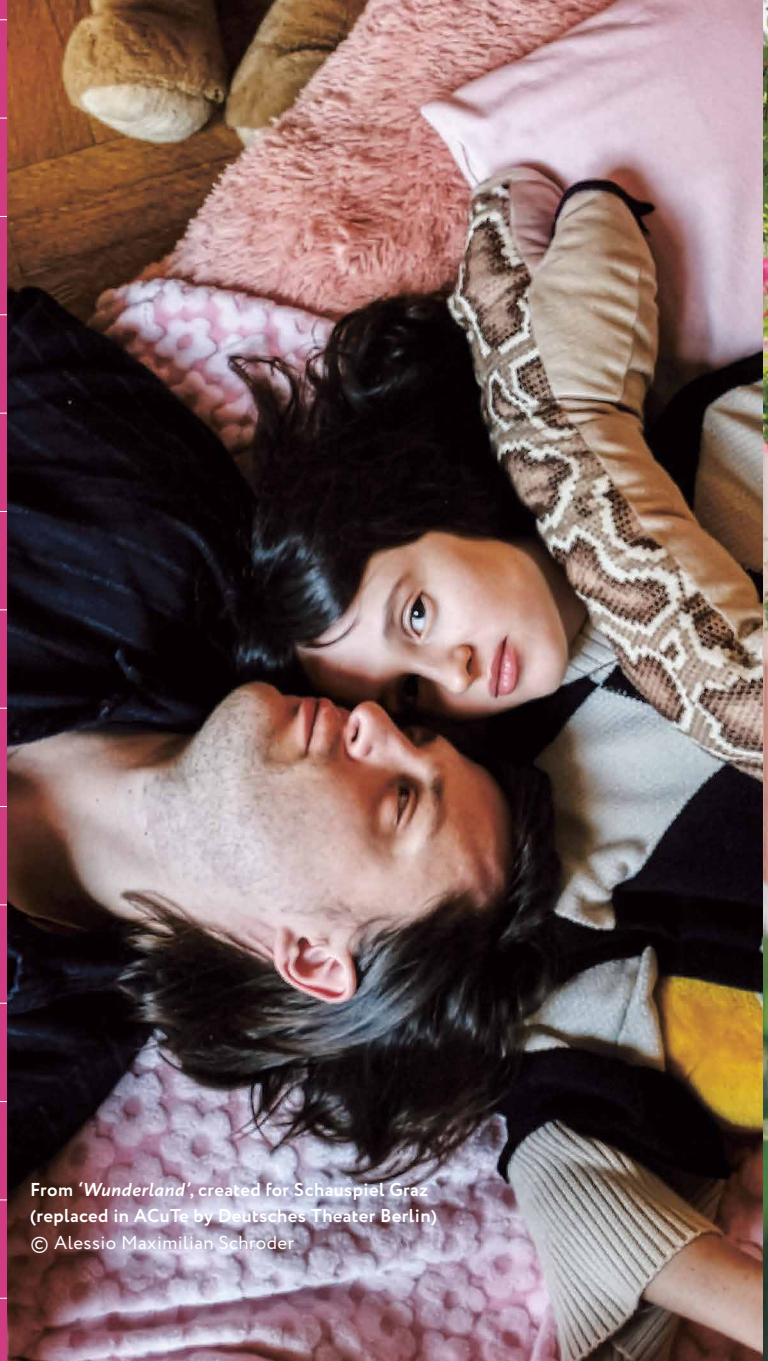
Production-related residencies that focus specifically on the artistic and technological aspects of a production are of great value for the final outcome of the production for several reasons:

- **Early testing of technology and aesthetics:** Complex stage designs, lighting, or sound concepts and the integration of new technologies on stage can often only be tried out late in the normal production phase, when time and flexibility are limited. A technically oriented residency makes it possible to prototype, test, fail, and start over early on, without the pressure of the premiere. This minimizes later problems and makes aesthetic decisions more informed.
- **Optimising collaboration between theatre and technology:** In most theatre productions, artistic and technical teams only work together intensively at a late stage in the production process. When creating a digital theatre production, this separation of competences and late encounter does not work. All expertise, the artistical and the technological one, must be brought together early on and residencies create a framework in which artists and creative technologists can meet in the same space and experiment together. This not only improves the result but also improves communication and efficiency in the later rehearsal process.
- **Innovation through freedom to experiment:** Many technical elements, like interactive media, sensor technology, mechanical elements, specific lighting architecture, etc. require time to be explored. A residency offers the necessary creative and technical freedom to try out new things without having to produce a finished product right away. This often leads to bolder, more innovative aesthetic decisions on stage later on.
- **Conservation of resources in the later production process:** Testing and optimizing technical requirements in advance saves an enormous amount of time in the rehearsal process, and saves costs, as design flaws, modifications, or overly complex processes can be identified and adjusted already during the residency.
- **Deeper artistic clarity:** In theatre productions which use

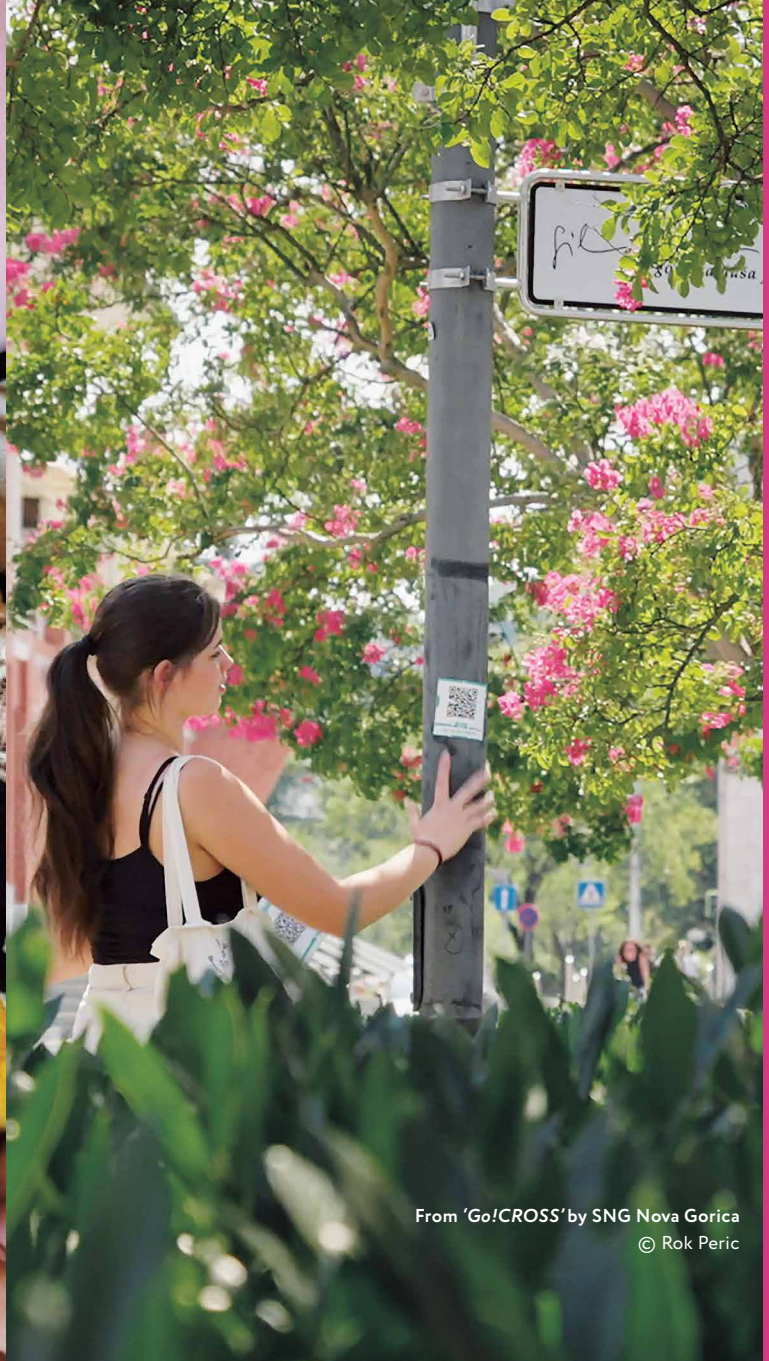
technology, the technical element should not simply be a gimmick but should have a dramaturgical reason for why it is integrated in the performance. Through a residency, artists can discover how technology can be used precisely in ways to support their storyline. This strengthens the overall impact of the production.

All in all, production-related residencies enhance the artistic quality of theatre productions because processes can be deepened and decisions are made on a more informed basis. It allows the artistic team to test material at an early stage, sharpen dramaturgical lines, and take aesthetic risks before the actual production pressure sets in. The distance from everyday life and the focus on the work process create space for innovation, bold ideas, and sustainable artistic development. At the same time, the exchange on site often generates unexpected impulses that enrich the project and give it additional depth in terms of content or form.

IV
Audience Development



From *'Wunderland'*, created for Schauspiel Graz (replaced in ACuTe by Deutsches Theater Berlin)
© Alessio Maximilian Schroder



From *'Go!CROSS'* by SNG Nova Gorica
© Rok Peric

From *'Feast of the Gods'* by Students at Saxion Creative Media and Game Technologies
© Saxion XR Lab

From Ziomara Hormaetxe. *"LÄTTICE"*, at Azkuna Zentroa
© Azkuna Zentroa

SECTION 4

STUDENTS

AUDIENCE INTERACTION

The Use of Design Thinking Tools to Enlarge Audience Engagement in Theatre Productions

BY
HESTER VAN DER ENT
& HERMAN PAASSEN
(The Netherlands)

One of the goals of ACuTe – Culture Testbeds for Performing Arts and New Technology, is to encourage engagement amongst under-presented audience groups of theatre and performing arts. Key elements for the project are outreach and accessibility by making use of digital technologies.

With an interdisciplinary approach integrating digital technology and co-creation methodologies, a new type of 'culture testbed' was created to test and prototype the application of new technologies within performing arts productions under three themes: 1. New Dramaturgies, 2. Stage Design, 3. Audience Engagement. To structurally design the testbed, the Design Thinking method was chosen, resulting in a toolkit of Design Thinking tools, based on the user needs drawn from the ACuTe consortium institutions and networks in the European sector. The toolkit was published in the form of an interactive PDF here: https://vanha.oamk.fi/acute/the-testbed-design-toolkit/

In this article the toolkit will be evaluated, based on the cooperation of students and researchers of the Saxion XR lab (https://www.saxionxrlab.com/) within two innovative concepts. The main question is whether the toolkit is usable for European theatres when applying digital technologies to develop innovative performances.

Design Thinking

Design Thinking was chosen as a method to develop the toolkit because it is a user-centered approach that integrates the needs of people, the possibilities of technology and the requirements for success (https://designthinking.ideo.com). A visualization of the methodology is presented in figure 1.

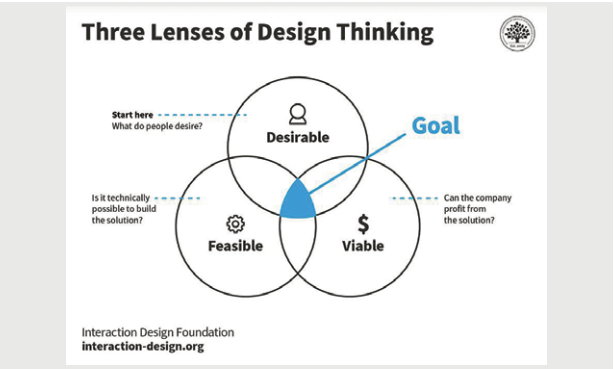


Figure 1 Visualization of the Design Thinking Lenses. (https://design-thinking.ideo.com)

As the goal of the ACuTe project is to test the possibilities of new technologies to encourage engagement amongst under-presented audience groups, the tools are meant to help the theatres to empathize with the audience, to create audience-centered innovative concepts and to follow an iterative prototyping and testing process.

The Design Thinking method contains five steps

- empathize: research your users' needs;
- define: state your users' needs and problems;
- ideate: challenge assumptions and create ideas;
- prototype: start to create solutions;
- test: try your solutions out.

For all phases tools have been incorporated into the toolkit to create a "Do-It- Yourself" toolbox to use the Design Thinking method. The goal of the toolkit is to provide theatres across Europe with tools that are widely used in the development of digital products to develop to prototype and test innovative theatre concepts, based on new technologies. The toolkit is structured by the five steps mentioned above, as is the description of the design processes in this case study as well.

The concepts

Under the working title "The case against humanity", a co-production between Det Norske Teatret and Net Nordic, based on Karel Çapek's book Rossums Universal Robats, an immersive audience experience is created to challenge the audience to participate in new dramaturgies. The goal is to develop a performance where the audience interacts with a manifestation of an AI alongside actors within a given framework. The play premiered in March 2025. From September 2023 till February 2024 a team of students of Saxion Creative Media and Game Technologies (https://aitheatre.wixsite.com/aitheatre/the-team) worked at the Saxion XR lab in cooperation with Peer Perez Oian and Anders Hasmo of Det Norske Teatret on developing the concept for the following concept for the play: "In the future an AI puts humankind on trial. Humans are charged with gross negligence onwards and on Planet Earth". The following technologies are explored: Generative AI in dialog, Deep Fake video, Robot Embodiment with trained AI and Real-Life Dialog between actor and AI.

During the same period another team of students (https://acutecity.wordpress.com/about/) developed together with Marko Bratuš and Jure Novak of SNG, The Slovene National

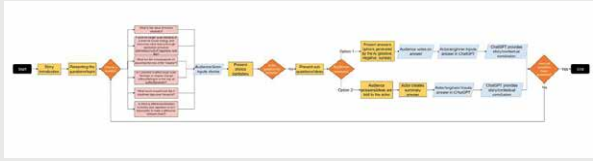


Figure 2 Example of an interaction framework diagram. A readable copy can be found here: https://aitheatre.wixsite.com/aitheatre/post/final-concept-cristian-week-5-6

Theatre in Nova Gorica, a concept for a City Game that will last two weeks in the City of Nova Gorica and that has the goal of stimulating citizens to explore parts of their city they normally don't visit. The game launched in June 2024

The design processes

Within the development of the concept for the *"The Trial Against Humanity"* production, the following design process was conducted:

Empathize

The team got insight in the assignment and the target audience by using a needs-motivations-drivers matrix and a motivation chart to find the so-called "sweet spot" of the target audience. This approach is very similar to the value proposition canvas that is incorporated in the toolbox.

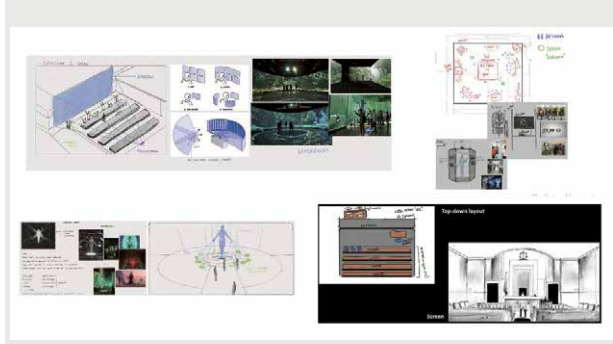


Figure 3 Examples of paper prototypes, explaining the interactive concept. Readable copies can be found here: https://aitheatre.wixsite.com/aitheatre/post/progussy https://aitheatre.wixsite.com/aitheatre/post/oslo-trip-i-nona-bocheva-week-11

Define

This step was skipped; after the empathize phase, the team immediately jumped into the ideation phase.

Ideate

No specific tools were used to develop ideas. The students brainstormed individually, discussed their ideas and selected the ones they wanted to present to the client, as a team.

Prototype

An interaction framework diagram was created to understand the interaction between the audience, installation and actors, as you can see in figure 2 below.

Paper prototypes of four concepts were presented to the client; 1. a Narrative/Story focused idea, 2. "Inside-AI" Installations, 3. a concept for an AI generated World and Story and 4. a combination of concepts one and three. The

Figure 4 Video recordings of the digital mockups of the digital human. https://aitheatre.wixsite.com/aitheatre/post/brainstorming-technical-research-nils-week-1-4 https://aitheatre.wixsite.com/aitheatre/post/metahuman-v-tuber-fails-and-success-emanuel

prototypes explained the interaction to the client, as can be seen in figure 3.

Digital mock-ups were made in the form of animated videos to test how realistic a digital human can look, including facial movements and body proportions (see figure 4).

The videos can be seen online, follow link at the end of this article.

An outline of the possible approach for the narrative, with the help of a service blueprint, as shown in figure 5 below, was made as a starting point for the testing on location. The final story driven concept is based on somewhat philosophical and complex questions; the flowchart explains how sub-questions can help the audience to answer the main question or further drive the discussion.

To test the concept of giving the audience a bracelet in order to enable them to react on questions by raising or

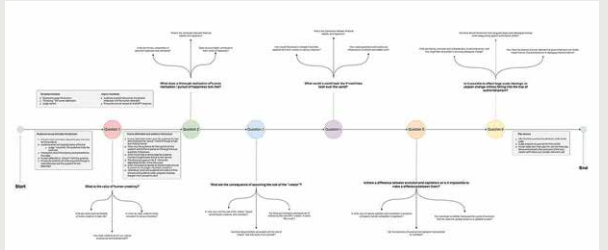


Figure 5 Example of a service blueprint. A readable copy can be found here: https://aitheatre.wixsite.com/aitheatre/post/interaction-design-user-experience-characters-cristian-week-9-10

lowering their hand, Arduino was used to make a prototype.

Arduino is an open-source electronics platform based on easy-to-use hardware and software. It's intended for anyone making interactive projects.

Test

Prior to the test on location a low fidelity user test was conducted at the XR lab, with CMGT students. To do this, rough 3D sketches were made to visualize the stage set up, as can be seen in figure 6 below.

To test the interaction between the actor(s), the ChatGPT persona, the system, and the audience a usability test was conducted at location with the actual user. A user test was conducted to understand if the performers would be interested in working with a Metahuman (figure 7).

The videos can be seen online, follow link at the end of this article.

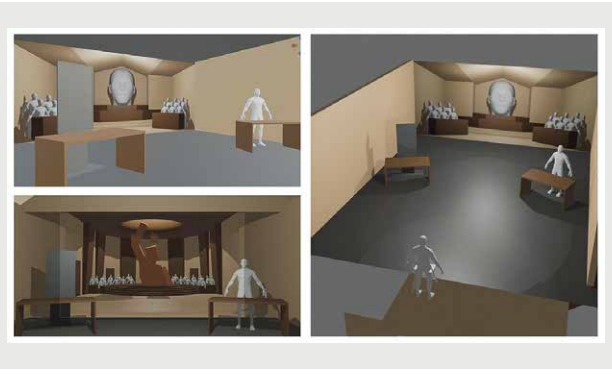


Figure 6 3D sketches to visualize the stage set up.

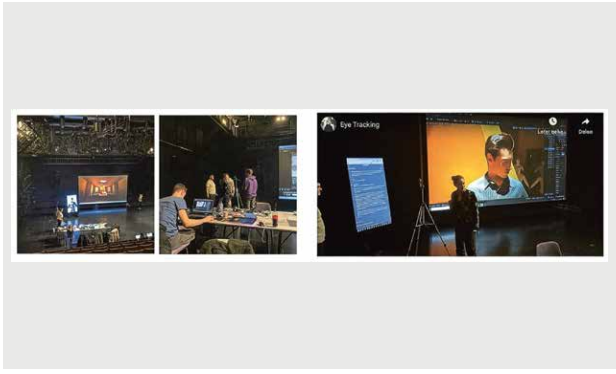


Figure 7 Usability and user tests on location.

For the development of the City Game for SNG the following steps were taken.

Empathize

An empathy map was made to understand why the citizens (the users) are hesitant to visiting the part of the city, they don't live in. A user persona was created to identify the user, the team was designing for. And the hook model was used to design flowcharts to design the loop of triggers, actions, variable rewards and investments to keep the audience engaged.

Define

The problem statement canvas was used to define the final problem statement.

Ideate

A user journey (see figure 8) was made to kickstart the wireframing process

Prototype

Some rough sketches on paper and flowcharts were made for the wireframes to get feedback from the client before going into digital prototyping. See figure 9 below. Flowcharts were made for the Scavenger hunt, the Onboarding process and a language barrier puzzle.

As open-source hardware, Arduino and Raspberry Pi were used to prototype two of the mini games.

Test

The Unity concept prototype was tested at the Saxion XR lab, with students of Saxion Creative Media and Game Technologies, by a survey and observation. The test incorporated the scores, QR codes, and clarity of prototype elements.

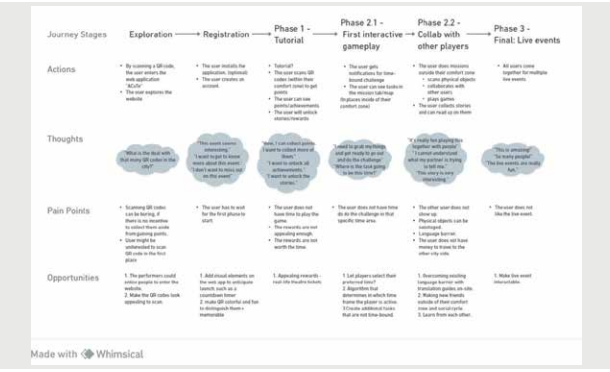


Figure 8 Example of a user journey. A readable copy can be found here: https://acutecity.wordpress.com/2023/09/28/user-journey-map/

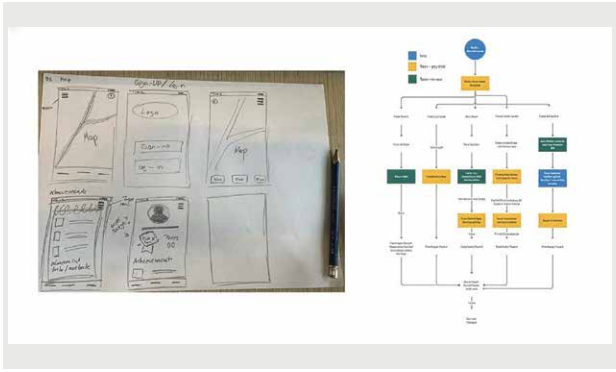


Figure 9 Examples of a paper prototype and flowchart for the wireframes. Readable copies can be found here: https://acutecity.wordpress.com/2023/09/29/week-2-app-wireframes/ and here https://acutecity.wordpress.com/2023/10/11/week-3-6-idea-the-enigmatic-puzzle-of-nova-gorica-scavenger-hunt/ and here https://acutecity.wordpress.com/2023/10/12/week-4-6-idea-lost-child-in-nova-gorica-language-barrier-puzzle/

Results

Conducting the empathizing phase, by using tools like the needs-motivation-drivers matrix, motivation chart, empathy map, user persona, and customer journey helped the team to find the "sweet spot", to understand how to create something for a theatre audience. In the case of the Oslo project the team had to find out how the expected visitors of the play can be stimulated to interact with the confronting experience. It was assumed that the users that are expected to visit the play concerned, do have the open mindset, needed to experience the uncomfortable interaction. For the students that worked on the production for SNG, the tools helped to understand what triggers the game must incorporate to stimulate the players to get "out of their comfort zone", and to stay engaged for two weeks.

Creating the problem statemen canvas was crucial for the students that worked on the concept for the City Game, to provide the team with a solid foundation for their design process. The consequence of the fact that the other student team skipped this step is, that the key success indicators of the final solution are not clear, what will make the analysis of the testing arbitrary. The same counts for skipping the use of tools in the ideate phase; as because of that, it is not clear what selection criteria are used to select the final concept. Using tools in the ideate phase will help to give the team a comprehensive understanding of the overall user interaction.

The Interaction Framework Diagram, developed by the Oslo team, proved to be useful to explain the concept to the client. Paper prototypes helped to explain the audience engagement and the digital mock-up gave insight in how realistic a digital human can look, including facial movements and body proportions. To make an experience

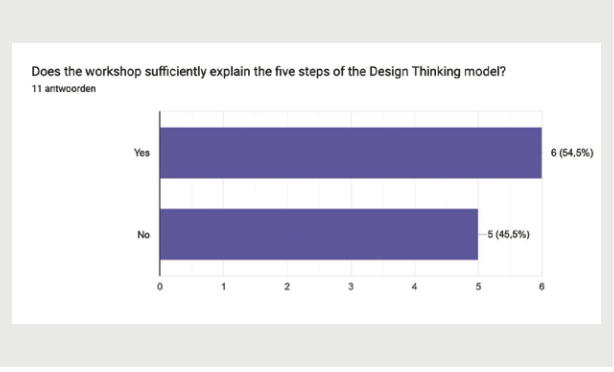


Figure 10 Feedback by participants of the crash course Design Thinking, held in Liège on November, 2024

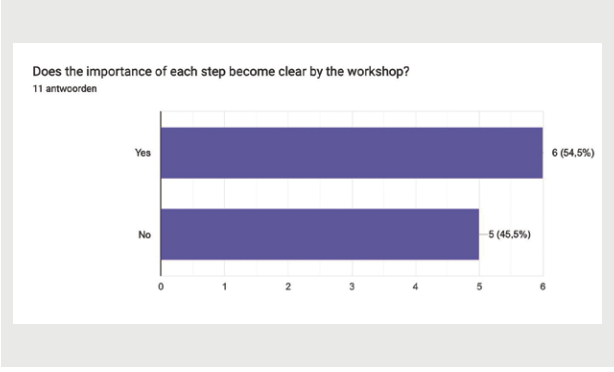


Figure 11 Feedback by participants of the crash course Design Thinking, held in Liège on November, 2024

immersive it is very important that digital humans look realistic, as unrealistic humans will break the immersion and will reduce the effect on the user. Regarding immersion, the time ChatGPT needed to generate answers and counter-arguments needed to be tested as well, as timing is an important issue when it comes to engagement and immersion. The service blueprint the students provided was helpful to create this test. By this it was tested how the installation would respond to the actor's cues, while acknowledging the unpredictable audience responses. An important take away was the actress concerned found it very limiting there was no body, just a head. Based on that the options of doing a full body motion capture were explored.

By making rough sketches the students made a concept presentation for the City Game, without spending too much time working on a solution that was not yet approved by the client. Paper prototyping makes applying feedback not too costly, before going into digital prototyping. Flowcharts explain the interaction of the audience with the app and with objects on location. Based on that the user experience can be tested. Also prototyping with open-source hardware, like Arduino and Raspberri-Pi, helps to test the interaction between the user and an object.

Conclusions

To design innovative concepts, it is important to get deep insight in the audience to find the "sweet spot" as the base for the engaging and immersive audience experience. Especially when working on new kind of productions for new (under reached) audiences. The tools in the empathy phase are very useful for this.

Low fidelity prototyping and flow charts help the design team to explain concepts that are new to the theatres, showing how the audience will interact within the experience. It also helps to do user tests in an early phase, to find

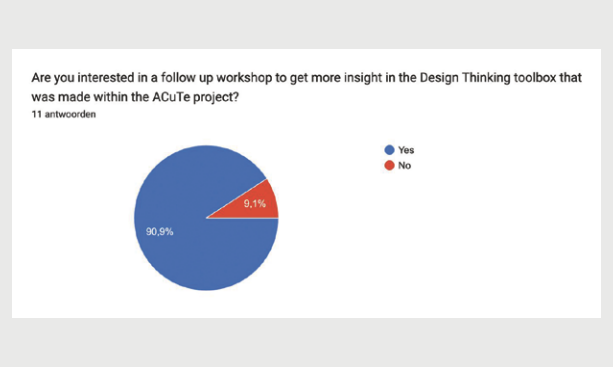


Figure 12 Feedback by participants of the crash course Design Thinking, held in Liège on November, 2024

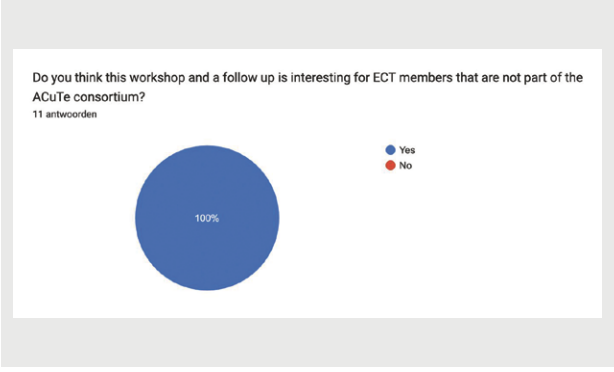


Figure 13 Feedback by participants of the crash course Design Thinking, held in Liège on November, 2024

out if the audience is likely to be engaged and/or interested in interacting with the experience.

Usability testing proves to be important to help the creation of an organic and responsive way to communicate that would enhance the overall theatrical experience for all involved parties. Based on the tests proper discussions with the people involved can take place about how to proceed with the project.

Discussion

The students and researchers at Saxion XR lab are educated from the start of their studies to use the Design Thinking method, as it is widely used in the creative industry. It is in their DNA, so to speak. So, they can and will use the tools from the toolkit by nature. As will most experts from the industry do as well. However, for the professionals from the theatres the Design Thinking method is new; they are not used to empathize, prototype and test. Because of that, the tools from the toolkit appear not to be as accessible as they are meant to be. This became not only clear during the cooperation of the students and researchers with the theatres, but also during the knowledge sharing event in Dortmund that took place on March 20 and 21, 2024. In general, the consortium partners feel that the theatres must be introduced to the Design Thinking Method before they can fully benefit from the toolbox. Also, the name of the toolbox doesn't help, as it doesn't explain what the purpose of it is for the theatres that are not part of the ACuTe consortium.

Crash course Design Thinking

Based on the conclusions a pilot "crash course" about Design Thinking and use of the tools was organized during the ECT Conference in Liège, on November 4, 2024.

Approximately 15 participants took part, some of them were consortium partners, some of them were not. For those who were not, it was the first introduction to the Design Thinking method. The goals of the "crash course" was to have the participants experience the importance of going through all the steps when designing concepts based on new technologies. And to become acquainted with some of the tools. The workshop took 2 hours during which the participants tried to offer a practical solution to a fictitious problem. Although it was experienced a fun way to be introduced to Design Thinking the time was too short to really understand the five steps of the method.

The survey that was conducted at the end of the session produced the following feedback (figure 10 to 13):

Some remarks given: *"For Bilbao – i think playing with funny approach next to a more serious approach would also work perfectly :)" — "I think it is interesting for everybody in Performing arts since we are not used working so planned and with so many different tools. We are still more focused on ourselves than on our audience." — "I think we should spend a bit more time on getting to know the steps."*

Follow up

Based on the feedback, a followup was planned for ACuTe partners at a consortium meeting in 2025. Half a day was reserved to help participants dive deeper into the five phases of Design Thinking. The workshop focused on a topic close to the daily practice of a theatre. A test panel of students of Saxion Creative Media and Game Technologies (CMGT) will be available to give the participants a real time experience with empathizing and testing.

The goal is to help theatres in Europe to meaningful apply new technologies, to create innovative interactive experiences for under-reached audiences. This will help the theatres apply a structured design approach when developing concepts and support cooperation with external partners from the creative industry.

Feast Of The Gods

A hyper-reality virtual experience, developed as part of ACuTe, that combines a physical installation with a surrounding VR environment to create a unified perceptual system. The participant is physically confined within a metal cage installation, which is duplicated one-to-one in the virtual environment, allowing tactile feedback to align with visual perception. This setup engages vision, sound, and touch simultaneously, while spatial confinement reinforces positional stability and enhances the perceived tangibility of the virtual space.
Saxion XR Lab team: *Team leader:* Matthijs van Veen; *Artist:* Anda-Gabriela Basuc; *Engineer:* Bram Scholten. **Saxion – Creative Media and Game Technologies team:** *Designer:* Diederic van Eijs; *Artists:* Anastasia Palana, Pieke Kerkhofs, Merel Vergunst, Daria Zaitseva, Shelby Casas, Anastasiia Kubrak; *Engineers:* Daria Cristiana Petcu, Rutger ten Brinke.

Lessons from the GO!CROSS City Game Project

BY
MARKO BRATUŠ
(Slovenia)

The Slovene National Theatre of Nova Gorica created an online cross border game called GO!CROSS as a part of its ACuTe project production.

The theatre is located in Nova Gorica which is known for its unique history, cultural diversity, and stunning natural surroundings. The town's history is closely tied to the aftermath of World War II. After the war, the original town of Gorizia, which had a predominantly Italian-speaking population, was divided between Italy and Yugoslavia. The Yugoslav part of the town became Nova Gorica (meaning "New Gorizia" in Slovenian), while the Italian part retained the name Gorizia. This division led to the establishment of two separate towns with distinct cultures and languages. As all of the administration buildings were in the old part of town, Yugoslavia built the city of Nova Gorica from scratch and it was one of the first urban architectural experiments designed by Edvard Ravnikar and inspired by Le Corbusier. The city has a contemporary urban vibe.

Gorizia on the other hand is a historical city. The name *Gorizia* was recorded for the first time in a document dated April 28, 1001, in which Holy Roman Emperor Otto III donated the castle and the village of Goriza to the Patriarch of Aquileia John II and to Count Verihen Eppenstein of Friuli. The document referred to Gorizia as "the village known as Goriza in the language of the Slavs" (*"Villa quae Sclavorum lingua vocatur Goriza"*).

Throughout history Gorizia was part of different countries: Patriarchate of Aquilea, Holy Roman Empire, Austria

Figure 1 SNG Nova Gorica building © SNG Nova Gorica

Figure 2 Map of Nova Gorica and Gorizia with the border.

under Habsburg rule, French Ilyrian Provinces, Austro Hungarian empire, Kingdom of Italy. On September 15, 1947, the town was assigned to Italy and everal peripheral districts of the municipality of were handed over to the Federal People's Republic of Yugoslavia. Around a half of the prewar area of the municipality of Gorizia, with an approximate 20% of the population, ended up in Yugoslavia.

Although the situation in Gorizia was often compared with that of Berlin during the Cold War, Italy and Yugoslavia had good relations regarding Gorizia. These included cultural and sporting events that favoured the spirit of harmonious coexistence that remained in place after Yugoslavia broke up in 1991 when the frontier remained as the division between Italy and Slovenia until the implementation of the Schengen Agreement by Slovenia on December 21, 2007.

Gorizia's population throughout history was multiethnical as it was constituted by Italians, Slovenians, Friulans and Austrians and four languages were used – Friulan and Slovenian predominantly among the peasants and Italian and German in the upper classes.

The historical context of both cities is important as it played a big role in designing the gameplay for city game.

The Challenge

Slovenian National Theatre Nova Gorica is located in the town of Nova Gorica with around 15,000 inhabitants. Together with the neighboring Slovenian towns and villages the population increases to 35,000. Statistically, about 3% of the population go to the theatre regularly, which corresponds to the visits that we record in Nova Gorica.

In the Italian part of town has another 35,000 inhabitants. And that is the population that Slovenian theatre cannot reach on its own because of the language barriers and cultural differences. Even though the Italian part doesn't have their own theatre institution of this size and quality in their part of town.

In the past, a lot of different efforts were made to combine the two audiences. However, this proved to be too difficult of a task. The closest we came with organizing a cross-border dance festival, as dance is not limited by language. But analysing this situation, we found out that it's not just the theatre that is affected by this division of the audiences, but that other cultural institutions are affected as well. Italians only go to Italian institution and Slovenians to Slovenian. And a lot of them don't even go into their own institutions and are not aware of the cultural offer of their own town. So the task for our ACuTe production was to invent a way to reach the audiences across both sides of the borders in a way that everybody from this area on Italian and Slovenian side would benefit from.

From previous experiences with applying technology on stage we had the feeling that simply putting a technological performance on stage would not contribute significantly to the rise of cumulative audience. That is why we decided to find another way to use the technology to get to the audience we are missing.

When we were looking for a concept that would help us deal with the task at hand we came across the city game concept. The main feature of a city game is to guide players through a city in a fun way while showing them the city through a new lense. When we were thinking about technological part of the city game we decided that we should use the technical device everybody has at their disposal – a smartphone. That is how the outline of the concept was born – create a fun city game using smartphones to move the audience around the two cities and in the process expose them to the cultural institutions in the area.

Game development

When developing the game SNG Nova Gorica collaborated with two classes of students from Saxion University in Enschede (NL), part of the Saxion Creative Media and Game Technologies course, under the mentorship of Hester van der Ent and Herman Paassen, with the game designer and programmer Markus Schubert and his Toto.io platform and with Michael Eichoff from Academy for Theatre and Digitality in Dortmund (DE). Adriana Costa Pinto who was one of the students also contributed with the team on the user interface design.

For developping a game story based on historical facts historian Neva Makuc from Scientific Research Centre of the Slovenian Academy of Sciences and Arts was contacted.

The key decision in the development process was to include all three of the living languages that are still used in the area – Slovenian, Italian and Friulian – to honor the region's diversity as well as respect the Friulan minority that is far too often overlooked in cross border collaborations. Apart from those three languages the game was available in English as well.

Jure Novak a theatre director and Marko Bratuš a screenwriter and a dramaturg designed a narrative about an AI called Anna that is trying to help the two cities become one. Anna sends players on different quests on both sides of the city which help her collect the data she needs. However Anna's underlying idea is that she needs to erase all history so people would become one by the simple fact that they occupy the same space geographically. That's where another sub-program kicks in, another AI called Pepe, who tells the players of Anna's plan and then they work together

Figure 3 *From left:* Maksimilian Zabukovec (programmer), Marko Bratuš (producer, writer), Markus Schubert (game developper, city game expert). © Private

to undemine Anna's unification concept by learning and being aware of the history of this area – and knowing that even though history was dividing these two cities for a long time – that ignorance is not going to fix it. Pepe proposes that only through knowledge and respect for diversity can the cities become one again.

When the script was ready a programmer Maksimilian Zabukovec joined the team to implement the game narratives into the platform.

In the preparation phase of the project SNG Nova Gorica connected with eleven important cultural institutions of both towns securing partnerships for the execution phase of the game ranging from libraries, cultural centres, theatres, institutes and cinemas.

The concept and gameplay

The first challenge aimed to address the lack of awareness

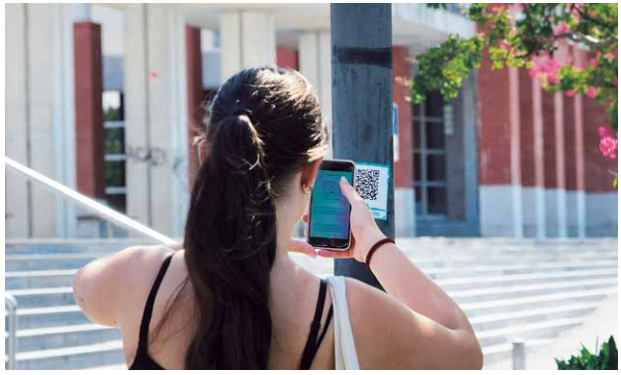


Figure 4 The QR code sticker. © Rok Peric

by inhabitants about the other city. Despite good relations between Yugoslavia and later Slovenia the inhabitants of the two cities visited the other side mainly because of their commercial interests – Slovenians were buying western merchandise and Italians were buying petrol and food. This habit still exsists as you can rarely meet inhabitants from Gorizia outside gas stations, shops and restaurants – and the inhabitants from Nova Gorica in shops on the other side. So one of the aims of this project was to open the eyes of inhabitants to their own city and to the city on the other side.

For the first game challenge we placed stickers with QR codes around both cities. The stickers were numbered and geolocated – which means we know where we put them so we can remove them after the game is finished. For this part of the game we placed over 1000 stickers on different urban locations in both cities.

The first quest was aimed to greet the players, introduce Anna's side of the story get the players on board. It guided

the players through the set-up process and introduces Anna's mission of trying to make these two cities one.

The second challenge gave players a choice of completing a challenge either on Slovenian or on Italian side of the border. The task was quite simple – to count the windows on the front side of the municipality buildings of Nova Gorica or Gorizia. However the Pepe character is introduced as he intervenes and tells the players about Anna's intentions to make the two cities one by erasing all history. He suggests that the players comply with Anna's requests but to give her the wrong answer.

The third challenge was composed by a series of walks around the two cities between the points that are historically connected. Each trail was a separate game.

The trail quests were followed by the treasure hunts. The first treasure hunt connects the cultural institutions on the Italian side. The game mechanism is pretty simple – Anna asks the players to go on a fun treasure hunt, to visit one institution after the other on both sides of the city.

For the final challenge Anna asks players to gather at the Slovenian national theatre in Nova Gorica at specific date where she will reset the history – at the event the results will be announced whether her plan succeded or if Pepe managed to prevent it. At the event the best players were also supposed to receive their awards.

The lessons learned

The GO!CROSS game was not as successful as we expected as we made a crucial mistake in the beginning of the project – we were trying to be too nice to players and we didn't want to ask the players for their personal data. We figured it would be easier and more attractive for them to start playing the game if they could just choose their nickname and continue straight to scanning the QR codes around the two cities. And it was. The first response was great, a lot of people started playing the first phase of the game – over 700 in the first ten days. But as the game story was strictured in a way that would keep the players engaged over longer period of time by progressively releasing new chapters every week our decision came back to haunt us as we didn't have any means to communicate that to our players.

As we added new challenges they would appear in the web app – but there was no way to inform the players about them via SMS service or even push notifications – again: we decided to run the game via web application as we wanted to be non intrusive and didn't want the users to have to download the app on their phones. All of that in our welcoming desire to preserve their privacy and their mobile phone storage space. This however meant that the players didn't see the new challenges if they didn't directly look for them which meant that most of the players stayed on the initial stage of the game and never progressed past that point.

Which brings us to the lesson number one: sometimes trying to be too audience friendly is simply a wrong approach. The fear of losing audience because of the complicated and personalised on-boarding process should not prevent us from doing it.

The second lesson is about the communication strategy. We officialy announced the city game with the traditional media outlets we use for theatre productions and created an instagram account for the game thinking this would be

enough to get the job done. But it soon became clear that we would need different, more direct approach to players, maybe even with demonstrators that would explain the players how to play the game or even with a large scale launch event. Which we didn't want to do as we were hoping that the appearance of mysterious QR codes would be enough to spark the players' interest.

The third lesson is a lot more positive however. During the preparation phase we started collaborating with cultural institutions from both cities and their reactions to the project were extremely positive. All contacted institutions opted for collaboration and were very accommodating with our requests for collaboration on specific game challenges that would take place at their premises.

The effect however went far beyond the city game – with some of the partners we were able to join forces on other levels as well and started off new collaborations that were triggered by this project. For instance Kinoatelje from Gorizia and Kulturni dom Nova Gorica were co-creating the summer program in the outside venue of Slovenian national theatre of Nova Gorica, and Società fillologica Friulana collaborated in hosting the Friulian theatre in Nova Gorica. In addition, a local IT company Arctur approached us to see if this project could be modified for touristic purposes to promote the region.

This game helped create a positive and collaborative environment between the institutions in both cities which is a result we did not expect or foresee but are extremely happy about.

The GO!CROSS project was entirely conceived and executed as part of the ACuTe program, allowing the theatre team to gain valuable knowledge and experience in designing digital experiences. The collaborations and exchanges that took place during ACuTe events were instrumental in the development of the project as the team had the opportunity to engage with specialists from various digital theatre fields. This support from ACuTe was crucial in shaping the GO!CROSS project into its final form providing comprehensive project support for the Slovenian national theatre of Nova Gorica.

Although the launch of the game did not meet our expectations – the majority of the creative team came from a theatre background and were expecting a huge applause – the GO!CROSS project served as a valuable learning experience for all involved.

And on top of that the impact that this project had on institutions of both cities, on interinstitutional collaborations and on social level is remarkable and will continue to grow in the upcoming years.

New Forms of Audience Engagement in Contemporary Technological Theatre

BY
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Different forms of audience participation in theatre and examine those modes of engagement that occur on a hybrid level—in the intersection and interplay between theatre, visual arts, and new technologies. Theatre, though inherently visual, has historically been a textual and "spoken" art form. Important shifts in visual and contemporary art have increased audience participation—driven both by cultural changes and by the rise of technology—though such practices have deep historical roots.

Speaking of the twentieth century,[1] we can trace audience involvement back to the activities of the Futurists. In *The Variety Theatre Manifesto* (1913), Marinetti wrote: "It [the audience] doesn't remain static like a stupid voyeur, but joins noisily in the action … communicating with the actors in surprising actions and bizarre dialogues." We may recall Dada soirées and the Surrealists' guided excursions, such as the *International Exhibition of Surrealism* at the Beaux Arts Gallery in Paris in 1938, where visitors were immersed in a surreal environment and became part of the exhibited world.

More explicit provocations and calls to the audience appeared in the 1950s and 60s, with groups such as GRAV (Groupe de Recherche d'Art Visuel), who invited viewers into labyrinths and organised *Une Journée dans la rue* ("A Day in the Street," 1966), involving the public in kinetic activities. These events are often described as early interactive

1 Here I would refer to our article where we discuss the history and experimental forms of technological theatre: Raivo Kelomees, Taavet Jansen & Petri Hoppu (2023) " FROM PAST TO PRESENT: THE JOURNEY OF TECHNOLOGICAL THEATRE", OAMK Journal, 125, 1–54. See the sub-chapter "History and the contemporary situation". https://oamk-journal.oamk.fi/wp-content/uploads/2023/09/Oamk-Journal-125_2023.pdf

art, since the audience participated actively. However, it is important to distinguish between *participatory* and *interactive* art. The distinction lies in the use of technology: if participation occurs without electronic or digital media, it is participatory art; if it uses electrical or digital systems, it becomes interactive art. This technologically diverse latter category—especially when applied in performative practices—forms the focus of this discussion.

When addressing the question of *new forms of audience engagement* in theatre, it is essential to consider the social, political, and technological environments that shape performance today. Below, the focus is on digital-technology-based modes of engagement, but also on innovative, low-tech immersive performances that exist within a technologically saturated culture.

Digital technology and theatre/performance intersections currently represent one of the most exciting fields of innovation. The traditional "audience sits and watches" model is rapidly evolving into more participatory, immersive, and personalised experiences.

The motivations behind such non-normative theatre formats vary, yet Erika Fischer-Lichte offers a useful framework: staging strategies play with three interrelated processes—(1) the role reversal of actors and spectators, (2) the creation of community between them, and (3) the establishment of physical and emotional contact that explores the interplay of proximity and distance, public and private, visual and tactile.[2]

2 Erika Fischer-Lichte, *The Transformative Power of Performance. A New Aesthetics*. Routledge, 2008, 40.

She does not directly emphasize technology-mediated engagement here, but in many mixed reality performances, these very phenomena occur, the emergence of community and greater closeness between the initiators and performers of the performances and the audience.

Below, I propose categories for audience engagement at the intersection of theatre, contemporary art, and technology. The examples include both highly digital and low-tech immersive formats that exist in our technologically rich cultural environment. It should be noted that although I made a separate category "Online theatre and telepresence stage", online elements can also be found in projects that emphasize physical space performance.

1. Immersive & Interactive Experiences

AR and VR performance projects: Audiences can use headsets or mobile devices to enter virtual or augmented performance spaces. They can "walk" through the digital production, interact with characters, or change the perspective of the story.

Digital tools blur the line between stage and spectator, creating spatial immersion and agency. However, the immersion experience could take place in a physical space, surrounded by activities and events, without the intermediary of technology. Spectators move in space between the actors, as is characteristic of immersive theatre.

360° Storytelling could be a subdivision of this category: Performances created for 360° video or projection domes allow the audience to look around and choose what to focus on, creating individual experiences.

Examples 360° Storytelling: *Limbo: A virtual experience of waiting for asylum – Guardian VR – 360 video* https://www.youtube.com/watch?v=AyWLvrWBKHA

The Click Effect (2016), https://www.youtube.com/watch?v=IcHCCCkEq8M

Examples

- ***The Under Presents*** (Tender Claws, 2019): a live VR theatre experience on Oculus that combines pre-recorded narrative with live actors performing in real time within a shared virtual world. Where immersive theatre meets VR. An intriguing multiplayer experience set between two worlds, https://tenderclaws.com/theunderpresents
- **Punchdrunk's *Sleep No More*** (2011–): though primarily physical, this immersive show has inspired digital extensions where AR and mobile technologies could guide individual audience paths. It can be described as promenade theatre, site-specific theatre. The audience wandered at their own pace throughout a set populated by actors. Since the audience is in the same room as the events, it is an extremely immersive situation. https://www.punchdrunk.com/work/sleep-no-more-new-york/
- Céline Tricart, ***The Key*** (Lucid Dreams Productions, 2019): a VR narrative where player choices influence moral outcomes. The Key is a 15-minute room-scale (6DOF) virtual reality experience with a strong narrative structure punctuated by moments of interactivity. The participant is lead through different environments, through dreams, and must face challenges and difficult decision in each, experiencing loss. The participant will experience a metaphorical journey from danger to safety. Through this journey a hidden truth is uncovered, and a new beauty revealed." The Key is an interactive experience mixing immersive theatre and virtual reality. https://thekey-vr.com

2. Hybrid & Extended Reality Performances

Mixed-Reality Theatre: Combines live stage action with digital overlays (projections, holograms, motion capture).

Performances may include motion-tracked performers who generate real-time digital avatars or environments.

I also include an example here *("Held in Human")* where remote participation is an essential component of a hybrid installation/performance.

In remote participatory performances, one virtually joins and interacts with live performers from different locations using avatars, chat, or even motion capture, creating global shared events.

Key idea: Integration of live action and digital environments (AR, VR, projection mapping, holograms, robotics) to create hybrid spaces.

Examples

- **At the RSC *Dream*** (Royal Shakespeare Company, 2021): combined live motion capture, gaming engines (Unreal Engine), and audience interactivity online; viewers influence digital environments in real time. https://www.rsc.org.uk/a-midsummer-nights-dream/
- ***You Me Bum Bum Train*** (2004 and various iterations): immersive theatre, integrates real-time instructions and hidden digital systems guiding audience-participants through narrative paths. Visitors to the performance

pass through a series of scenes of which they have no foreknowledge, in which they are either passive or where they must improvise a part without any preparation. https://www.bumbumtrain.com

- **Complicité's *The Encounter*** (2015): used 3D binaural sound technology to immerse each listener in the protagonist's mindscape through headphones. Imaginative journey. https://www.complicite.org/work/the-encounter/
- **Marshmallow Laser Feast** installations: blend physical performance and real-time visualizations (eg, forest ecosystems) for deeply sensory experiences. https://marshmallowlaserfeast.com
- **Louis-Philippe Demers and Bill Vorn *Inferno*.** The performance pushes the boundaries of robotic performance quite far, as viewers are placed in exoskeletons, where the movements of a few dozen volunteers are controlled and synchronized to techno-industrial music.
- **Punchdrunk's *The Burnt City*** (2022): uses game-like freedom and exploration mechanics, where participants navigate multiple storylines. https://www.punchdrunk.com/work/the-burnt-city/
- ***Held in Human,*** Liis Vares and Taavet Jansen, an interactive hybrid installation/performance, remote participation of audience is combined with real space participation, https://lab.elektron.art/projects/held-in-human

Performances where audience avatars and physical actors co-exist in mixed-reality stages. Performances as an alternative reality stage. Performances as installations, hybrid

spaces where offline and online realities intertwine.

3. Smartphone-Integrated Interaction

Second Screen Experiences:

Apps or online platforms allow audience members to influence the show through voting, messaging, or making narrative decisions. Interaction with a virtual character via a mobile app. Location-specific narrative journeys using a mobile device.

Possibilities of immersive performances: audience choices made via phones can change the lighting, music, or dialogue on stage.

Augmented reality layers in real-time spaces:

Viewers scan the stage or scenes with their phones to reveal hidden narratives, visual effects, or backstories.

Main idea: Mobile devices act as narrative tools or decision interfaces during performances.

Examples

- **Dante or Die *User Not Found*** (2018): audience members used smartphones to explore the digital afterlife of a character through live messaging and social media feeds. https://danteordie.com/user-not-found
- ***Blast Theory Karen*** (2015): a smartphone app blending film and AI chatbot, where users build a personal relationship with a fictional life coach — blurring performance and everyday life. https://www.blasttheory.co.uk/projects/karen/
- **Blast Theory *Rider Spoke*** (2007): cyclists record and listen to personal confessions via mobile devices, merging physical motion with affective storytelling. https://

www.blasttheory.co.uk/projects/rider-spoke/

- **At the National Theatre *Immersive Storytelling Studio*** experiments: spectators receive text messages or AR prompts mid-performance to influence plot direction. https://www.nationaltheatre.org.uk/about-us/skilled-makers/immersive/

Emerging potential: Geolocation-based narratives where a live show continues through audience phones as they move through real-world spaces.

4. AI-Driven Personalization and Algorithmic Dramaturgy

Artificial intelligence as a co-creator or performer: Artificial intelligence-based characters or chatbots can improvise dialogue with the audience in real time.

The audience can "talk" to an AI-based performer, whose reactions develop over the course of the performance.

Adaptive narratives: AI can adapt parts of the show based on the audience's emotions (captured by biometrics, cameras, or feedback). Every night can be unique.

Key idea: AI systems generate, adapt, or personalize performance content in response to audience input or emotion. These are mostly experimental endeavors.

Examples

- ***AI: When a Robot Writes a Play*** (Czech Centre, 2021): the first play written in collaboration with GPT-2, performed live in Prague. https://www.theaitre.com
- ***Project December*** (Jason Rohrer, 2020): an interactive text performance platform powered by AI dialogue models — functioning as both theatre and simulation. " Project December is the first system in the world of its kind. Using patent-pending technology, in conjunction with deep AI running on one of the world's most sophisticated super-computers, we can now simulate a text-based conversation with anyone. Anyone. Including someone who is no longer living." http://projectdecember.net. Classic version: http://projectdecember.net/classic.php
- ***The Trial Against Humanity*** by Det Norske Teatret , director Peer Perez Øian, playwright Anders Hasmo and Atle Ottesen Søvik. (A theatre co-production between Det Norske Teatret and Net Nordic, based on Karel Čapek's book *Rossums Universal Robots*, an immersive audience experience is created to challenge the audience to participate in new dramaturgies.) https://www.detnorsketeatret.no/framsyningar/prossessen-mot-menneska
- ***Patchworkgirl*, De Toneelmakerij, concept:** Paulien Geerlings and Eva Knibbe. (*Patchworkgirl* takes you inside online communities dedicated to exposing and shaming young women.) https://toneelmakerij.nl/voorstelling/patchworkgirl
- ***Hello Hi There*** (Annie Dorsen, 2010): two chatbots debate political theory on stage, exploring algorithmic aliveness. https://anniedorsen.com/projects/hello-hi-there/
- **Mikael Fock *SH4DOW,*** 2020–2021 "The stage-performance *SH4DOW* is an immersive 3D production, inspired by HC Andersen's fairytale "The Shadow",

that utilizes machine learning to investigate the digital seduction that humanized artificial intelligence enables." https://www.artificialmind.ai/projects/sh4dow

Possible potential: AI characters on stage who improvise dialogue with human actors or audience members in real time.

5. Digital Participation & Co-Creation

Crowd-sourced storytelling: The online or audience in real space contributes text, voice, or art that becomes part of the live broadcast of live performance. Examples include the aforementioned *The Trial Against Humanity* and *Patchworkgirl*.

The shows are expanding to social media platforms and are integrated into social media, where the audience continues the narrative, interacts with characters, or influences future storylines.

Key idea: Audiences contribute content that becomes part of the live or evolving artwork.

Examples

- **Rimini Protocol *Call Cutta in a Box*** (2008): a one-on-one performance via live phone call with a call center worker in India — blending intimacy and telepresence. https://www.rimini-protokoll.de/website/en/project/call-cutta-at-home
- **Coney's interactive theatre** – an unique approach to interactive theatre and social change. *Ends & Tales* was a series of immersive smartphone adventures on foot, inspired by the untold stories and histories around us. https://coneyhq.org/project/ends-tales/

- **Back to Back Theatre's digital workshops:** invite community participants to upload text, sound, and movement data used in future performances. https://backtobacktheatre.com/about/about-us/

Possible future developments: Web-based collective writing or AI co-authorship platforms generating live scripts from audience contributions.

6. Biometric and Sensory Feedback

Emotion-Sensitive Performances: Sensors (heart rate, EEG, facial expression) monitor the audience's reactions. The system adjusts the lighting, tempo, or sound accordingly – creating a living feedback loop between the audience and the stage.

Haptic or multisensory technology: Wearables or seats that vibrate, release scents, or change temperature can deepen engagement.

Performances use biometric or sensory data to adapt dynamically or enhance physical immersion.

Examples

- ***The Machine to Be Another*** (BeAnotherLab, 2013): VR and body-swap system where participants see through another person's eyes — exploring empathy and embodiment.
- ***Boiling Mind*** by Moe Sugawa. It is a novel interactive performance approach that breaks the fourth wall between the audience and performers by using

sonification and visualization of heart beats and EDA data.[3] *"Boiling Mind is a contemporary dance performance for connecting dancers and audiences. During the performance, the audiences wear a pulse sensor and eye-tracking device to generate data that will be visualized later on. The visualization will become a part of the stage design and create a connection between the dancer and the audience."* https://awrd.com/creatives/detail/9261029

- **Future of StoryTelling's *Bio-interactive Theatre*** experiments: wearable sensors adjust sound and visuals based on audience heart rate or breathing. https://futureofstorytelling.org

7. Online theatre and telepresence stage

Performances and installations with a strong telecommunication element that act as triggers for audience activity could be classified here. The criterion for classification should be the conceptual significance of the online element.

In the case of this practice, reference should be made to the collaboration between Kit Galloway and Sherrie Rabinowitz within the Satellite Art Project in 1977. It is also considered a precursor to cyberformance. Cyberformance is a term coined by Helen Varley Jamieson to distinguish it from digital performance. According to her definition, cyberformance is "live theatrical performances in which remote participants are able to work together in real time through the medium of the internet."

Here, mention should be made of Paul Sermon's experiments from the early 1990s, such as *Telematic Dreaming* (1992), *Telematic Vision* (1993), *The Tables Turned* (1997), where viewers played and communicated with each other. Sermon's most recent project, which is particularly relevant to Covid, is the *Telepresence Stage* project. It was a technological and conceptual platform for different theatre companies to realise remote theatre projects. Remote performers (actors/dancers) are in separate physical locations but are merged into a virtual stage (green-screen, virtual set) so that they appear in the "same" space.

"This project demonstrates how telepresence (not just audiovisual streaming) can create a sense of co-presence with the performers and offer new ways for the audience not only to view but to be visually embedded in the virtual performance space. It shows how audience engagement can go beyond chat, into visual/embodied presence."[4]

Here I also mention examples that I mentioned earlier, such as *The Trial Against Humanity* and *Held in Human*. *The Trial…* would not have been possible without real-time online AI support. The project *Held in Human* offered viewers the opportunity to participate via the internet. It is very problematic to classify projects purely on the basis of the online element, as it occurs in many works.

3 Moe Sugawa, Taichi Furukawa, George Chernyshov, Danny Hynds, Ji-awen Han, Marcelo Padovani, Dingding Zheng, Karola Marky, Kai Kunze, and Kouta Minamizawa. 2021. Boiling Mind: Amplifying the Audience-Performer Connection through Sonification and Visualization of Heart and Electrodermal Activities. In Fifteenth International Conference on Tangible, Embedded, and Embodied Interaction (TEI '21), February 14–17, 2021, Salzburg, Austria. ACM, New York, NY, USA, 10 pages. https://doi.org/10.1145/3430524.3440653

4 Telepresence Stage. Case study, March-April 2022, https://www.telepresencestage.org/uploads/case-study-pdfs/Sharp-Teeth-Theatre-Case-Study.pdf

I would also include the following projects:

- **Blast Theory** *"Can You See Me Now?"* 2001, Synopsis from the website: *"Online players navigate a 3D map of a city-centre game area, whilst Blast Theory runners are on the streets for real. Runners chase after online players, using mobile devices to follow their location live, whilst runners' positions are tracked by satellite and updated in real time on the 3D game area."* https://www.blasttheory.co.uk/projects/can-you-see-me-now/
- **Avatar Orchestra Metaverse** (AOM) (founded March, 2007) -- is a large collaborative group of performers spread across three continents, who incorporate the use of online avatars alongside virtual instruments, to create a variety of audio-visual performances within Second Life. https://avatarorchestra.blogspot.com

Conclusion

The convergence of theatre and digital technology has transformed audience engagement from passive observation to active co-presence. Whether through VR immersion, AI-driven dramaturgy, or biometric feedback, spectators become integral to the performance's unfolding structure. This shift challenges traditional hierarchies between stage and audience, expanding the definition of liveness to include remote, virtual, and data-mediated presence. Yet, technology alone does not guarantee deeper participation; the success of such experiments lies in meaningful integration, where digital systems amplify rather than obscure human connection. Contemporary technological theatre thus represents both an aesthetic and ethical exploration of how audiences and machines can co-create experience.

SECTION 4

VR

AUDIENCE DEVELOPMENT

Intimate Performances

Engaging Smaller Audiences by Using New Technologies

BY
KARLA MÄDER
(Germany)

I work at Deutsches Theater Berlin, a theatre that was significantly influenced by Max Reinhardt at the beginning of the 20th century. As a director, he had the vision of re-enchanting the audience after a period of socially critical and socio-politically influenced theatre. To this end, he worked closely with his brother Edward, a financial genius, and Gustav Knina, an engineer and inventor, who technically realised and implemented the aesthetic visions of the ingenious director. Not only "our" Deutsches ("German") theatre, but German theatre in general and, beyond that, international modern director's theatre owes much to Reinhardt's artistic vision and his collaborators, who translated his wishes into modern technologies, e.g. the revolving stage, the circular horizon, modern lighting concepts, etc. etc. Reinhardt understood like no other how to use the relatively new possibilities of electricity for a magical theatre experience.

As Reinhardt was not only an artist, but also a theatre entrepreneur (who at times owned several theatres in Berlin and later also in Vienna), his venues became larger and larger – right up to the huge Felsenreitschule in Salzburg, which is still used today by the Salzburg Festival, also founded by Reinhardt, and the (no longer existing) Großes Schauspielhaus in Berlin (for 5,000 spectators), where he created sophisticated theatre for the masses. In addition, Reinhard invented something completely new in 1906 with the Kammerspiele (the second, smaller venue of the Deutsches Theater): an intimate, small theatre space for very few spectators at the time (around 200). In the Kammerspiele, there is no ramp to the stage and the audience sits so close to the action on stage that they can even

smell the cabbage soup eaten by the working-class families on stage – at the time, this smell was considered the epitome of poverty. The Kammerspiele, however, was a big flop at the beginning of the 20th century – Reinhardt even described it as "my biggest mistake" – but it is fair to say that he was simply ahead of his time: both the drama and the audience interest in this type of theatre, which focuses on stories and psychological acting rather than show value, has developed sustainably and is a mainstay of our art today.

In this respect, I have the impression that today – around 100 years after Reinhardt – we are on a threshold where new technological developments are once again demanding evolutionary steps from the theatre, which are currently still done with a lot of trial and error, but are bringing with them quite a few insights. It is possible that in a few years' time, artificial intelligence and digital technologies will have changed our world to an extent that we cannot yet foresee.

In this text, I would like to use three very different but successful German VR productions to describe a few insights that I myself have gained in dealing with VR technology in the theatre in recent years. It is a comparison or description of the following three productions:

- *"I AM (VR)"* by Susanne Kennedy and Markus
- *"The Wall"* by Thomas Krupa (a production of the Essen Theatre)
- *"Antigone :: Comeback"* an independent production by RAUM+ZEIT (director Bernhard Mikeska, author Lothar Kittstein and dramaturge Alexandra Althoff)

On a larger scale, VR emerged in the theatre as a fruit of the coronavirus era. Suddenly, on the one hand, there was time and energy for artistic research, which was utilised by quite a few people. In some German municipal theatres, for example, digital sections emerged as a result, and on the other hand, the isolation of people brought other forms of theatricality onto the scene, in the theatres' honest and understandable effort to remain productive and in contact with the audience.

We have long since returned to normal. After the end of the coronavirus pandemic, it was not without relief that theatres reassured themselves of their actual unique selling point, which seems precious in the light of the experiences of isolation: being a meeting place for many people who follow an analogue stage event in physical co-presence, who exchange ideas and so on: Theatres once again see themselves as places of democratic action, an important function in times of authoritarian tendencies throughout Europe.

After the pandemic had been overcome, theatres (and audiences) recognised this intrinsic essence of their art, which is worth protecting and celebrating, with renewed zeal, so that the new technologies and their devices gather dust in corners like not entirely convincing toys do after the Christmas holidays, after having played with them for a short while with fascination.

VR survives today in theatre niches in which individuals try to make it fruitful. In the meantime, I believe that VR technology should only be used in the theatre cosmos if it provides absolute added value in terms of content. Otherwise, the adventure is too expensive, too complex,

too unknown, too unsafe – basically a luxurious undertaking in the theatre's operating system, which is not primarily commercially orientated. Nevertheless, I would like to use three VR experiences to try to describe how it is possible to create a great, almost "intimate" experience in the end – especially without too much VR technical effort, but with clever dramaturgy.

A dramaturgy of obstruction, a creativity born of need and despair has not always been the worst incentive to create something new, but it has not always been one that has to develop beyond the moment of despair. In this respect, a sceptic fascinated by new technology is writing here, but one who is prepared to acknowledge that there are masters who continue to devote themselves to this technology with profit.

I Am (VR)

In summer 2021, when we had already started experimenting with VR at Schauspielhaus Graz, I visited Susanne Kennedy's and Markus Selg's VR show with the playful title *"I AM (VR)"* as part of the summer festival at Kampnagel in Hamburg. Markus Selg is an artist with a background in the visual arts who now works on an interdisciplinary basis. Since the mid-1990s he has been exploring the dynamic between archaic myths and computer technology in the form of digital painting, sculpture, moving images, theatre and comprehensive, immersive installations. Susanne Kennedy, born in 1977, is undoubtedly one of the most memorable German theatre makers of the present day. She has so far attracted attention above all with extremely strong formal evenings and has thus been invited several times to the Berlin Theatertreffen, the most important theatre festival in Germany. In her works, the performers often play in confined stage spaces and do not recite their lines themselves, but move their lips to the playback of a sound recording, occasionally wearing masks. This creates an intense effect of artificiality and artistry. For several years now, Kennedy has been developing theatre works – mostly in collaboration with Selg – that work with loops, virtual reality, digitally generated stage sets and visual worlds, and the sampling of texts from a wide variety of sources.

So I went to the quickly sold-out show, which was advertised as "a psychedelic self-awareness trip for one person each about the oldest philosophical questions of mankind: Where do I start, where do I end? What constitutes reality, and what is fiction, what is virtual? On a meditative journey through a kind of digital version of the cave allegory, visually exaggerated spiritual-mythological settings are traversed and the basic assumptions of human consciousness are scrutinised. Until the participants are finally ready to face the digital oracle and ask the question of all questions." I really wanted to experience that! Together with two close friends from Hamburg. There were around 50 tickets available per day, and they were quickly sold out.

The show only lasted half an hour. We were separated, each assigned our own small room separated by curtains, where we immersed ourselves in the universe that completely enveloped each of us with VR glasses and headphones. We emerged astonished by the fact that only half an hour had passed and that we were in a different part of the room to where we started. Although we appeared to

be sitting on the floor, we had unconsciously moved a few metres. Time and space, it seems, behave differently in VR experiences than in reality.

What was there to experience? The entire VR experience was computer-generated and took place without text, but with a well-composed soundscape as a kind of VR course. You sat in the virtual space on a kind of flying carpet and could use your eyes to navigate doors through which you slid into a new room. Only when you had seen all five available rooms (in any order) were you allowed through the decisive door. This led into a high chimney in which you travelled upwards to emerge at the end in a kind of huge dome, which was supposed to represent something like an illuminated universe. The contrast between the five rather empty rooms on the ground floor and the spectacular ascent to heaven was quite something! After flying around the vast domed room for a while, I landed in front of anthropomorphic creature sitting under some kind of tree. That was the end point, which was probably meant to suggest to me that I had "arrived". – The fact that I no longer have any memory of the "question of all questions" or how I might have asked it or even what the answer was speaks volumes, and my two friends, whom I asked again especially for this article whether they remember the end of this VR show, also have no clue anymore: dramaturgically, the climax so eagerly described in the advert probably didn't work somehow …

Another problem: despite the obvious computer-generated effort (the programme credits Dutch VR designer Rodrik Biersteker as the creative mind behind the programming), the aesthetics were simply so imperfect and the story

so shallow that our small audience of three was left highly unsatisfied. Ultimately, however, it is a striking further development of Susanne Kennedy's artificial and "dead" directorial language, which shows little interest in actors and acting work and likes to have its actors lip-sync to a pre-produced soundtrack or hide behind masks.

The Wall

I liked *"The Wall"* better, a VR experience that was also produced during the Coronavirus period based on the novel by Marlen Haushofer by Schauspiel Essen, which I saw at the PAD conference in Darmstadt in January 2023. *"The Wall"* is a novel that dates from 1963 and was written by the then 43-year-old Austrian author. In it, she describes the life of a woman who is cut off from civilisation by an invisible wall, that is suddenly appearing. The unnamed protagonist travels with her cousin and her cousin's husband to a hunting lodge in the mountains one weekend. In the morning, the narrator misses her companions and leaves the hut to look for them. At the exit of a ravine, the couple's dog, which is with her, bumps into an invisible barrier. A man drawing water from a well in the valley looks petrified. It seems as if a great misfortune has fatally frozen all living creatures – or at least all those recognisable to the woman through the transparent wall and through a looking glass. The first-person narrator is protected from this misfortune by the mysterious wall and at the same time trapped. As the area enclosed by the wall extends over several hunting grounds, the isolated woman gradually learns to feed herself from the remaining supplies, the fruits and animals

of the forest and some farm animals that run to her, as well as a garden that she cultivates over time. During the third winter, she writes this report – without knowing whether anyone will ever see it. Towards the end, a man appears. As he kills the young bull born of her cow with an axe for no apparent reason and also kills the dog rushing to help, she shoots the man with her hunting rifle without hesitation. The woman's fate remains unknown.

This cult novel, which has been read by many as a feminist text, but whose metaphorical content also fits so perfectly during the coronavirus period, was staged by German director and set designer Thomas Krupa, who focussed heavily on the space. For the VR experience, he has designed a fully functional tiny house, which is a feast for the eyes architecturally and the only setting for the story – apart from the surrounding forest (which is completely computer-animated, as I was amazed to discover during my research), although you don't get very far into it as the wall is assumed to be very close to the house. The VR experience initially impressed me with an incredibly lovingly crafted wealth of visual detail, which constantly reveals new things and later undergoes gruesome neglect and destruction – an apocalyptic moment that is a theatrically effective interpretative setting that deviates from the original novel.

The VR experience, which lasts around an hour, is a partly animated, partly real 360° film, in which it often remains indistinguishable what is animated and what is real. Nevertheless, with all due respect for the impressive wealth of detail in the visuals, which also gives an idea of the immense effort that went into the workshops, technology, make-up, props, etc., in my opinion, it would have been

particularly appealing if the role of the protagonist had not been played by an actress (with several cuts), but instead the text had been told from the subjective perspective of the 360° camera, so that you could have been the protagonist yourself, who has to survive in great solitude in the hut in the forest. It is precisely the strong physical experience of VR that makes this effect seem to me to be the most valuable feature of this technology.

Revisiting familiar stories (the title *"The Wall"* alone is already a selling point in Germany for many people who know and love the novel and will therefore indulge in a new technological experience with relish) seems to me to be an appealing dramaturgical task. However, it seems important to me that the element of loneliness that VR seems to fundamentally entail is inherent in the content.

Antigone :: Comeback

I found this particularly successful in a VR experience that comes from the workshop of director Bernhard Mikeska, who has been working with this technology for many years and who made a name for himself years ago with 1:1 experiences (albeit 100% analogue at the time) and has developed his own convincing poetics across many different projects, which also creates overwhelming experiences with cognitive value in the intimate space of VR.

In the summer of 2022, I attended the VR and live performance of "Antigone :: Comeback. A rehearsal with Weigel and Brecht" in an off-space of the Berlin free scene. This staging is a production by the group RAUM+ZEIT, which was already staged at the Chur Theatre in 2018 and has

since been a guest at numerous festivals. I find it remarkable that Bernhard Mikeska actually used this technology to further develop his previous themes, aesthetics and formal approaches long before COVID struck.

The starting point for the production is Brecht's play *"Antigone"*, which Brecht himself staged in 1948 in exile in Chur, Switzerland, with his wife Helene Weigel in the main role, who was actually far too old for the leading role and also exhausted and desperate. As chance would have it, Bernhard Mikeska discovered that the original stage design by Caspar Neher was still in the Chur Theatre's collection, and based on this astonishing fact, together with the author Lothar Kittstein and the dramaturge Alexandra Althoff, he developed a one-hour experience at the Chur Theatre that was much more convincingly intimate than the evening by Susanne Kennedy, for example, wanted to be.

A large wooden box was set up in a hall at Uferstudios, in which parts of the following storyline take place. In order to be able to change locations with the VR glasses on your nose, you have to rely on a helper to guide you, which happens repeatedly throughout the evening. In the past, Mikeska has also worked with the idea of being blindfolded and led to a "secret" venue, where you then meet the characters of the respective play in 1:1 situations in a completely analogue way. This process alone can be described as intimate – being dependent on another person who, blindfolded as you are, touches and guides you. The first room that you initially see without VR glasses is a small chamber in a typical set design. As soon as you put on the VR glasses, you are sitting in a simple theatre dressing room, as it might have looked in the 1940s. Surprisingly, the virtual image

corresponds exactly to the dimensions of the real chamber – except that all the realistic wall details are visible in the image: Light bulbs, grey oil paint on the wall, a washbasin with a mirror above it, a dressing room table, etc.

In the next scene at the latest, which requires a change of location, you realise that you have just been sitting in the dressing room of Helene Weigel, who was preparing for a rehearsal with Brecht. Suddenly you are standing on the stage of the Chur theatre – in the original set of Brecht's *"Antigone"* – and feel yourself insulted by Brecht, who is sitting at the director's desk in the middle of the auditorium. Forty-seven-year-old Weigel has not been on stage for 15 years and is actually far too old for this role. Brecht and Weigel are existentially dependent on the success of "Antigone": For Weigel, her career is at stake, for Brecht his entire theatre model. Beneath the conflict between Antigone and Creon, between loyalty to the law and freedom, between tyranny and resistance, lies the struggle between Brecht and his partner Weigel. The actor Peter Jecklin (who is well known in Switzerland and was born in Chur) plays the role of Brecht, even jumping onto the stage at one point and coming very close to you – and when you look around, he is suddenly, irritatingly, Creon in an ancient toga with a laurel wreath.

For the third scene, you are taken back to the small dressing room that you were introduced to in the virtual image at the beginning. Your glasses are taken off and you see all the lovely details in reality that you could only see as an image at the beginning, whereas in the reality of the first dressing room, the bare backdrops dominated: the room you are sitting in is identical in construction to the first

room, but the surfaces are moulded. Suddenly, an actress enters – Helene Weigel in the flesh – and vents her frustration and anger about the botched rehearsal in a monologue. She mainly plays through a dressing room mirror, where the spectator and the actress can meet each other's eyes. At the end, she disappears, not without signalling you to put your VR glasses back on.

What follows is the most magical moment of the evening, because you have long since realised that you yourself are the Weigel from whose perspective you are experiencing the "Antigone" rehearsals; Helene Weigel, the woman who was so loyal to Brecht for so long, who is simply exhausted at the end of the Second World War and at this moment is not only at odds with herself and her profession. The monologue, which the actress performed intensely and with the utmost closeness to you, was also thematically about the suffocating situation she finds herself in. So while you sit helplessly in the dressing room as Helene Weigel – now with VR glasses on your nose again – and don't know what to do next and what will happen next, the small dressing room mirror suddenly falls out of the wall and reveals a view of a beautiful, lonely Swiss Alpine valley. After this first small "stroke of liberation", the miraculous dismantling of the walls around you continues for several minutes until you are sitting in the most beautiful mountain weather in the deserted, peaceful Alpine landscape, which you could only see in sections through the room behind the mirror. As a spectator, you experience the virtual world intensely and sensually, experiencing vastness and freedom, nature and peace – as a positive contrast to the cramped, suffocating rehearsal atmosphere in the Chur theatre in 1948.

This truly impressive ending was followed by a short epilogue. After being led out of the dressing room again, you take a seat on a chair at the edge of the stage next to the wooden box for a fourth scene – without VR glasses. You see an audience member who has started a few minutes after you, looking helpless and a little ridiculous as he experiences the scene on the stage of the Chur theatre under the VR glasses, you see the actress of Helene Weigel coming out of the dressing room where she has just done her monologue again, taking a sip of water and resting for a moment just before the next spectator enters the room. You can see what kind of assembly line work she is doing close to a chain of spectators who start the course at intervals of a few minutes – and you can see the technicians and assistants at work, sitting at various desks and ensuring that everything runs smoothly in technical and organisational terms. This production is about nothing less than the laws of reality and fiction.

Even those who do not know the historical theatre details of the reception history of Brecht's "Antigone" or know little or nothing about the complicated relationship between Brecht and Weigel will experience a touching evening here and understand: theatre is preservation (e.g. historical stage sets) and renewal (e.g. trying out new technologies), theatre-making is loneliness (e.g. in the dressing room) and teamwork (e.g. in rehearsals and behind the scenes). A successful production is the interplay of tension and relaxation and a theatre life consists of exhaustion and release – and a successful audience experience consists of physical and intellectual contact.

Conclusion

In her book *"A brief history of the future and how we continue to write it"*, Austrian physicist Ille C. Gebeshuber describes an experience she had in Malaysia, where she was researching physical principles on plants. There, in a place that resembles hell on earth – one of those gigantic rubbish dumps where people recycle electronic waste from Europe under extremely unhealthy conditions – she observed a child playing a colourful flashing game on a smartphone. The little boy was so absorbed in the game that he was able to completely block out the cruel reality around him.

From this experience, the researcher develops a vision of the future with the cool precision of a natural scientist, which does not seem so far-fetched and which – irritatingly in my view – is presented by her as a positive way out of the dilemmas of the present: In the future, there will only be a few intact natural areas, consequently access to nature and natural processes (from food to sex) will be the privilege of the (few) people that are wealthy enough. The (huge) underclass of the poor, on the other hand, could make do in inhospitable habitats with virtual and industrially produced substitute worlds and substitute satisfactions, which are cheaply produced and easily available and enable a kind of second-class life, but which give the illusion of abundance. Even if the difference between the real and non-real world will only be marginal, Ille C. Gebeshuber believes that the future does not have to be bleak. Her thesis: If the past was dominated by faith and the present by knowledge, thanks to digital technology, faith and knowledge could merge in the future.

With this vision in mind, which I see as terrible but not implausible, I think that we should take a responsible approach to the content of this technology, which could perhaps become a key technology of the future. The task of theatre must be to use the means – and to criticise them at the same time. Reaching and fascinating people is one thing (difficult enough), but at the same time making the human condition clear to them, which lies beyond technology and which must be fought for, is the real task that I see for theatre.

The point I'm trying to make here when comparing these three VR productions, each of which is successful by external criteria like festival invitation: it's the dramaturgy that counts!

The technology must serve the story and not be an end in itself or a playful element in the foreground. Because, as we have learned, VR technology is expensive and complex and simply not affordable for theatres in the high-end sector. And ultimately perhaps it doesn't make sense because theatre is essentially a local phenomenon with a comparatively small sphere of influence. But it has the power to bring people together in large numbers. Under this premise, VR experiences currently remain more or less successful experiments with a technology that can be produced – and sold – far more elaborately and expensively in other, commercially orientated industries (from gaming to porn). In this respect, the strength and only meaningfulness of VR in theatre lies in the clever selection of stories that are worth telling and the equally clever consideration and calibration of the means with which they are told in order to achieve the greatest possible dramaturgical effect. And the success of the experiment lies in the makers' knowledge of the specific requirements, production conditions, strengths and weaknesses of VR technology.

SECTION 4

VR

ARTISTIC RESIDENCY

Enhancing Stage Productions VS Sharing Knowledge: The Importance of the Post-Premiere Residence

BY

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in cooperation with

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Azkuna Zentroa played a pivotal role in the ACuTe project, focusing on organising artistic residencies for four out of nine new productions: Det Norske Teatret/Norway; "Marin Sorescu" National Theatre of Craiova/Romania; Azkuna Zentroa/Spain; Schauspielhaus Graz/Austria (later replaced in the project by Deutsches Theater Berlin/Germany). Each production was at a distinct stage of development, requiring tailored support and guidance. Notably, *WUNDERLAND*, a VR production that premiered in March 2023, taught us the importance of integrating post-première evaluations.

The residency program is designed to provide artists and creative professionals the opportunity to reflect on their work after it has premiered. This phase often includes analysing audience reactions and expert critiques to further enhance the production. The residency not only benefits the specific production but also fosters an environment for knowledge sharing and collaborative growth among diverse artistic communities.

Research Questions

Creating a new stage production is a meticulous endeavour that requires substantial investment in terms of time, creativity, and collaboration. While the journey culminates in the premiere, it is crucial to recognise that this is not the end of a performance. Instead, it marks the beginning of essential phases that can significantly enhance the production:

1. Refinement of Performance: A Post-première residency allows teams to refine and perfect performances based on feedback from audiences and experts. This iterative process is vital for artistic growth.

2. Knowledge Sharing: These residencies create opportunities for artists to share their experiences and insights with other professionals, fostering a culture of collaboration and continuous learning within the arts community.

The absence of structured programs for post-production evaluation highlights a gap in the performing arts sector. Traditional residency models often focus on the research and creation phase, neglecting the importance of reflection and adjustment after a work has premiered. Addressing this gap is essential for the ongoing development of innovative and experimental productions.

Theoretical Framework: Understanding Artist Residencies

Artist residencies are programs that offer artists and creative professionals the resources, time, and space necessary for their work. They are instrumental in:

1. Professional Development: Residencies enable artists to hone their craft, learn new techniques, and collaborate with peers and mentors.
2. Economic Benefits: They can provide financial support or access to resources that might otherwise be unavailable to individual artists or small companies.
3. Cultural Development: Residencies contribute to the cultural enrichment of both the artists and the communities hosting them, fostering dialogue and exchange of ideas.

4. Organisational Learning: Hosting residencies can enhance the capabilities of organisations by exposing them to new practices and perspectives.
5. Enhancement of Regional Reputation: Successful residencies can elevate the profile of a region as a hub for creativity and innovation in the arts.

The primary goal of artistic residencies is to assist the artistic process, facilitating interaction and collaboration among artists and experts from various fields. This engagement allows for a deeper exploration of artistic ideas and concepts, often resulting in enriched creative outputs.

Case Study: WUNDERLAND

WUNDERLAND is a groundbreaking production that emerged during the COVID-19 pandemic, produced rapidly within a five-day timeframe in November 2022. This innovative project blends multiple disciplines—staging, cinema, and animation—into a unique VR experience. Lasting 15 minutes, the audience experiences the narrative through 360-degree virtual reality, seated in a specially designed space that resembles a child's room, equipped with VR glasses and 3D sound.

The narrative centres around a family, portraying the complexities of modern parenthood through the eyes of a child. It delves into themes of aspiration and sacrifice, highlighting the struggles of both parents as they navigate their roles and the impact on their child. The father's decision to prioritise childcare while the mother pursues a successful career creates a tension that culminates in a powerful emotional climax.

Premiering at the Diagonale festival in Graz in March 2023, the production aimed to not only entertain but also provoke thought about contemporary family dynamics. The creative team sought feedback and reflection through the residency, recognising the value of expert insights in refining their work and sharing their experiences with the local arts community.

The Expert/Artist Residency Programme

In January 2024, the residency at Azkuna Zentroa, the Bilbao Society and Contemporary Culture Centre, for WUNDERLAND featured a structured program that brought together ten experts from various disciplines. The experts were divided into groups focusing on key areas relevant to the production:

- Film and Audiovisual: Including filmmakers and curators who provided insights on the narrative and technical aspects of the VR experience.
- New Dramaturgy and Interpretation: Aimed at examining the theatrical elements of the production and how they translate into the VR medium.
- Production and New Technologies: Experts in digital media and scenography offered perspectives on the technological aspects of the production and how they integrate with traditional storytelling.
- Audience Engagement: Engaging with students and youth allowed for fresh perspectives on how the production resonated with different demographics.

The residency commenced with the experts attending performances of WUNDERLAND. This firsthand experience was crucial in allowing them to observe and critique various elements of the production, from acting to technical execution. Reflective discussions followed each performance, enabling the production team to receive constructive feedback.

Key Benefits of the Residency

One of the primary advantages of post-première residencies is the opportunity for production teams to engage with knowledgeable sources who can provide unbiased critiques. This feedback is essential in identifying strengths and weaknesses within the production, offering a pathway for further refinement.

The residency fostered a collaborative environment where dialogue between the production team and experts enriched the creative process. Participants shared their insights and ideas, sparking innovative approaches to storytelling and staging. This collaborative spirit not only improved the production but also nurtured a sense of community among the diverse group of professionals involved.

For many experts, the residency was a first encounter with a VR production, which opened new avenues of artistic exploration for their own projects. They expressed appreciation for the willingness of the production team to share insights and engage in open discussions about their creative process.

Expert Contributions and Insights

The experts contributed valuable insights that highlighted the complexities of integrating VR with traditional theatrical elements. They grappled with questions regarding the classification of WUNDERLAND: Is it primarily a film or a theatrical performance? This ambiguity led to discussions about the need for new roles and approaches to dramaturgy that address the unique demands of VR storytelling.

Experts noted that the current production leans more towards a cinematic experience rather than traditional theatre. They emphasized the necessity of developing a new framework for dramaturgy that accommodates the distinct narrative and spatial requirements of virtual reality. This new approach could involve multiple layers of storytelling—focusing on the narrative, the audiovisual elements, and the spatial design.

Feedback included suggestions for enhancing the sensory experience of the production. Experts proposed exploring additional sensory dimensions, such as touch and smell, to deepen audience immersion. They also discussed the implications of individual versus collective experiences in theatre, raising questions about how the loss of shared presence in a traditional theatre setting affects audience engagement.

Additionally, some experts pointed out that while the narrative's starting point is intriguing, the perspective of the child—a central character—was not fully developed. They observed that the production often resembled a collection of tableaux rather than a cohesive narrative flow. This fragmentation was noted as a potential area for further refinement.

Audience Engagement and Feedback

Engagement sessions included students from local institutions, providing a fresh perspective on the production. These young audiences shared thoughts on the possibility of distributing WUNDERLAND through platforms akin to Spotify, suggesting that its immersive sound experience could attract wider audiences. They also proposed alternative venues for showcasing the production, such as cultural centres and museums, to enhance its social impact.

The educational potential of the piece was highlighted, with suggestions to program it in schools to foster discussions about family dynamics and emotional well-being. Such initiatives could raise awareness of how conflicts within family settings affect children.

Conclusions

In conclusion, post-première residencies can be a vital component of the stage production lifecycle. They offer critical opportunities for reflection, critique, and collaboration, which ultimately contribute to the refinement and evolution of artistic works. Engaging with experts and incorporating their feedback allows productions like WUNDERLAND to improve and resonate more profoundly with audiences.

Furthermore, these residencies facilitate knowledge exchange among professionals, encouraging innovative practices and artistic experimentation. The insights gained during this process not only enhance the specific production but also contribute to the broader cultural landscape, inspiring future generations of artists and audiences alike.

Through initiatives like the residency program for WUNDERLAND, we can see the transformative power of collaboration in the arts. Such programs not only elevate individual productions but also enrich the entire community, fostering a vibrant, interconnected cultural ecosystem.

Figure 1 Azkuna Zentroa hosts an artistic residency

Audience Testing and Genuine Participation in Rabbit Hole

BY
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In 2023, de Toneelmakerij made the interactive tech-production Rabbit Hole, for which a live audience chat was developed. We embarked on this journey with students of Saxion University of Applied Science, which was also part of the ACuTe project.

We were still in the brainstorming phase when we first met up with the students and soon found out they worked in a highly structured manner, in a way that was completely new to us. Each two weeks, we received a presentation at the end of something they called a 'sprint' and we were expected to present them with a new assignment for the next two weeks, based on their results so far. In the brainstorming phase, it was completely new to us to work in such a structured manger and to test things to reach an improved concept. But we appreciated their nerdiness and decided to embrace the design thinking method throughout the whole creation process of Rabbit Hole.

What is the Design Thinking Method?

In the design thinking methodology, the user is the central focus of innovation. In this approach, a profile of the target user and their specific needs forms the foundation for developing a product tailored to them. Throughout the production process, the product is continually tested by users who match this profile.

The design thinking method contrasts sharply with how most theatre practitioners traditionally work. Through the ACuTe project, Saxion developed a toolkit based on design thinking principles to help theatre practitioners innovate their production processes. They discovered that it was

common practice for their theatre partners to involve test audiences only during the final phase of production—the tryout. Coming from the design world, this was a completely unfamiliar strategy to Saxion. They wondered, aloud, how it was even possible for theatre makers to create a final product without including the intended user in their process. The theatre makers were at a loss for words.

Saxion concluded that the lack of testing made theatre production an unnecessarily risky endeavor. Beyond the possibility of failure at the premiere, it raised a more fundamental question: How seriously do theatre makers take their audience? Integrating and applying the design thinking method requires a shift from the traditional concept of the 'genius artist,' who works in relative isolation from the audience, to a theatre maker who values the audience's feedback and is willing to make modifications based on that feedback when it is well-founded.

This testing procedure can lead to even more significant changes, if audience behavior differs from what was initially anticipated. Such outcomes can inspire theatre practitioners to develop new ideas, redefine the original concept, or even completely revise it.

The importance of audience testing

To determine the most effective form of interaction for "Rabbit Hole," we applied the design thinking method and therefore engaged with members of the public early in the production process. This allowed us to explore in what way the live chat would function best, both technologically and thematically, and make necessary adjustments along the way. It is notable that such an extensive process of testing and modification requires a more extended production timeline, with sufficient preparation time allocated even before rehearsals begin.

For "Rabbit Hole," the final narrative design, which included a live chat, was markedly different from the initial version. In an early iteration, we had a system in place to control at what moments the audience could chat or not. However, during a test performance, a glitch accidentally allowed audience members to use the chat function throughout the entirety of the play. This unexpected development revealed a more engaging approach than what we had originally planned, so we decided to stick with it.

The most substantial change based on test results occurred between the original Austrian version, performed in Linz, and the Dutch version, produced six months later. In Linz, audience members were assigned to different 'bubbles' based on their responses to several questions, with each bubble having its own content feed. However, this separation into bubbles, combined with the impactful visuals on Samy's desktop, resulted in too much additional input without providing sufficient added meaning. For the Dutch version, we therefore decided to focus solely on the live chat feature.

Using new tech to nurture a less hierarchical relationship with the audience

Videogames, the internet, social media, and virtual reality have been around for a while, but they are relatively new to the traditional theatre. While some technologies like live

cameras and videowalls are incidentally used, many others remain unexplored. Often, when technology and interactivity are incorporated, they serve more as novelties than a way to make the audience intrinsically contribute to the performance.

However, technology and interaction have become integral parts of daily life and could actually seamlessly be implemented in theater. If we put aside the risks of the online world highlighted in "Rabbit Hole," the internet and smartphones have also democratised participation. Social media allows everyone to have a voice, and VR games can make you experience things that you would never obtain in real life. Especially for generations raised with the internet, technology is by definition accessible and participatory.

The theatre world can benefit from these developments to explore a less hierarchical relationship with audiences. By using technology in an everyday manner, rather than for mere effect, we can introduce genuine forms of participation. "Rabbit Hole" exemplifies this by allowing the audience to behave as they would in a regular chatroom, reducing the distance between actors and spectators. This approach works because the technology is integral to the story.

There are other theatrical contexts where technology can play a democratizing role. Live translations and surtitles can diversify audiences, and live streaming performances to homes or care facilities can increase accessibility. Younger audiences' desire for immersive experiences also offers opportunities. Traditional museums have drawn inspiration from 'Instagram museums,' and TikTok's BookTok community has encouraged more reading among young people. While some in the art world may view such audience engagement with disdain, those rooted in the gaming industry and youth theatre know that considering the the desires of the audience is enriching. In contrast to the adult theatre, audience-testing is very normal in youth theatre, simply because adult theatre makers can never really know how a show will communicate with children or youngsters. We also know this testing doesn't mean we have to surrender our own artistic autonomy and only make easily consumable work.

Conclusion

Working in sprints from an early stage proved to be a powerful way to maintain clarity and momentum in our artistic process—especially when several creative developments were unfolding simultaneously. It provided a structure that helped us reflect, adapt, and keep moving forward without losing sight of our goals.

Even more valuable was the decision to centre the audience from the very beginning. Engaging them not only as spectators but as participants through continuous testing created a meaningful dialogue that enriched the entire process. By inviting the audience in early and often, we didn't just build a more effective production—we deepened our understanding of what theatre can be when it opens itself up to genuine participation.

SECTION 4

Residency Reflection: Deutsches Theater Berlin with 'Wunderland' in Bilbao

VR

ARTISTIC RESIDENCY

BY
KARLA MÄDER
(Germany)

The invitation and the invitees

A residency is, of course, a wonderful thing. You are given time to explore a project in greater depth or to advance it with the help of knowledgeable people. In our case, we were awarded a residency at Azkuna Zentroa in Bilbao as part of the AcuTe project. In itself, this was a cause for celebration. But it also presented a problem: our VR film *"Wunderland"* had long been completed by the time of the residency, the AcuTe project had since moved from Graz to Berlin, and there was only one person in the entire new Berlin team who had been involved in the creative process from start to finish. However, Barbara Epalza from Azkuna Zentroa in Bilbao, who had already welcomed other AcuTe teams to residencies in Bilbao before us, had an almost ingenious idea: How about turning the process on its head and using the available time to reflect on the result and explore potential opportunities for further development and insights for future VR projects? No sooner said than done. Artist and technology expert Jaime de los Rios put together teams of experts from a wide range of fields for four days, each of which spent a day reviewing and reflecting on our result – the VR film *"Wunderland"* – discussing it with us, generating ideas and thus enabling us to engage in a kind of quality management that would otherwise never have been possible. Jaime de los Rios is a visual artist and programmer. In 2007, he founded the open laboratory of art and science ARTEK[Lab]. An expert in free software and hardware, he has developed over the last decades a body of work that blends contemporary art, science and technology, creating immersive environments and generative works, often in collaboration with other artists, scientists

and engineers. Jaime became our generous chaperone and moderator through a series of interesting encounters with Spanish artists and experts, students and colleagues.

Specifically, the experts he invited on 9 January 2024 were Iratxe Fresneda, a Spanish filmmaker, and Ainara Bilbao, a programme technician at Azkuna Zentroa. On 10 January, a group of about 20 students from Kunshtal, a design college in Bilbao offering courses in various fields ranging from interior design to fashion and food design, visited the museum. On 11 January 2024, we met theatre director, actress and dramaturge Maria Goiricelaya and her fellow actor Javier Liñera. And on 12 January 2024, we concluded with a team of three experts from Vicomtech, specialists in artificial intelligence, visual computing and interaction, who were the only ones among the invitees to have in-depth experience with new technology and VR in the context of the performing arts (especially in opera productions). On this last day, we met another group of students who are training as dancers in their first semester at Dantzerti, the Higher School of Dramatic Arts in Bilbao.

The Berlin travel group that was able to take part in the residency in Bilbao was a colourful mix of women: Kathrin Frosch, head of set design at the Deutsches Theater, an experienced stage designer with around 30 years of experience and a keen interest in new media and possibilities. Anna Gyapyas, an employee in the DT's communications department, studied cultural journalism and is primarily responsible for the theatre's website, newsletter and digital content for social media. Marie Speckmann, dramaturgy assistant and jack-of-all-trades at the DT. She will soon complete her studies in applied literary studies with a focus on translation. Marie took the minutes at our meetings with the Spanish experts from and, with her excellent Spanish skills, guided us through the city outside of our appointments at Azkuna Zentroa. Last but not least was Karla Mäder, head of dramaturgy at the Deutsches Theater, who accompanied the VR project "Wunderland" from start to finish in Graz and also wrote this text.

Residency upside down – what it takes to make it work

The fact is that in the busy theatre world, where every premiere is inevitably followed by the next rehearsal start, we rarely take the time to reflect deeply on the success of a production in terms of future-oriented quality management. At best, there is a feedback discussion with the ensemble at some point. Critiques in the traditional media are also no longer what they used to be, and in my opinion, theatre people tend to overestimate their own performance and react extremely sensitively to criticism. The laudable exception, of course, are the dramaturgs, who, due to their more rational approach to projects, are often not so emotionally involved that they are perfectly capable of sharing open words of self-criticism with well-meaning colleagues.

Honesty is therefore an essential prerequisite for the success of such a reflective residency. Especially with new media, with which many viewers have no previous experience and are therefore initially overwhelmed and enthusiastic about the experience, it is important to keep a cool, critical head and not be lulled by the enthusiasm of an uncritical audience.

Furthermore, I found it extremely enriching and helpful that we were dealing with a group of highly qualified and experienced colleagues who had no interest in working for us in the future. This meant they could be honest without missing out on any possible job opportunities. The fact that they nevertheless offered friendly and appreciative criticism speaks for a well-developed feedback culture among our Spanish colleagues. In fact, I found the contact with knowledgeable, attentive colleagues who are well connected in their cultural circle and therefore not looking for new contacts at all to be incredibly pleasant. This setup enabled an honest and approachable, but also critical, imaginative and generous exchange.

Insights from the four days of residency

As mentioned, many of the invited guests had little to no experience with VR – a reflection of the general situation among an art-loving segment of the population. With the exception of the Vicomtech team and Jaime de los Rios himself, for 36 out of 40 participants it was the first encounter with the medium. Nevertheless, their professional analysis from their respective fields of expertise or from their youthful perspective was valuable and, overall, insightful for us. As much of the feedback was similar, we have attempted to distil and summarise the most important insights from the many responses.

There was a general interest in the story itself and in the dramatic idea of telling it from the child's perspective. Nevertheless, the combination of conventional cinematic storytelling with 360° VR was mentioned, and the translation of the narrative into a suitable digital form fell short of the possibilities. The interaction between the parents and with the baby (the camera) was also perceived as not really working in a "realistic" way: the parents do not treat the camera like a child. The visibility of the baby's body is missing, but would be important. The child's perspective itself was praised as a great idea and a smart concept, especially because even a baby does not understand everything; therefore, if the film is confusing, that is okay and normal. Problem: expectations of the "child's perspective" are disappointed because all actions and events remain understandable and clear to the viewer.

The narrative could potentially be infinite; the film does not need a starting point or an ending point. A non-linear installation would be interesting. Idea: e.g. with several screens to the right and left of the viewer or with a mobile phone in hand, cyclorama. Other ideas included using spotlight technology/narrative, i.e. again, not a linear narrative, but telling the story through movement through the flat, i.e. depending on where you look, something happens, like in a video game, each viewer creates a different story depending on their personal interest.

Ultimately, the strongest criticism, which we also share, was that the project was filmed like a conventional film and thus failed to exploit the full potential of the VR medium. From a cinematic perspective, one could also criticise the fact that the cuts between scenes are too abrupt; there are no meaningful transitions. Sounds do not come from the direction in which they are generated, which is confusing. In addition, there are too many inputs at the same time, and speakers/players are not always visible, which is also confusing.

Another criticism was levelled at the animation, which is very adult in content; it would be more authentic if it depicted children's basic fear of being left alone by their parents.

Haptics are essential in VR. Therefore, it is important to sit on a chair that corresponds to the chair in the film. Or create an installation where you can move around the room. It would be conceivable to take haptic elements from the film and incorporate them into the experience as real elements, e.g. holding a rattle or a toy in your hand; likewise, a focus on haptic position rather than haptic objects: e.g. building a child's seat that corresponds in size to an adult.

Potential and ideas for future VR work

General notes:

- Consider the target audience from the outset and help design interactive storytelling.
- Prerequisite: development of a new dramaturgy (difference between: visual dramaturgy, theatre dramaturgy, video game dramaturgy)
- Important initial question: What content requires VR?
- Do not impose VR technology if it does not make sense in terms of content.
- Where does the language/sound come from?
- What separation of sight and hearing makes sense?
- 360° direction: requires knowledge and interest in the viewer's sensations
- Use of voice actors instead of theatre actors: they don't need an audience and can perform alone, without spectators.

- Or: special acting coaching is necessary for VR shoots.

Ideas for a theatre presentation:

- Refer back to conventional theatre, as it does not work properly as a pure VR project.
- Tour from room to room within the theatre; at each station, watch a scene with VR glasses to make it an interactive experience
- Create an installation with real actors.
- Involve all the senses: smells, tastes, sounds, touch (e.g. actually feeding the food from the film scenes)

Ideas for a potential reworking and further development of the existing VR material:

- Cut scenes apart and use existing hard cuts to insert surreal scenes.
- Bring inanimate objects to life through animation → Not feasible on stage, therefore exciting for VR theatre
- Turn interesting coincidences into designed effects, expand with audio effects, spotlight narration
- Omit speech, only reproduce images and sounds (perception of the baby)
- Video editing in a new format
- Prepare for other media, reuse fragments, use with students for learning purposes if necessary
- Pass on the material to a theatre writer and develop a prequel or second part (backstory or follow-up story) to be performed as a proper play on stage.
- Convert film to YouTube 360° (making it easy to consume on mobile phones, for example)

For future projects:

- Take lessons learned and redesign the project instead of repeat mistakes
- When continuing work in VR format: don't come up with more content, but expand the perspectives (psychological, historical, non-linear, playful)
- Be bold with abstraction: work less realistically and think more abstractly, also in terms of set and decoration
- Artistic team in the future: combined team needed (combination of film, theatre and dramaturgy teams)
- Involvement of new partners with technical expertise essential in future projects
- Production aspects: VR projects require a very long pre-production period → a question of balance! Cost/benefit?
- Knowledge of the middle ground between technology and dramaturgy is important – both sides must be prepared to relinquish some of their influence

Conclusion

"Wunderland" is not yet a final product, but a test. The process is just as important as the result – and we theatre people should want to explore technology as something that can enrich a result rather than weaken it, even if not everything turns out perfectly. Or, to quote the encouraging closing words of the experts at Vicomtech:

"The potential is visible. 'Wunderland' is a good trial-and-error experiment with a lot of learning potential for the future."

On behalf of the DT team we would like to express our sincere thanks to Barbara Epalza, who made this experience and these insights possible with this unusual residency, which deserves to be applied from time to time in this form in the everyday theatre life for our quality management and also for our analogue theatre productions!

Authors

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Heidi Wiley has been Executive Director of the European Theatre Convention (ETC) since 2009. Under her leadership, ETC has become an established European cultural network with an international programme of artistic collaboration, professional development and advocacy for Europe's public theatres, spanning over 30 countries. She led ETC to become a strategic partner of the European Commission and the recipient of several prestigious prizes, including the 2022 Art Explora – Académie des Beaux-Arts European Award for innovation in access to culture; and European prizes for outstanding achievement in the fields of audience development and cultural heritage. Heidi is a sought after moderator and speaker at European events and conferences. In 2022, Speaker at the 8th Culture & RTBF Meeting; 2021, Consultant for European cultural policy agencies KEA (Brussels) and PPMI (Vilnius); 2020, Co-initiator of the 1st European Theatre Forum of the European Commission and the German EU Council Presidency; 2019, Author for the European Expert Network on Culture and Audiovisual (EENCA). Heidi started her career as international producer and touring manager for artists Victoria Chaplin and the Tiger Lillies, touring around Europe and Asia at major festivals and theatre venues. A studied cultural manager with degrees from La Sorbonne and Leuphana University, she lived and worked over the last 25 years in the UK, US, France and Germany.

Julia Heikkinen is a Project Manager at the Oulu University of Applied Sciences (Oamk) in Finland, specializing in initiatives that bridge art, technology, and well-being. She is prominently involved in the AVARA Art & Tech event and projects like ACuTe (Culture Testbeds for Performing Arts and New Technology

Hester van der Ent is a professor of the course "Creative Media and Game Technologies" and a researcher in the XR laboratory at Saxion University of Applied Sciences. An expert in areas such as design thinking, consumer behavior and user experience, she is a project leader for Saxion's participation in ACuTe, as well as a co-designer of the Design Thinking Toolkit and related workshops.

Herman Paassen is a senior lecturer in the Creative Media and Game Technologies program at Saxion University of Applied Sciences in Enschede, the Netherlands. He graduated from the Minerva Academy of Fine Arts in Groningen, where he specialized in graphic design, illustration, and computer animation. Initially, he worked as a 3D designer and animator for film and television productions and has extensive experience in interactive media, working as an interaction and graphic user interface designer at various multimedia agencies

Paulien Geerlings is a Dutch dramaturg and playwright. She studied Philosophy and Theatre Studies at the University of Amsterdam and graduated from DasArts, a post-master programme in the performing arts. Since the founding of de Toneelmakerij, the Amsterdam-based theatre company for young audiences, she has been its head dramaturg and is responsible for international collaborations. At de Toneelmakerij, she has worked on numerous translations and adaptations, including My Mother Medea, Sadness and Joy in the Life of Giraffes, and Hamlet, which won the Kaas & Kappes Award in 2021. Under her artistic leadership, the international collaboration project Young Europe IV, focused on new texts for the classroom, received the Art Explora Award in 2022. Geerlings has a strong focus on developing new repertoire and regularly publishes essays on representation, new technologies in theatre, and her research into care dramaturgy. She recently wrote a main-stage play addressing the Dutch colonial history in Indonesia. In 2024, Patchwork Girl, to which she contributed as one of the writers, was awarded the prestigious Prix Ars Electronica for Digital Humanity. She is also a member of the Advisory Board of the European Theatre Convention (ETC).

Nina van Tongeren (*1999) is a Dutch playwright and dramaturg. Since 2022, she has been the resident dramaturg at De Toneelmakerij, where she also writes one production per year. Her most recent piece for the company was »Giselle« (8+) in 2024, a radical mainstage adaptation of the classical ballet, exploring themes of social class. She graduated from University of the Arts Utrecht (HKU) in 2022 with the youth play »Ndumbé and the Wolf Gang« (9+) and a thesis on the importance of meaningful representation in theatre. That same year, she wrote »Swimming to Ndakaaru« (8+) with De Toneelmakerij and Urban Myth, a story about the lingering effects of colonial history from an African perspective. Her play 'Cuckoo's nest/Kuckucksnest' (10+) was awarded the Kaas & Kappes Award for best youth theatre text in the Dutch-German language area in 2024 and the Charlotte Köhler Stipendium of the Dutch authors' union in 2025. Alongside Paulien Geerlings, Nina also engages in research and writes essays on representation, care dramaturgy, and the position of marginalized voices in the performing arts. She is currently writing »Dachshund«, her first work for adult audiences, for the Amsterdam Theater Bellevue. »Dachshund« will premiere in said theatre in 2026, before it will tour through the country in 2027.

Peer Perez Øian is a Norwegian theatre director. He holds a bachelor's degree in performing arts from Emerson College in the USA (1999–2003), and has a five-year directing education from the Oslo National Academy of the Arts / Norwegian National Academy of Dramatic Arts (2005–2010). He won the 2011 Hedda Award in the category for best direction for his interpretation of Sjuk ungdom by Ferdinand Bruckner, created for Det Norske Teatret . He directed the theatre production Solaris korrigert (Det Norske Teatret, 2015), which received the 2016 Hedda Award in the category "Performance of the Year". Among his other directing assignments are Hedda Gabler (National Theatre in 2010, resumed in 2013), The Fundamentalist (The Norwegian Theatre, 2011), A Midsummer Night's Dream (The Nationale Scene , 2012), To the Congo (Our Theatre , 2012), Antichrist (The Norwegian Theatre, 2013), Biedermann and the Firemen (Rogaland Theatre , 2013), Twenty Thousand Pages (The Norwegian Theatre, 2014), Little Eyolf (Our Theatre, 2014), Hamlet (The Norwegian Theatre, 2014) and Constellations (The National Theatre, 2015).

Anders Hasmo has been a dramaturg at Det Norske Teatret in Oslo since 2016, contributing to a wide range of productions across genres and formats. He holds a Master's degree in Dramaturgy from Aarhus University, where his thesis examined developments in institutional theater. Alongside his dramaturgical work, he has a particular interest in how new technologies may influence the future of theater, and has been involved in the Creative Europe projects ACuTeand European Theatre Lab: Drama Goes Digital. He has also worked at Den Nationale Scene in Bergen and held teaching engagements at several universities.

Christy Romer is Communication Manager at the European Theatre Convention (ETC). He studied International Relations at the London School of Economics and Political Science. After internships at political consultancy firms and national newspapers, he spent four years as a journalist at the arts policy magazine ArtsProfessional, then contributed articles as a freelance writer to The Guardian, The Independent, El País and City Lab. He joined ETC in October 2020.

Oxi Koskelainen is a theatre director, dramaturge, and performance maker. They hold a Master's degree in Directing from the Theatre Academy Helsinki. From 2010 to 2013, they served as artistic director of Ylioppilasteatteri in Helsinki. Since 2013, Koskelainen has worked as a freelance artist at the intersection of institutional theatre, visual arts, and performance.

Tero Takalo is a co-founder and art director at Studio Outo, based in Oulu, Finland.

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Denisa Neațu (b.2001) is a theatre critic and cultural manager. She holds a BA and a research MA in Theatre and Performance Studies from the National University of Theatre and Film (UNATC) in Bucharest. Since 2023, she has been a dramaturg at Marin Sorescu National Theatre in Craiova and, since 2025, director of Theater Networking Talents Festival for Young Directors. She collaborates with major theatre and film festivals, contributes to Teatrul Azi, and is editor-in-chief of SpectActor from 2026. Her work in dramaturgy includes original texts, translations, and adaptations for various theatre productions.

George Albert Costea (b. 1984) is a Romanian theatre and film actor, and a member of the artistic ensemble of The "Marin Sorescu" National Theatre in Craiova. Within this institutional framework, he has also developed substantial expertise in the management of collaborative artistic projects financed through European funding programmes. As an actor, he has collaborated with other public theatres and cultural organisations, and has created and performed one-person shows positioned at the intersection of fiction, autobiographical theatre, and the integration of emerging digital technologies. Through these works, he has explored themes such as love, sexuality, and family from a queer perspective. In the Romanian public sphere, he is also recognised for his advocacy for LGBTQIA+ rights. In addition to his artistic practice, he has worked as a trainer for youth theatre groups and has contributed articles to Teatrul.Azi magazine, addressing topics on European regulatory frameworks for artificial intelligence and sustainability in theatre. In 2024, he was awarded a PhD in Theatre and Performing Arts, with a dissertation examining the impact of European cultural policies on public theatres in Romania over the past approximately 25 years.

Ciprian Făcăeru navigates the roles of XR architect, director, and researcher, working across the reality–virtuality continuum. He leads the design and production of immersive experiences that enhance perception and presence through virtual and augmented layers. By turning space into an interactive narrative medium, he examines the mediating role of technology and the meaning-making capacity of mixed reality. With a PhD in New Media Studies and over 10 years of experience in VR/AR/MR, Ciprian is a research assistant at the Research, Development, and Innovation Department (DCDI) of the "I.L. Caragiale" National University of Theatre and Film (UNATC), co-founder and creative director of Augmented Space Agency (ASA), an XR design and development studio based in Bucharest. His work spans artistic, cultural, educational, and research contexts. Notable contributions include the development of a virtual embodiment installation for You Are Another Me: A Cathedral of the Body, directed by Adina Pintilie and presented at the 59th Venice Biennale. He also played a leading role in developing the virtual components of the Museum of Abandonment, an award-winning project that explores themes of societal abandonment. In academic research, he contributed to the NEURESIL project by designing an EEG-integrated VR simulation to investigate neural mechanisms of psychological resilience in adolescents and young adults.

Taavet Jansen is an innovative artist and creative researcher specializing in digital and experimental performing arts. He co-founded the art collective e¯lektron, is a lecturer at the UT Viljandi Culture Academy, and is a doctoral student at the Estonian Academy of Arts. Traditionally working within the confines of black box theater, Jansen's recent work has expanded into diverse digital platforms, reflecting his evolving interest in the intersection of art and technology.

Jonathan Thonon is Deputy General Manager – Director of International Relations and Development at Théâtre de Liège – Théâtre d'Europe. He worked for 10 years as a researcher in the Department of Arts and Communication Sciences (ULiège) and CRECI (Paris III) before joining the Théâtre de Liège – Théâtre d'Europe in 2014. He is now responsible for European projects and innovation. In this capacity, he is notably the coordinator of IMPACT Forum whose objective is to build bridges between the arts, sciences and technologies.

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Vanessa Hannesschläger is head of European Collaboration at Ars Electronica. She holds a PhD in literature from the University of Vienna and teaches

digital humanities in Austria and Sweden. Before joining Ars Electronica, Vanessa worked on developing European digital research infrastructures and numerous projects involving physical and digital archives for cultural heritage and art. In the European policy context, Vanessa advocates for digital infrastructures for the arts and humanities, data and legal literacy, the Commons, and Open approaches.

Carla Meller is Head of International Collaborations at the Academy for Theatre and Digitality. She worked for ten seasons in various positions at the Residenztheater in Munich, including as a scheduler in the artistic operations office. At the same time, she gained valuable experience as a junior consultant advising cultural organizations. Her academic background includes a degree in political, economic and social sciences from Sciences Po Paris and McGill University in Canada, as well as a master's degree in cultural management. In 2021, she completed the extra-occupational further education in Theater and Music Management at the Ludwig-Maximilians-University Munich. Since the beginning of 2023, Carla Meller has been part of the team at the Academy for Theater and Digitality, where she is responsible for setting up a wide variety of collaborations. In this role, she brings her extensive experience in cultural management to network the Academy in the global theater landscape and promote innovative, forward-looking projects.

Marko Bratuš is member of ETC Theatre Advisory Council and Artistic Director of SNG Nova Gorica (Slovenia). He studied dramaturgy and radio directing at the Academy for Theatre Radio Film and Television at the University of Ljubljana, Slovenia. He worked both as a theatre and film director, as well as a dramaturge, musician, theatre pedagogue, new format developer and screenwriter for television, film, radio and theatre. He was artistic director at Gledališče Glej - NGO experimental theatre in Ljubljana between 2013 and 2016. Marko Bratuš has worked since 2016 as artistic director at the Slovenian national theatre Nova Gorica.

Raivo Kelomees (*1960) is an artist and art historian. He has studied psychology at the University of Tartu and art history and design at the Estonian Academy of Arts. He is a senior researcher at the Faculty of Fine Arts of the Estonian Academy of Arts and a professor at Pallas University of Applied Sciences. Kelomees is the author of the books "Surrealism" (Kirjastus Kunst, 1993) and the collections of articles "Ekraan kui membran" (Proceedings of the Tartu Art College, 2007) and "Social games in the art space" (EKA, 2013). His doctoral thesis is "Postmateriality in art". Indeterministic art practices and immaterial art" (Dissertationes Academiae Artium Estoniae 3, 2009). Together with the British researcher Chris Hales, he edited the collection of articles "Constructing Narrative in Interactive Documentaries" (Cambridge Scholars Publishing, 2014). In cooperation with Varvara Guljajeva and Oliver Laas, he edited the collection of articles "The Meaning of Creativity in Age of AI" (EKA Press, 2022). Kelomees has been performing at exhibitions since 1980. He has preferred electronic and digital art, but painting has also been among his mediums. Most recently, he appeared at the exhibition "Surrealism 100. Prague, Tartu and other stories…" (Curators: Anna Pravdová (Prague National Gallery), Joanna Hoffmann (Tartu Art Museum) and Kristlyn Liier (Tartu Art Museum)).

Karla Mäder is Head Dramaturg at Deutsches Theater Berlin in German. She was born on the island of Rügen. After completing her schooling in East Berlin, she spent a year at a high school in Oregon after the fall of the Wall, receiving a scholarship from the US government. From 1992, she studied General and Comparative Literature at the Free University of Berlin and Theater Studies/Cultural Communication at the Humboldt University of Berlin. From 1997 to 2000, she was Head of Press and Public Relations at the theaters of the state capital Kiel, and then, until 2007, she worked as a dramaturg in the Hanseatic City of Lübeck, where she occasionally also supervised operas. In 2007, she held the same position at the Stadttheater Bern (Director of Drama Erich Sidler, and from 2012 Director of Drama Iris Laufenberg). She has also taught at the German Student Academy, the Bern University of Teacher Education, the Institute for Theatre Studies at the University of Bern, and the Graz University of Art and Design in the departments of acting and stage design, performance theory, and production dramaturgy. From the 2015/2016 season to the 2022/2023 season, Karla Mäder was the head dramaturge at the Graz Schauspielhaus.

Bárbara Epalza Azqueta is Head of Marketing at Azkuna Zentroa. After completing secondary school in France, she moved to Bilbao where she graduated with a degree in Marketing. She completed an MBA/European Management Programme master's degree where she learned the importance of cooperation and cultural exchange. She has 25 years experience working in strategic and operational marketing, analyzing and studying the market, and creating services and products. Half of her career has focused on finding solutions and connecting with companies and organisations for social, cultural, and contemporary innovation projects.

Fernando Pérez is Cultural Programming Manager at Azkuna Zentroa - Alhóndiga Bilbao. Specialising in cultural management and the performing and visual arts, Fernando Pérez has a degree in Basque Philology, a Master's degree in the International Leadership Programme in Visual Arts Management and in Cultural Management, Music, Theatre and Dance, and a Postgraduate degree in European Cultural Policies. He has more than 30 years of experience in cultural management and artistic direction. He was director of Azkuna Zentroa - Alhóndiga Bilbao, director of Culture for the Government of Navarra, director of BAD, the Bilbao Theatre and Dance Festival, and a member of the advisory committee of the Japan Foundation for Performing Arts, among others. He participates in various commissions for the management of international cooperation projects on new audiences and emerging technologies in the arts within the framework of the Creative Europe Programme, which have been active over the last decade.

Partners

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Oulu University of Applied Sciences (Oamk) is a multidisciplinary university of applied sciences, whose close cooperation with companies and communities lays the foundation for high-quality and up-to-date training of digital competences. Oamk's expertise in digital solutions is founded on its strong experience supporting the Oulu region to become a global technological hub with technologies such as 5G, future 6G and wireless connectivity. The management of the ACuTe project will take place within the Department of Media and Performing Arts which has previous experience leading European level research and development projects. Overall, Oamk has supported technology testbed infrastructure and methodologies associated with software and hardware development in fields such as mobility and cloud computing and is expanding project work and programs in the field of digital performance. Additionally, the city of Oulu has been designated as the 2026 European Capital of Culture. A core theme for activities leading up to and during 2026 is the interface between art and technology of which Oamk has a strong regional role for production development and capacity development.

European Theatre Convention (ETC) is the largest network of public theatres in Europe, with over 75 members in more than 30 countries. It is an arts organisation that promotes European theatre as a vital platform for dialogue, democracy and interaction that responds to, reflects and engages with today's diverse audiences and changing societies. ETC is supported by the Creative Europe Programme of the European Union. www.europeantheatre.eu

Ars Electronica is a cultural institution, educational facility and R&D lab based in Linz, Austria. Like no other institution, Ars Electronica represents a comprehensive approach to working with techno-cultural phenomena and enjoys a worldwide reputation for excellence. It is comprised of four divisions: the Ars Electronica Festival, the Prix Ars Electronica, the Ars Electronica Center and the Ars Electronica Futurelab. These four divisions mutually support one another, constituting a circuit of creativity. The FESTIVAL as test environment and the PRIX as competition of the best and brightest — both of which are international, artistic, experimental and focused on the leading edge. The CENTER as year-round presentation and interaction platform—local, educational and entertaining; and the FUTURELAB as R&D facility—innovative, creative, endowed with strong technical competence

and implementation skills, and linked up to a global network of universities and research facilities.

Deutsches Theater Berlin is one of the largest theatres in the German-speaking world. Situated in the centre of Berlin, it was built in 1848 as a commercial theatre, but only one generation later, under a new management and the name "Deutsches Theater" (German Theatre), it had developed to become one of the most significant and influential theatres in the world – a status which it still holds today. For more than 150 years, numerous actors, directors, playwrights… as well as technical innovations (like the invention of a revolving stage, the use of electricity, light design, up until video design and digital technologies) pushed the artistic means of the theatre medium further.

Saxion University of Applied Sciences (SUAS) As one of the largest institutions for higher education in the Netherlands, Saxion University of Applied Sciences covers a broad spectrum in education and research. Within these activities there is a strong focus on collaboration with industry and societal organizations in solving practical problems through innovative technology, co-creation, and collaboration between disciplines. A central theme is that of living technology that looks at the interaction between technology and society. Besides various schools and research groups, Saxion has various labs around key-enabling technologies that allow for its application in various research domains and study programs. One of these labs is the Saxion XR (Mixed Reality) lab. The Saxion XR Lab has a mission to bring together education, research, and industry through projects in the areas of XR, game technology, storytelling, AI, mobile, serious gaming, and computer graphics. Within the lab there is an active learning community which involves students, teachers, researchers, and industry professionals that work together to generate new knowledge. Within the lab there is a strong focus on experimenting with technology and building high quality prototypes for various domains which involve the state-of-the-art technologies.

Academy for Theatre and Digitality Since its founding in 2019, the Academy for Theatre and Digitality has established itself locally, nationally, and internationally as a central point of contact in culture, science, and teaching. It is recognized as a consultant to a whole range of national (cultural) policy institutions and cultural policy project developers, and acts as a point of contact for expertise and, above all, as an internationally outstanding artistic research institute and network hub.

SNG Nova Gorica The Slovene National Theatre Nova Gorica is the successor of the Primorsko dramsko gledališče, which was founded in 1969. Between 1972 and 1991, the theatre organised the Gorica Meeting of Small Stages festival (later the Alpe Adria Theatre Meeting), which importantly influenced the development of the theatre and its affirmation in Slovenia and internationally.

Det Norske Teatret Det Norske Teatret – The Norwegian Theatre – is the largest theatre in Norway with an over 100 year long tradition. Its repertoire varies from musicals to new interpretations of Norwegian and European classics, and new Norwegian and international drama. It is sited in the capital Oslo in a large, modern building with four stages, and one satellite stage in another part of Oslo; Rommen.

De Toneelmakerij The Toneelmakerij, based in Amsterdam, is a theatre company for children and teenagers, as well as the adults in their lives. It is also a place for professional theatre makers – both experienced and new – from many different disciplines. We create performances and we tell stories: new ones written for us and old ones retold. We enjoy language, powerful imagery and music. We use a wide range of theatrical resources to produce theatre that is adventurous and meant to surprise.

Azkuna Zentroa – Alhóndiga Bilbao is the public centre of Bilbao for Society and Contemporary Culture, the agora that aims to promote the conversation between the people and the artistic context that share this convulsive contemporary time. Azkuna Zentroa promotes respect for cultural and social diversity, integration, equal opportunities and access to information and knowledge with the professional artist sector as connector and catalyst through four different lines of programming: Contemporary Art (artistic exhibitions and interventions), Live Arts (performance, dance and experimental music), Film (experimental audio-visual narratives), and Literature that dialogue with each other through Education and Mediation, plus Sustainability and Diversity. Azkuna Zentroa has taken part in numerous EU funded projects and will foster production support across partner institutions and the wider performing arts sector.

EKA Estonian Academy of Arts Established in 1914, the Estonian Academy of Arts is the only public university in Estonia providing higher education in fine arts, design, architecture, media, visual studies, art history, and conservation. EKA is striving to be among the leading international centres of innovation

in the field of visual culture. Currently there are more than 1 000 students enrolled in the Academy, with many participating in exchange programmes at international partner universities. Research at the Estonian Academy of Arts is oriented towards practice, technology, theory, society and culture. Alongside high-level humanities research projects in art history, visual culture and Soviet culture, our priority is to develop artistic research on an international level. Artistic research at EKA is conducted in a variety of fields and encompasses numerous methods and tools of knowledge production such as artistic research in contemporary art, design research, practice based research in architecture and urban design, conservation combining both practical elements and theory-based research, and cultural heritage research.

Theatre de Liège One of four dramatic centres in the Federation Wallonia-Brussels, the Théâtre de Liège (TDL), formerly Théâtre de la Place, has been reinvigorated by an artistic programme headed by Serge Rangoni in place since 2004. Located in Liège, TDL intends to consolidate its partnerships with local and regional actors and build bridges with international institutions as a European centre for theatrical and choreographic production. In recent seasons, the theatre has co-produced various European productions and, since the 2005/2006 season, every two years hosts the Emulation Festival, dedicated to newer Francophone Belgian theatre companies. In addition to this festival, TDL also organizes the international contemporary dance festival Pays de Danses, held every two years.

Teatrul National Marin Sorescu Craiova "Marin Sorescu" National Theatre of Craiova is more than 165 years old, and has always been one of the most important theatres in Romania. After 1989, it participated in a large number of renowned international festivals such as the Edinburgh International Festival, the Festival in Avignon, the Tokyo Shakespeare Festival, the Theatre Festival of Americas in Montreal, the Melbourne Arts Festival, the Scenic Arts Festival in Sao Paulo, the Lincoln Center Festival in New York, the Theatre of Nations Festival in Seoul etc, and it was awarded several important prizes worldwide. It is worth mentioning that the reputed British magazine "The Stage" compared the National Theatre of Craiova to Brecht's Berliner Ensemble and Peter Brook's Royal Shakespeare Company.

Oulun Teatteri is the home of northern theatre art, offering colourful experiences, insights and unforgettable stories for all ages. We are a forward-looking, nationally significant theatre that dares to become a topic of conversation by also reaching out to new audiences and ways of working. It is an arts organization with over a hundred employees, producing 7–8 premieres per year on four different stages. In addition, the program includes many guest performances.

About ETC

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Founded in 1988, the European Theatre Convention (ETC) is the largest network of public theatres in Europe. It is an arts organisation that promotes European theatre as a vital platform for dialogue, democracy and interaction that responds to, reflects and engages with today's diverse audiences and changing societies.

ETC's current four-year programme of activities, European Theatre: BREAK THE MOULD, is co-funded by the European Union and supports networking, professional development and artistic collaborations for theatre staff across Europe — championing theatre as a key European art form for the 21st century.

ETC has more than 75 members from 33 countries and is supported by the Creative Europe Programme of the European Union.

About Oulu University of Applied Science (OAMK)

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Oulu University of Applied Sciences (Oamk) is a multidisciplinary university of applied sciences, whose close cooperation with companies and communities lays the foundation for high-quality and up-to-date training of digital competences. Oamk's expertise in digital solutions is founded on its strong experience supporting the Oulu region to become a global technological hub with technologies such as 5G, future 6G and wireless connectivity. The management of the ACuTe project will take place within the Department of Media and Performing Arts which has previous experience leading European level research and development projects. Overall, Oamk has supported technology testbed infrastructure and methodologies associated with software and hardware development in fields such as mobility and cloud computing and is expanding project work and programs in the field of digital performance.

Additionally, the city of Oulu has been designated as the 2026 European Capital of Culture. A core theme for activities leading up to and during 2026 is the interface between art and technology of which Oamk has a strong regional role for production development and capacity development.

ETC Publications

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Journal
The annual ETC magazine since 2017

Casebooks
STAGES Sustainable Theatre — *A Casebook (2025)*
Fabulamundi New Voices: Diversifying Theatre — *A Casebook* (2025)
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Future Laboratory: Artistic Research in Theatre — *A Casebook (2025)*
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The Art of Ageing — Bringing the Burning Issue of Global Demographic Change on Europe's Stages. Creative Research — a Documentary by the European Theatre Convention *(2015)*
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How can theatres use the latest technologies in their productions, stage designs, and when interacting with audiences? The ACuTe – Culture Testbeds for Performing Arts and New Technology project, co-funded by the European Union, aimed to test several answers to this question.

From 2022–2026, 14 leading theatres, universities and creative arts organizations, from 10 European countries, tested new approaches to embedding VR, video game narratives, animation, projections, and geocodes to challenge the way they usually work with new technologies. Their reflections are shared in this booklet of honest reflections and learning.

Edited and published by the **European Theatre Convention (ETC),** this casebook documents experiences that theatres had in testing and prototyping new technologies in their venues and performances, encouraging theatre-makers, audiences and cultural institutions to rethink their approach to technology for the future.