Ideas in Action

TUM Think Tank
2024

Annual Report 2024
TUM Think Tank

Munich School of Politics and Public Policy
at the Technical University of Munich

Contents

Photo: Adobe Stock

A Message from the Managing Director

2024 was a year of momentum and reimagination at the TUM Think Tank. As we look back, I find myself returning to a central question that shaped much of our work this year: What does it mean to innovate responsibly in times of uncertainty? In an era defined by rapid technological shifts, geopolitical tension, and growing societal fragmentation, this question grounds us—and challenges us to think beyond our own disciplines, silos, and comfort zones.

At the TUM Think Tank, we don't just observe change; we engage with it. Our mission is to build bridges between science and society — and to ensure that knowledge, ideas, and technologies are translated into meaningful impact for the public good. What makes our work distinctive is not so much just what we do — from AI governance to digital sovereignty, from quantum policy to ethical data use — but how we do it: collaboratively, exploratively, and with a deep commitment to the public interest.

This past year, we saw this approach come to life. We launched several new labs and initiatives, including those exploring sustainable smart cities, responsible innovation across the AI lifecycle, government technology and innovation, ethical data, content moderation, or how to finance the green transformation. We hosted workshops, conferences, and dialogue formats that brought researchers, students, policymakers, artists, and practitioners from industry and civil society into shared spaces of experimentation. Our community expanded to over a dozen active labs, working groups, and programs—and together we secured over €5 million in third-party funding to support real-world impact. These numbers, while significant, matter most because they reflect something deeper: the growing trust in our role as a research-to-action platform—a space where complex challenges are met with creativity, courage, and collaborative problem-solving.

One moment that stays with me came during a workshop on content moderation: A civil servant, a technologist, and a representative from civil society found themselves sketching out joint approaches and prototype solutions to a tricky question on how to best address hate speech and create more healthy discourse online. It wasn't perfect — and at times the conversation was difficult — but it was real. That, to me, is what the TUM Think Tank is about: creating the conditions for unlikely conversations and unexpected collaborations. We know that building these bridges across disciplines and sectors is not always smooth. It can be messy, and it takes time. But it is precisely in these moments of friction that new insights emerge.

Personally, I am extremely excited that our fellowship programs continued to grow in both depth and ambition. The inaugural cohort of Friedrich Schiedel Fellows demonstrated how early-career researchers can bring a society-centered mindset to real-world challenges, while our Fellows of Practice brought in invaluable experience from government, industry, and civil society. Their work — whether mapping the role of AI in elections, the push for public interest AI, or piloting strategies for digital sovereignty — reminded us of the importance of applied expertise and cross-sectoral learning.

At the heart of all this is our community. The TUM Think Tank is not a static institution — it is a living, breathing network of people committed to shaping a more just, better and imaginative future. I want to thank everyone who contributed to this community in 2024: our team, our labs, our fellows, our university partners & leadership, and our many collaborators across sectors and disciplines. From seasoned policymakers to first-year students, it's your ideas, your energy, and your trust that make this space what it is.

Looking ahead to 2025, we aim to deepen the foundations we've built. We will strengthen cross-lab collaboration and develop shared tools and strategies that help our ecosystem translate insight into action. We'll explore new thematic frontiers while continuing to engage with the big questions that define our time. And we'll remain committed to what makes our work meaningful: staying curious, staying critical, and staying connected to the needs of society.

We don't pretend to have all the answers. But we do believe in asking questions—and in doing so, creating space for change to emerge. Complexity isn't something to fear but what we aim to embrace. It's an invitation to think differently, to act together, and to shape futures that are more inclusive, resilient, and open.

Thank you for being part of this journey. Let's keep building it — together.

Dr. Markus B. Siewert
Managing Director, TUM Think Tank

About the
TUM Think Tank

TUM THINK TANK

Workshop with the GovTech Campus Germany. Photo: TUM Think Tank

Transformation Finance Lab Breakfast. Photo: TUM Think Tank

Workshop with the GovTech Campus Germany. Photo: TUM Think Tank

At the TUM Think Tank, we foster interdisciplinary connections among academia, civil society, industry, and public authorities to harness technology for the public good.

By embedding democratic values into technology's design, application, and governance, we ensure that innovations remain both impactful and responsible. We cultivate a community of experts dedicated to the public interest and build innovation networks that thrive on collaboration, experimentation, and learning. Through co-design with diverse stakeholders, we drive forward technological solutions that tackle society's most critical challenges.

Since April 2022, we have incubated a total of 11 labs and working groups at the TUM Think Tank. These have involved around 50 professors as well as 50 postdocs and PhD students from the Munich School for Politics and Public Policy, five TUM Schools, and the campuses in Straubing and Heilbronn.

In 2023, our labs and programs successfully secured approximately EUR 4.2 million in third-party funding. This includes projects such as "QuantWorld" in the Quantum Social Lab (funded by the BMBF with EUR 1.9 million) and "Smart Sustainable Cities" in the Urban Digitainability Lab (funded by the Mercator Foundation with EUR 1.2 million).

In 2024, our labs and programs have raised approximately EUR 5.4 million in third-party funding. This includes projects such as "AI4POL" (funded by EU Horizon with EUR 3.0 million) and "Hemispheres" (funded by Erasmus+ with EUR 1.5 million).

At the TUM Think Tank, we believe that technology must be built for and in the public interest—empowering democratic societies and institutions, advancing sustainability and equity, and fostering resilience in an interconnected world.

Our approach is rooted in interdisciplinary and intersectoral collaboration, emphasizing the cultivation of communities and practices dedicated to public interest, and building innovation systems that thrive on collaboration, experimentation, and co-learning. Through co-design and co-creation with stakeholders from academia, civil society, industry, and the public sector, we address some of society's most critical challenges, focusing on building responsible technologies

AI Roadshow at the Bavarian State Ministry for Digital Affairs. Photo: TUM Think Tank

Completed Labs & Programs

Reboot Social Media Lab

Mobilität.Leben

Generative AI Taskforce

Planned for 2025

Youth & Media Lab (PI: Sandra Cortesi)

Law & Tech Lab (PI: Boris Paal)

Public Engagement Lab (PIs: Anne Rademacher, Sabina Leonelli & Jörg Niewöhner)

From Vision to Reality
Driving Responsible Technologies and Society-Centered Innovation at the TUM Think Tank

Our Five Mechanisms for Driving Impact

To achieve real-world impact, we focus on five core mechanisms that shape our theory of change:

Catalysing Innovation Ecosystems

1 We believe that innovation thrives where diverse expertise converges to co-design ideas and co-create solutions. To drive meaningful change, our labs build strong partnerships, bring together communities of practice from all sectors, and engage in networks and ecosystems where innovation can flourish.

Incubating Transformative Innovation

2 At the TUM Think Tank, we don't just think—we act. Our labs, programs, and initiatives provide inter-disciplinary environments where approaches and solutions—both technical and non-technical—are developed, tested, and iterated. We prioritize building, shaping, and realizing novel ideas to foster transformative innovation.

Building Capacity with Stakeholders

3 Empowering stakeholders to navigate rapid techno-logical change is central to our mission. In various labs, we design training programs, learning opportunities, and platforms that equip professionals, academics, policymakers, and institutions with the skills and tools to stay ahead in an evolving digital landscape.

Developing Talent with Young Researchers

4 As part of one of Europe's leading universities, we are dedicated to nurturing the next generation of "movers and shapers," "builders and change-makers." Our labs offer students hands-on opportunities to engage with real-world challenges. We actively pro-mote student initiatives at the intersection of tech-nology and social sciences, aiming to foster a new generation of public entrepreneurs and innovators.

Setting the Agenda & Claiming Thought Leadership

5 In today's complex and fast-paced socio-technical landscape, we strive to shape public discourse and high-level discussions. Through evidence-based analysis, thought leadership, and expert engagement, our labs raise awareness of the opportunities and challenges of emerging technologies and promote human- and society-centered innovation.

Immersive Realities Hackathon. Photo: TUM Think Tank

Operating in a Unique Innovation Ecosystem

Located at the Munich School of Politics and Public Policy (HfP) at the Technical University of Munich (TUM), we operate within vibrant ecosystems that unite academia, civil society, industry, startups, and the public sector. By combining TUM's entrepreneurial mindset with the visionary expertise of our research and innovation labs, we bridge the gap between traditional academic processes—which are often slow and long-term—and the need for rapid, impact-driven innovation.

To maintain agility, we continuously update our innovation strategy and activate existing resources quickly, ensuring that external funding serves as a catalyst rather than a bottleneck. Our innovation community thrives on open membership structures that connect researchers from HfP and TUM with partners across all sectors and around the globe.

Looking Ahead: Fostering Cross-Lab Collaboration & Synergies

Our journey at the TUM Think Tank is one of continuous evolution. By combining entrepreneurial spirit with visionary expertise, we are building an adaptive and sustainable innovation ecosystem. We connect disciplines, empower people, and transform ideas into actionable solutions that benefit society.

In 2025, we will emphasize fostering interdisciplinary collaboration and identifying synergies that enhance impact across our labs, initiatives, and programs. We will develop frameworks, templates, and innovation strategies through iterative processes, working hand-in-hand with our labs to ensure our collective efforts drive meaningful change.

6 new labs & initiatives
120 (co-)organized events
5.4 Mio € of third party funding
7 new team members

The TUM Think Tank
Core Team

Yerkenaz Arinova, Project Manager

What do you enjoy most about working at TTT?
What I enjoy most is the exciting variety of topics and the in-depth collaboration with researchers and members of our TUM Think Tank Labs and Initiatives. From ideation and early conceptualization to the practical application of tools, dashboards, and events with stakeholders, our mission of putting technology at the service of the public interest creates a dynamic and multifaceted work environment.

Felix Beer, Ecosystem Manager

What question should society ask itself more often about technology? I believe that we should ask: "How might we drive technological advancement in the service of the public interest?" Too often, innovation is framed as neutral progress rather than the outcome of design choices shaped by power, values, and culture. At the TUM Think Tank, we work to make these dynamics visible and negotiable—so that public interest, not just commercial gains, guides technological development. Asking this question helps shift our focus from what's possible to what's desirable – it invites democratic imagination into the heart of digital transformation.

Jennifer Bettinger, Creative Program Manager

What question should society ask itself more often about technology? Society should ask: 'How can we ensure that technology creates a net-positive impact?' Instead of just asking what tech can do, we need to ask what it should do. This means evaluating responsibility across all tech domains, not just AI, and aligning ethical innovation with financial viability. Since our economic systems aren't changing overnight, we must embed responsibility into existing incentives. By asking these questions more often, we can shift from reactive fixes to proactive, inclusive tech development.

Arfa Khan, Graduate Assistant

Which societal challenge do you think technology could solve best? Technology is best suited to solving the challenge of inequality in access to essential resources—whether it's education, healthcare, or economic opportunity. The digital revolution has already shown how scalable solutions can reach millions, breaking traditional barriers of geography and privilege. EdTech platforms can bring quality education to underserved communities, AI-driven diagnostics can make healthcare more affordable and widespread, and fintech innovations can provide financial services to the unbanked. The key is intentional innovation—ensuring that technological advancements are designed to uplift rather than widen the gap. When applied thoughtfully, technology has the power to create a more inclusive and equitable world.

Dr. Gesa Lüdecke, Community & Outreach Manager

What question should society ask itself more often about technology? Digitalization in the context of sustainability is often primarily discussed in terms of the resource and energy consumption linked to servers. In my view, this is a rather simplistic and outdated perspective. The technologies are already in place, and the more important question now is how they can be harnessed to benefit the greater social and ecological good. To me, this is a fundamental societal challenge and should be discussed more often. With its own Urban Digitainability Lab, the TUM Think Tank provides proof of concept that the integration of sustainability and digitalization is working. Sometimes, a new perspective on the commonalities between the two is all that's needed.

Dr. Philip Pfaller, Innovation Manager

What do you enjoy most about working at TTT?
What I enjoy most is the exciting variety of topics and the in-depth collaboration with researchers and members of our TUM Think Tank Labs and Initiatives. From ideation and early conceptualization to the practical application of tools, dashboards, and events with stakeholders, our mission of putting technology at the service of the public interest creates a dynamic and multifaceted work environment.

At the TUM Think Tank, we bring together experts from diverse backgrounds who are passionate about shaping the intersection of technology and society. Our team works across research, policy, and innovation to ensure that technology serves the public good.

Photos: TUM Think Tank, Yannic Plumpe, Arfa Khan

Lil Emery, Graduate Assistant

Which societal challenge do you think technology could solve best? For me, the real challenge isn't just finding new problems to solve with tech, but also about ensuring we keep sight of what really matters along the way. Too often, progress is measured in terms of efficiency and competition, which can result in technologies that unintentionally drive isolation, polarisation, or environmental harm. That's why I value that the ThinkTank prioritises ethical considerations, and brings together so many talented experts who are motivated to build a better future for everyone. Together, I hope we can encourage the development of tech which helps people to connect and build sustainable, fulfilling lives, without compromising our wellbeing, societies, or the natural world in the process.

Kenzi El Shaer, Graduate Assistant

What do you enjoy most about working at the TUM Think Tank? Working at the TTT is an endless intellectual adventure. One moment you're discussing content moderation strategies; the next you're exploring emerging technologies. The interdisciplinarity keeps things dynamic—there's always something new to learn, fresh perspectives to engage with, and complex problems to tackle. Perhaps the most rewarding aspect is the tangible impact. It's one thing to study complex issues, but it's another to contribute to shaping policy, influencing public discourse, or providing insights that help decision-makers navigate uncertainty. There's a sense of purpose in knowing that your work, however small, is part of a larger effort to drive meaningful change.

Eric Jacob, Graduate Assistant

What question should society ask itself more often about technology? Many widely hyped technologies often fail to live up to expectations in many scenarios. It's important to regularly ask ourselves, "Is this truly the right use case? Do the benefits outweigh the costs?" Taking the time to consider these questions can help us avoid the pitfalls of rushed decisions.
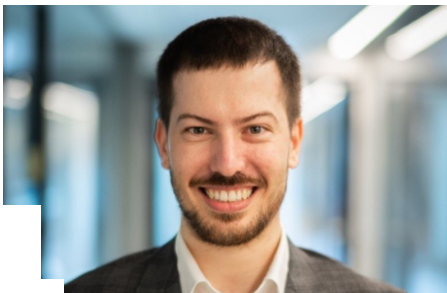
Yanic Plumpe, Graduate Assistant

With whom (alive or historical) would you like to have a discussion about technology? I would love to have a discussion with Michel Foucault about technology. He lived at a fascinating turning point, bridging the analog and digital eras, as the internet was emerging. His analyses of power, knowledge, and surveillance would provide a unique perspective on today's technological landscape. I would be particularly interested in understanding how he might interpret digital infrastructures, algorithmic governance, and the transformation of subjectivity in the digital age.

Rahel Roloff, Communications Manager

How do you explain your job to others? I usually say: "I make sure the important work we do at the intersection of technology, politics, and society doesn't stay in an ivory tower." My job is to translate complex ideas into clear messages, connect people and projects, and help position the TUM Think Tank as a driver of democratic innovation.

Fernanda Sauca, Graduate Assistant

What was your 2024 highlight at the TUM Think Tank? 2024 ended on a high note with the third edition of the Facilitating Constructive Dialogue Workshop. This event brought together driven people from academia, civil society, and the public sector to explore the latest research on harmful online content and brainstorm mechanisms to collectively address these challenges. As hate speech and misinformation continue to take root across the political spectrum, empirical research remains crucial. The Content Moderation Lab at the TUM Think Tank is dedicated to this effort, kicking off 2025 with a new report examining public attitudes toward content moderation and freedom of expression across 10 countries.
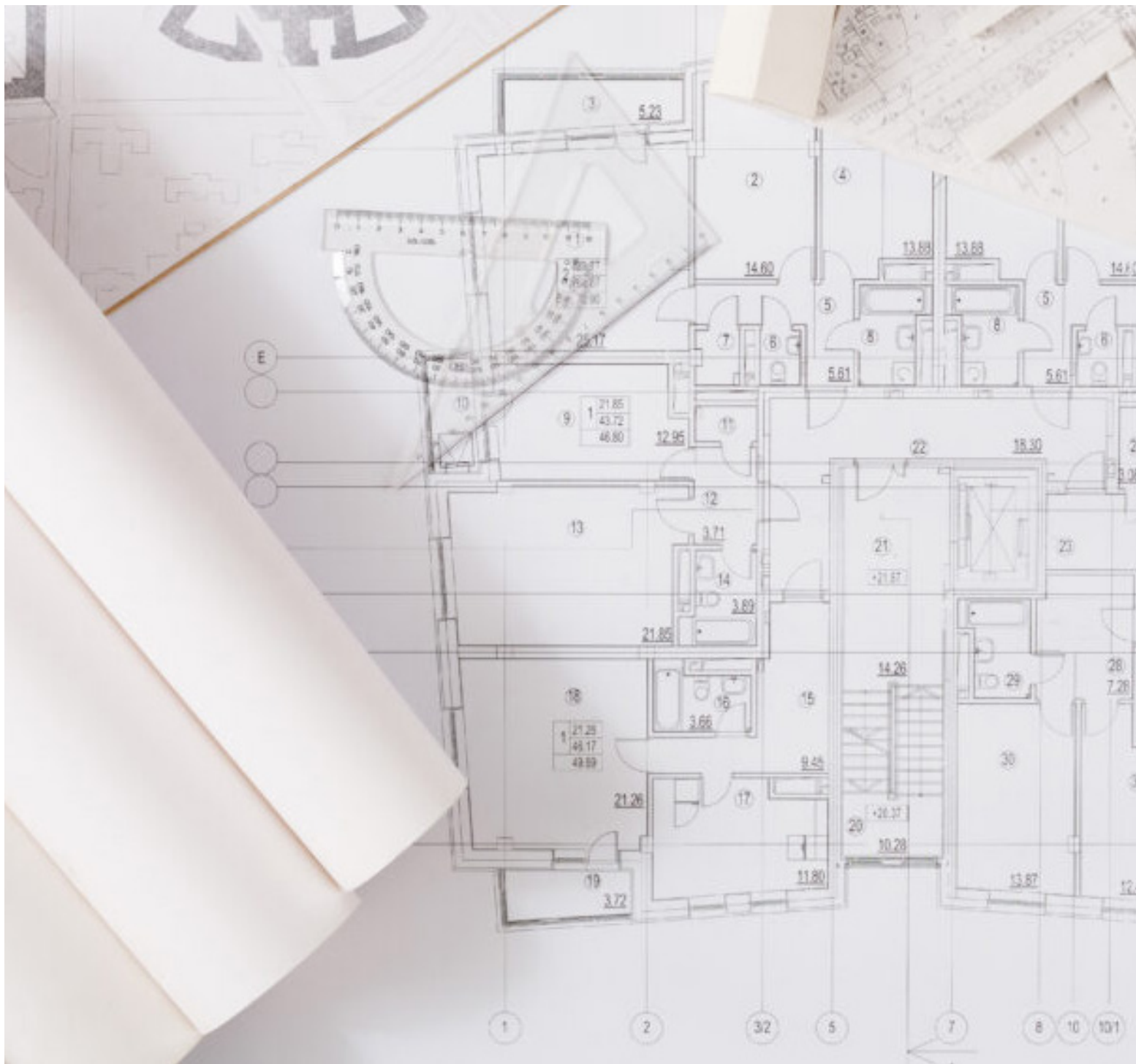
Our Labs & Projects

CIVIC MACHINES
LAB

Principal Investigator | Orestis Papakyriakopoulos

At the Civic Machines Lab, our work is driven by a simple but profound question: How can we generate Socio-Technical Insights towards a Sustainable and Equitable Future shaped by Algorithms? Towards this end we perform projects at different parts of the algorithmic supply-chain, from the hardware that support it, to the machine learning foundations it is constituted by, and the impact algorithms have on individuals and the society.

One of our flagship initiatives, the Audio Deep Fakes project, brings this question into sharp focus. Imagine a future election where deep fakes blur the line between truth and fiction, subtly altering political narratives and undermining voter trust. Our project is not merely about highlighting these dangers—it's about crafting a live demonstration that exposes the vulnerabilities in our political discourse and offers tangible countermeasures. By simulating scenarios where deep fakes are used to manipulate public opinion, we spark a broader conversation on digital authenticity and safeguard democratic integrity, as well as understand the limits of democratic autonomy. To achieve this, we are already performing a study including individuals across the globe to understand how they are influenced by deep fakes, as well as how we can empower them to resist algorithmic manipulation.

In parallel, our AuditEU project tackles the equally pressing challenges of algorithmic transparency within the framework of the EU AI Act. Here, we have been working closely with algorithm owners, especially start ups in the Munich area, to ensure that automated decision-making processes meet rigorous ethical and legal standards. This project stands as an example to our commitment to building capacity with stakeholders, guiding both industry and regulators toward more responsible practices in AI governance. The goal is to generate both scientific knowledge about algorithmic auditing, but also to create policy recommendations that can inform the efficient application of the Act. As part of the project, a Friedrich Schiedel Fellow is spearheading the initiative, bringing in expertise from participatory design and computer science.

Focusing on the hardware foundations of algorithms, we organized a Workshop on the Ethics of the Semiconductor industry. This event brought together young researchers, industry experts from various companies, and policymakers from the German and Bavarian gover-

nment to explore the ethical dimensions of hardware innovation—a crucial yet often overlooked facet of the tech ecosystem. By fostering dialogue and incubation of transformative ideas, the workshop embodied our mission to catalyze innovation ecosystems and develop emerging talent. We are in the process of developing a white paper from the discussions in the workshop, in order to generate actionable insights that can promote more sustainable algorithmic technologies, as well as empower institutions in Europe to reflect on often understudied aspects of artificial intelligence.

Together, these projects form a cohesive narrative: a commitment to not only spotlight pressing issues—whether in digital media manipulation, algorithmic accountability, or hardware ethics—but also to pioneer solutions that ensure technology serves the public good. As we forge partnerships, mentor the next generation of researchers, and set the agenda for thought leadership, the Civic Machines Lab remains steadfast in its vision of a future where technology and democracy coexist in harmony.

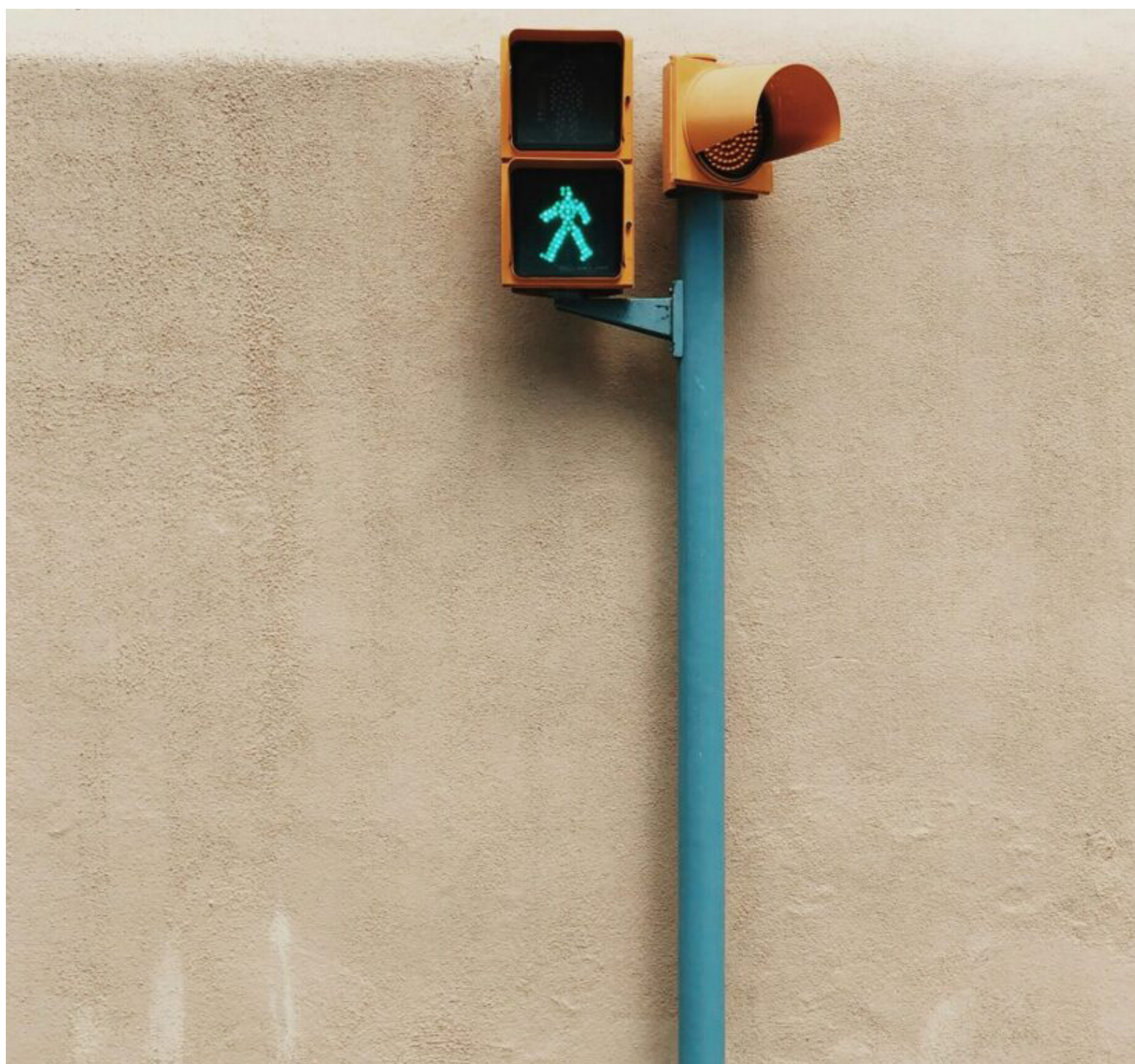**Workshop** on Ethics, Innovation and Sustainability of the Semiconductor Industry together with Sony AI and Infineon Technologies. Photo: TUM Think Tank

CONTENT MODERATION LAB

Principal Investigators | Yannis Theocharis & Spyros Kosmidis

Social media platforms play an increasingly central role in shaping public discourse, yet the rules governing online speech remain highly contested. Where do we draw the line between free expression and harmful content? Who determines what is legal but harmful, what is acceptable, and what should be removed?

At the Content Moderation Lab, we examine these tensions by studying how digital platforms regulate content, their motivations, policies, and real-world practices — while taking a comparative approach to global speech regulation (e.g., U.S. vs. Europe). On the demand side, we investigate how platform decisions influence user behavior, public opinion, and democratic participation, exploring perceptions of content moderation, censorship, and free speech. On the supply side, we examine how digital platforms regulate content—their motivations, policies, and real-world practices. Our work provides empirical insights that help lawmakers, platforms, and civil society navigate the complexities of online speech regulation.

Content moderation is first and foremost about establishing boundaries—determining what constitutes hate speech, misinformation, harassment, or illegal content, and defining platform responsibility. Governments and companies worldwide grapple with finding the right balance between protecting free speech and ensuring safe online environments. Yet, much of the discourse focuses on corporate policies and legal frameworks, often neglecting the perspectives of those most affected—the users. To address this gap, we conducted our first global survey on public attitudes toward content moderation and freedom of expression. Our findings reveal both diverse perspectives among users from various regions and shared common ground.. While some place the responsibility of moderating online content on platforms and others on governments, the vast majority support restrictions on problematic content. These insights provide evidence-based recommendations, which we hope can lead to more informed decision-making and healthier online spaces.

Navigating the legal and ethical dimensions of content moderation requires interdisciplinary and intersectoral collaboration. Recognizing this, we facilitate discussions among academics, industry leaders, civil society organizations, regulators, and policymakers to identify solutions that are both practical and grounded in research. In 2025, we will continue fostering cross-disciplinary and cross-sector engagement through multi-stakeholder workshops on content moderation, hate speech regulation, synthetic media, and other key topics. Additionally, we continue to expand our collaborations with civil society organizations, government institutions, and other TUM Think Tank Labs, most recently with the Civic Machines Lab with a focus on content moderation and deep fakes during and outside elections.

As the digital landscape evolves, so too must our understanding of content moderation. Our work aims to spark dialogues on alternative moderation models, cross-border regulatory challenges, and platform accountability mechanisms, ensuring that emerging debates are informed by empirical, user-centered research. By engaging junior scholars and emerging researchers, we also contribute to building a new generation of experts in digital governance.

Content moderation is not just a technical issue—it is a fundamental question of rights, responsibilities, and societal values. At the Content Moderation Lab, we contribute to these ongoing discussions by offering rigorous, research-based insights that help shape more transparent, effective, and inclusive online speech policies.

Multi-Stakeholder Workshop on Healthy Online Discourse. Photo: TUM Think Tank

Workshop on Transparency and Attitudes Towards Content Moderation on Social Media in Berlin. Photo: Das NETTZ.

ETHICAL DATA
INITIATIVE

Principal Investigator | Sabina Leonelli

Data shapes decisions at every level—from personal choices to global policies. Yet, discussions about the ethics of data collection, sharing, and use often remain inaccessible, framed in technical or academic terms. But data ethics concerns everyone, and it must be a conversation that is open to the public. This is the challenge that the Ethical Data Initiative (EDI) seeks to address. As a collaboration between the University of Exeter and the TUM Think Tank, the EDI fosters open discussions on data ethics by transforming abstract ethical dilemmas into concrete experiences, drawing from philosophy, history, and social science and arts to rethink data governance in the public interest.

One of the most striking ways the EDI has brought this vision to life is through Data Shadows, a 20-minute cinematic journey that challenges conventional perceptions of data as immaterial and abstract. Instead of numbers on a screen, Data Shadows presents data through the lens of natural elements—soils, stones, earth, and plants—revealing its physical presence, its intersections, and its hidden costs. The film, created by the EDI, removes human presence, inviting the audience to ask: Where does data come from? Where does it go? What forms does it take, and at what cost? It explores the environmental and ethical implications of data extraction, storage, and movement. The title Data Shadows itself is a metaphor—highlighting the dependencies, gaps, and unseen dimensions of data that often go unnoticed. Premiered in January 2025, the film sparked engaging discussions, enriched by a panel featuring its creators: Sabina Leonelli, Jacob von der Beugel, and Oliver Page. The audience's response reinforced the power of artistic storytelling in making ethical debates on data governance more accessible and impactful. Data Shadows will be made openly accessible in 2026, further extending its reach.

Beyond film, the EDI continues its mission of making data ethics tangible through Data Stories, an interactive, "choose your own adventure" tool designed to help data practitioners navigate real-world ethical dilemmas. Rather than passively learning about ethical principles, users experience the complexity of ethical decision-making firsthand, making choices and witnessing their consequences unfold. Partnering with the Harvard LabXchange, a premier Open Access educational platform, EDI will integrate Data Stories into a Data Ethics education cluster, which will be trialled through Data Clinics in Munich and then launched globally by the end of 2025. This initiative highlights the importance of education as a means of promoting ethical awareness in data work, empowering practitioners with the tools to engage in responsible data practices.

The EDI ensures that ethical considerations are no longer abstract—but rather something we see, feel, and actively shape together. Recognizing that ethical reflection thrives in conversation, the initiative launched its Affiliate Programme in December 2024, fostering a global network of collaborators committed to shaping the future of ethical data governance. Many of these affiliates will gather at the first EDI Town Hall in March 2025, where discussions will center on expanding ethical engagement in data practices and strengthening community-driven initiatives to widen and empower participation.

Sabina Leonelli giving a keynote talk. Photo: TUM Think Tank

Kick-Off Event of the Ethical Data Initiative. Photo: TUM Think Tank

GENERATIVE AI TASKFORCE

Principal Investigators | Enkelejda Kasneci & Urs Gasser

In 2024, Generative AI transformed from a technological breakthrough into an everyday reality. From AI-generated text and images to deepfake detection and policy automation, the rapid rise of tools like ChatGPT sparked excitement, disruption, and a global conversation about AI governance. But as governments, businesses, and institutions rushed to adopt these technologies, critical questions emerged: How can we ensure that AI is used responsibly? Who sets the rules? How do we prepare society for the impact of AI?

The Generative AI Taskforce was created to tackle these challenges head-on. Bringing together experts from various disciplines and backgrounds, our mission was to provide guidance, education, and public engagement in response to AI's fast-evolving landscape.

Shaping AI Policy: From Costa Rica to Brussels. 2024 was a year of rapid AI governance. As governments around the world scrambled to define their AI strategies, Taskforce members worked directly with national governments such as Costa Rica, Mauritania, and Thailand, offering expertise on AI governance, regulatory frameworks, and risk mitigation. Welcoming thought leaders like Alondra Nelson, Nick Clegg, and Kai Zenner to the TUM Think Tank, transatlantic perspectives on latest EU regulations were also at the center. These exchanges provided insights on pressing AI policy debates, including the EU's AI Act, Digital Services Act (DSA), and Data Act—critical regulations that will define AI's future in Europe and beyond.

Bridging the AI Skills Gap in the Public Sector. While AI policy shapes the rules, real change happens when people understand and apply them. That's why the Taskforce prioritized AI literacy for public sector professionals. We participated in several AI Roadshows—hosted by "byte", the digital agency of Bavaria— at government ministries, including Digital Affairs, Justice, Environment & Consumer Protection, and Science, Arts & Culture. The AI Roadshow equipped public sector professionals with the necessary insights to navigate AI integration. Moreover, it provided hands-on experiences on how to actively shape the responsible implementation of generative AI. We also contributed to several AI training programs on the national level. In partnership with GovTech Campus Germany and the TUM Think Tank, several learning offers provided practical knowledge on AI assessments, ethics, and applications, supporting policymakers and administrators to make informed decisions about AI adoption in public administration.

Building AI Guidelines at TUM: A Collaborative Effort. As AI enters classrooms and research labs, universities must set clear guidelines for responsible use. The Taskforce played a key role in this effort at TUM, organizing a collaborative workshop that brought together professors, researchers, students, and administrative staff to co-design a shared vision for AI integration. This initiative laid the groundwork for institution-wide AI policies that balance innovation with ethical and academic integrity.

Engaging the Public & Inspiring the Next Generation. AI is too important to be left to experts alone—it must be understood and shaped by society as a whole. That's why the Taskforce prioritized public engagement, bringing Generative AI discussions to citizens, students, and young innovators. At Munich's "Festival of the Future," attendees had the chance to experiment with AI tools, explore its impact on society, and ask tough questions: How do we deal responsibly with AI applications? How do they change us? We also introduced young talents to AI through Germany's Girls' Day, partnering with the Munich Center for Machine Learning (MCML) and Women in AI & Robotics. Teenagers aged 12-18 built their own chatbots, explored AI's role in early disease detection, and debated ethical dilemmas—planting the seeds for the next generation of AI thinkers and builders.

A Lasting Impact Beyond 2024. The Generative AI Taskforce was designed as a time-limited initiative that ended in 2024. But its impact will continue: Many of the projects, collaborations, and research efforts it sparked—from policy engagements to new educational programs—will carry forward into 2025 and beyond. And while Generative AI will continue to evolve rapidly, various contributions by taskforce members have helped to lay a foundation for responsible AI governance—not just at TUM, but in governments, industries, and communities worldwide.

Impressions from the AI Roadshow. Photos: TUM Think Tank

Principal Investigators | Markus B. Siewert & Urs Gasser

The public sector stands at a crossroads, facing mounting pressures from rapid technological shifts, geopolitical uncertainties, and an aging workforce. As the digital transformation accelerates, governments must adapt or risk falling behind. By the mid-2030s, a significant portion of today's public sector employees will retire, and talent shortages will challenge the ability to maintain essential services.

However, within these challenges lies an opportunity: by leveraging innovation, rethinking governance structures, and cultivating a new generation of skilled professionals, the public sector can transform itself into a more agile, efficient, and forward-looking institution. The GovTech Initiative at the TUM Think Tank is dedicated to making this vision a reality.

The GovTech Initiative fosters digital transformation, rethinking of processes and governance, as well as hands-on experimentation. To this end, we bring together students, researchers, policymakers, startup founders and leaders from industry and civil society to co-create solutions that have a real-world impact. More than just technology, we emphasize new ways of thinking and working, turning ideas into action.

The first step in transforming governance is building a network of changemakers who challenge conventional approaches and bring fresh perspectives. Since our founding, we have laid the groundwork for a dynamic GovTech ecosystem. Through our GovTech Series, we connect founders and students to engage in knowledge sharing about pitfalls and motivations when building a startup on GovTech. At the same time, our collaboration with the GovTech Campus Deutschland has enabled us to bring innovation directly into government institutions, reaching public officials from the federal to the local level through targeted workshops. Working with GovTech Campus Deutschland as the Lead Academic Partner, we are developing forward-thinking curricula and learning opportunities concerning questions of state modernization, technology implementation, and governance innovation.

We are designing an iterative process where collaboration

drives cultural transformation, and a new generation of talent sustains long-term innovation. By seamlessly integrating stakeholders from government, academia, civil society and industry, we create a cycle in which expertise informs action, and action reinforces learning. This ensures that innovation does not remain theoretical but becomes a continuous force shaping the public sector's evolution.

To realize our vision, the GovTech Initiative employs three core mechanisms:

1. The initiative serves as a dynamic meeting point, facilitating interaction between government agencies, academia, and industry. Through curated events, workshops, and cross-sector dialogues, we enable knowledge-sharing and the co-creation of government technologies and public sector innovation that address real-world challenges. This ecosystem approach ensures that ideas are not only conceptualized but tested and refined for tangible impact.

2. A key challenge in transforming the public sector is the need for skilled professionals who can navigate emerging technologies while understanding governance constraints. To bridge this gap, we provide learning opportunities tailored for government professionals, strengthening digital competencies and fostering adaptability in an evolving policy landscape.

3. By actively engaging students in practical projects, mentorship programs, and interdisciplinary research, we are cultivating a pipeline of future talents equipped with skills, tools, and mindsets to drive meaningful innovation in the public sector.

Our vision is to make Munich one of the leading hubs for public sector innovation. We aim to strengthen partnerships, expand our capacity building efforts, and facilitate national & international collaboration. Public entrepreneurship will be at the heart of this evolution, empowering individuals to take ownership of change and embed digital transformation into public institutions. We invite organizations and individuals who share our vision to collaborate with us.

Workshop together with the GovTech Campus Deutschland. Photo: TUM Think Tank

IMMERSIVE REALTIES
WORKING GROUP

Coordinators | Sofie Schönborn, Auxane Boch, Daniel Saad

Immersive realities hold the potential to reshape how we interact with the world. From transforming education and research to fostering new forms of collaboration, this technology opens doors to unprecedented experiences. However, as a field still in its early stages, its impact depends on a strong ecosystem that nurtures innovation, talent, and interdisciplinary dialogue. Our working group is dedicated to building this ecosystem that actively involves students, researchers, and external stakeholders to drive the next generation of immersive talent.

In 2024, we set out to empower thinkers and innovators by fostering an environment that bridges the gap between theory and hands-on practice. Central to this vision was our collaboration with students and researchers to prototype groundbreaking ideas, showcasing the transformative potential of immersive technologies. This initiative is more than just about creating technology; it's about developing the critical skills and problem-solving mindset necessary to navigate and lead in an ever-evolving landscape.

The Immersive Realities Hackathon held in October was pivotal in this journey. This four-day event brought together 30+ students, 20+ mentors, industry leaders, policymakers, and civil society representatives to address the pressing challenges of immersive realities. The focus was clear: equitable access, sustainability, and responsible innovation. Teams like TranquilMind and COMSPHERE not only impressed with their innovative solutions but are now being supported to transform these ideas into real-world applications. This is just the beginning. With a second hackathon already planned for 2025, we are more committed than ever to fostering a culture of creativity and collaboration.

This hands-on approach embodies our core belief in the power of interdisciplinary work, bringing together diverse voices from academia, industry, and civil society. Our monthly working group meetings have become a nexus for cross-pollination of ideas, paving the way for new research and collaborative ventures that tackle complex societal challenges through immersive technologies.

We are excited to launch the first product of the De-Mysti-fAI project in early 2025, an educational experience called "Finding Unsupervised Pete", an initiative aimed at making AI, specifically LLMs, more understandable for the general public. We aim to demystify artificial intelligence through an immersive experience with conversational agents, fostering public engagement and understanding of these technologies. This open-source project will serve as both an educational tool and a platform for sparking meaningful conversations about the role of AI in society.

In 2025, we will also expand into the realm of social robotics, combining immersive technologies with human-centred AI. This initiative will explore new frontiers in interactive and assistive robotics, seeking to create more engaging and accessible solutions for diverse communities.

As we continue to build an interdisciplinary ecosystem, we remain focused on shaping responsible, human-centred innovation. Our commitment to empowering young innovators and making advanced technologies accessible to all will guide us as we explore new frontiers in the metaverse, AI, and immersive realities. The road ahead is filled with opportunities to deepen our impact, and we are excited to lead the way in shaping a future where technology is used for the common good.
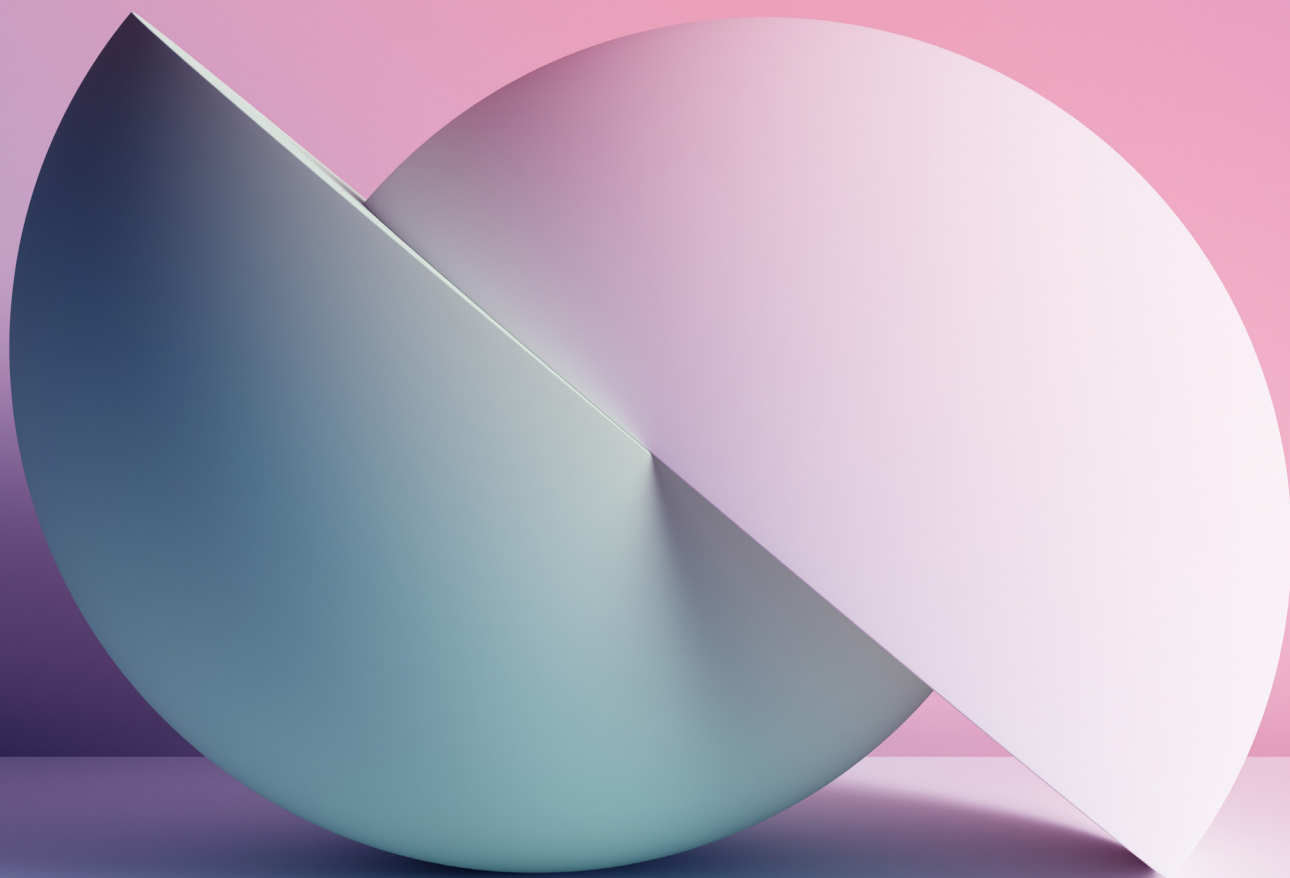

Impressions from the Immersive Realities Hackathon.
Photos: TUM Think Tank

Principal Investigator | Boris Paal

The legal sector is on the verge of a fundamental transformation. Technologies such as artificial intelligence, blockchain, and automation are not only reshaping the economy and society but are also changing the way laws are created, interpreted, and enforced. These developments present both challenges and opportunities. The central question is no longer whether technology will impact the law but how it will do so and how legal professionals, businesses, and public institutions can harness its potential.

The Law & Tech Lab at the Technical University of Munich is a driving force behind this change. It brings together stakeholders from diverse fields — from law firms and the judiciary to start-ups and established companies. Our goal is to create a collaborative platform where innovation in technology and law is seamlessly integrated. In doing so, we ensure that legal systems remain relevant, efficient, and adaptable in an ever-changing world.

Through interdisciplinary and cross-sector dialogue, we address emerging legal questions brought about by new technologies while simultaneously supporting the application of cutting-edge technologies to address existing and future legal challenges. The lab serves as a hub for knowledge exchange and collaboration.

Our event series, the "Law & Tech Series," creates a network for students, legal professionals from both the public and private sectors, technology entrepreneurs, and researchers. The series provides our partners with the opportunity to share practical experiences with legal technologies, present current research, and discuss topics such as safety and accountability in the context

of legal automation. These events act as catalysts for innovation, fostering new ideas and partnerships that drive the advancement of legal scholarship and practice.

Going forward, the Law & Tech Lab aims to establish itself as a central hub that consolidates the vast knowledge and infrastructural potential of Munich and TUM, helping partners to leverage these resources effectively.

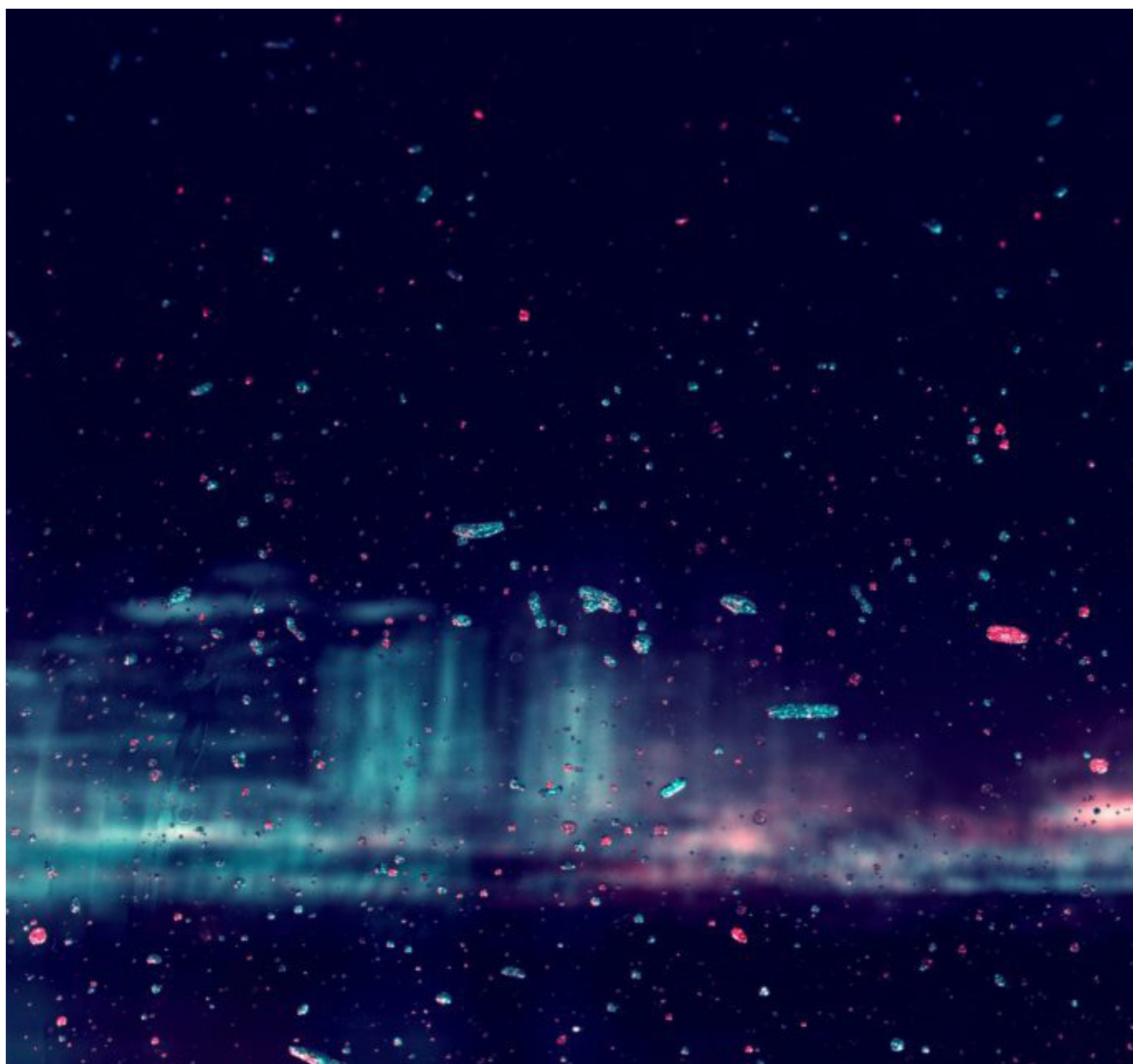**Kai Zenner (l) and Boris Paal (r) at the Law & Tech Series**. Photos: TUM Think Tank

Impressions from the Law & Tech Series. Photos: TUM Think Tank

QUANTUM
SOCIAL LAB

Principal Investigator
Lab Lead

Urs Gasser
Fabienne Marco

Quantum technologies are poised to redefine multiple industries, driving innovation and shaping the future, however thy are still in their early stages. Current quantum devices offer limited capabilities, lacking low-barrier applications such as no-code interfaces. This moment presents a crucial opportunity to proactively design frameworks that ensure responsible development and meaningful applications of quantum computing before it becomes widespread.

At the Quantum Social Lab (QSL), we are committed to leading the conversation on responsible quantum innovation. A key milestone in 2024 was the publication of a Call for Responsible Quantum in Nature co-authored by Urs Gasser in collaboration with QSL partners. This initiative has sparked important discussions within academia, industry, and policy circles, reinforcing the need to embed responsibility into the evolution of quantum technologies.

Our commitment extends to fostering the next generation of quantum scholars through our Young Quantum Social Scientists program. This year marked an important transition as our first cohort completed their journey, and a new group of promising researchers joined. Their work is helping bridge the gap between quantum science and its societal applications, ensuring that interdisciplinary perspectives remain central to the field's development.

One of the highlights of 2024 was our participation in XPanse, where we showcased our vision for interdisciplinary collaboration. Our students presented research on quantum applications in medicine using art as a medium to communicate complex scientific concepts. Fireside chats on the future of quantum technologies facilitated dialogue across disciplines, reinforcing the need for cross-sector collaboration in shaping responsible quantum governance. Fabienne Marco delivered a keynote emphasizing the importance of interdisciplinary

approaches in ensuring that quantum technologies serve the broader public good.

Looking ahead, QSL is expanding its research and policy efforts. A new collaboration with the Network of Centers will explore the potential of quantum technologies for the Majority World, ensuring that innovation is inclusive and globally relevant. With 2025 designated as the International Year of Quantum Science and Technology, QSL remains dedicated to driving interdisciplinary collaboration, influencing policy, and contributing to the responsible development of quantum computing.

The Quantum Social Lab at XPANSE in Abu Dhabi.
Photo: XPANSE
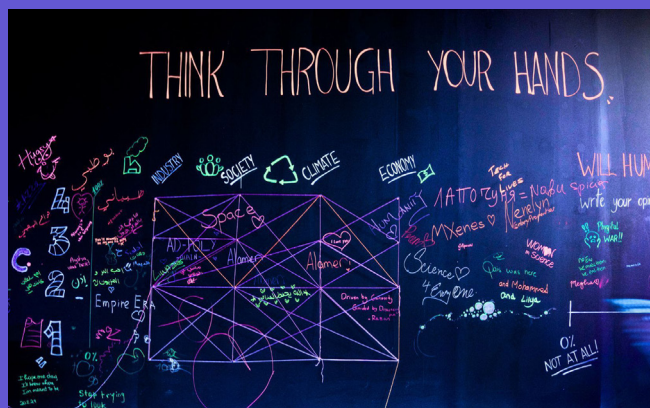
The Quantum Social Lab at XPANSE in Abu Dhabi.
Photo: XPANSE

The Young Quantum Social Scientists preparing their quantum cypher garden. Photo: XPANSE

TRANSFORMATION
FINANCE LAB

Principal Investigator | Florian Egli

2024 saw the global community agree to ramp up the climate finance target from US$100 billion to US$300 billion by 2035 at the international climate conference in Baku. Yet, this is too little too late. Will the private sector step in? Actors have done little to dissipate doubt: Days before Trump took office, the six largest US banks announced their withdrawal from a global net zero alliance.

These global developments stand in contrast to local energy. At the first breakfast gathering of the Transformation Finance Lab, experts from finance, start-ups and think tanks gathered to build what could become a community of transformative actors in finance. Germany stands before one of its biggest industrial and economic transformations - success or failure will also depend on the availability of private and public capital.

The shift to a low-carbon economy is inevitable, but it comes with economic and social challenges. The transformation of industries, particularly in high-carbon sectors, means that while new jobs will be created in renewable energy and green technology, existing jobs in fossil fuel-dependent industries will disappear. Research led by Florian Egli and colleagues at ETH Zurich highlights that the introduction of electrification, synthetic fuels, and carbon capture technologies could mitigate job losses significantly. However, in sectors like steel and manufacturing, where emissions reduction strategies are still developing, the risk remains high. Countries such as Germany and Hungary, which house a significant portion of high-carbon jobs, face the additional burden of transitioning their workforce with limited financial aid from the EU Just Transition Fund. This underlines the urgent need for re- and upskilling programs to ensure that workers are not left behind in this transformation.

Financing the green transition is another central challenge. The UN Climate Conference (COP 29) in Baku focused on the issue of climate finance, particularly the successor agreement to the existing $100 billion annual commitment from developed countries. Questions remain on how additional funding can be secured. One potential

solution is the taxation of excess profits from fossil fuel companies. Analysis from the Transformation Finance Lab revealed that in 2022 alone, 93 of the world's largest oil and gas companies recorded excess profits of $490 billion—an amount nearly equivalent to the total pledged climate finance for developing nations over a five-year period. With state-owned companies accounting for a significant portion of these profits and most privately-owned energy giants based in countries committed to climate financing, implementing an international excess profits tax could serve as a feasible mechanism to direct these revenues towards green investments.

For 2025, the Transformation Finance Lab will work on the design and implementation of financing models (e.g., assess and combine different financial instruments) to advance the transition to a clearer economy and the creation of value in new companies and initiatives. Perhaps local is a good place to start, so Munich and its net zero plans will feature prominently in the Lab's work as well as plans to bring German hardware tech financing to the next level. Yet, the Lab has a global mission, and 2025 will also see the launch of a climate finance tracker based on award-winning science and involvement in global initiatives, such as the Systemic Investment Summit organised by TransCap and Twist.

The urgency of climate action requires innovative financial strategies and careful economic planning. Without proactive measures, the transition risks exacerbating economic inequalities and political resistance. By leveraging insights from empirical research and engaging with stakeholders across the finance and policy sectors, the Transformation Finance Lab is positioning itself at the forefront of designing sustainable solutions for a just and equitable transition.

Florian Egli at the first Multi-Stakeholder Breakfast organized by the Transformation Finance Lab. Photos: TUM Think Tank

URBAN DIGITAINABILITY LAB

Principal Investigators | Stefan Wurster & Markus B. Siewert

Cities today are facing two major transformations: the green transition and the digital transition. While both hold immense potential for urban development, their true impact depends on successful integration: Digitalisation, if fully leveraged, can become a key ally for cities in the journey towards a sustainable future. Yet, many municipalities encounter challenges—from siloed governance to resource constraints—that hinder progress toward a green and digital twin transition.

Launched in 2024 with a grant provided by the Stiftung Mercator through its Digital Society program, the Urban Digitainability Lab (UDL) addresses this challenge by equipping city administrations with the capacities needed to align digital transformation with sustainability goals. To achieve this, the lab builds collaborative interfaces between public servants, scientists, technologists, and citizens, driving joint innovation through co-creation and co-design. UDL's work is structured around four interconnected programs:

- Community of Practice – A peer-learning network for municipalities and universities to tackle shared challenges in the twin transition.

- Academy Program – A structured curriculum designed to equip city administrators with core competencies for sustainable digital innovation.

- City-University Partnerships – Testing collaborative interfaces between cities and universities to drive twin transition.

- Impact Measurement – Frameworks and tools to assess, evaluate and refine twin transition initiatives within cities.

One of our first initiatives is a Community of Practice focused on mobility data, where 15 municipalities collaborate to advance their data-driven sustainable mobility solutions. Leveraging the scientific expertise at HfP and TUM, this initiative fosters peer learning and knowledge exchange to help cities navigate data governance, regulatory complexities, and implementation barriers. Building on this foundation, additional CoPs—focusing on urban health and livability—will launch in 2025, further expanding the lab's impact.

Workshop for the Community of Practice. Photo: TUM Think Tank

Similarly, the Academy Program empowers city administrators to acquire the competencies needed for advancing a twin transition. In partnership with a consortium that brings together diverse experts from civil society, academia, and cities, the program designs a new curriculum that aims to provide knowledge, skills and tools critical for navigating the intersection of sustainable, digital, and urban innovation. A train-the-trainer model ensures that this expertise is effectively scaled across municipal teams.

Looking ahead, the UDL aims to develop and test scalable models for city-university partnerships, ultimately turning successful pilots into replicable blueprints. By bridging academic research and policy implementation, the lab aspires to showcase how knowledge brokering can amplify impact—ensuring that insights, data, and best practices flow seamlessly across sectors. In doing so, the UDL not only spurs urban innovation but also cultivates a thriving ecosystem where researchers and practitioners jointly accelerate the green and digital twin transition.

The Urban Digitainablity Lab at the TUM Sustainability Day. Photo: TUM Think Tank

Principal Investigator | Sandra Cortesi

The Youth and Media Lab brings together youth (ages 12-18) from around the world with participants from academia, industry, government, and civil society. The aim is to enable mutual learning, empower participants with new skills and knowledge, and collaboratively explore innovative ways to understand, evaluate, and shape current and future social challenges emerging in the digital world. The lab draws on the knowledge and experiences of individuals with various backgrounds, including psychology, ethnography, sociology, education, media theory, and the law.

Building upon this interdisciplinary approach, the Youth and Media Lab invites and amplifies the voices of youth throughout the research process, aiming to develop contributions that reflect and address young people's diverse needs, perspectives, experiences, and interests. The team's work builds upon evidence-based participatory research, offering unique insights into the creative, educational, and revolutionary possibilities of youth participation in the digital environment while addressing the genuine concerns of living life online.

Our projects are often application-oriented and translational, combining different methods of social science research. We are committed to engage in projects with a real-world impact — particularly by translating findings from research for policy-making in the private and public sector — and to engage in participatory, multisectoral, interdisciplinary, and global projects. Current projects include:

Frontiers in Digital Child Safety

This initiative seeks to contribute to ongoing debates about novel ways to advance child safety through a series of open-source materials, including research briefs, issue spotters, or technical descriptions. It is complementary to existing and emerging child protection efforts. The transatlantic multi-stakeholder initiative at the TUM Think Tank is made possible by financial support from Apple. It invites collaboration among scholars at TUM, Harvard University, and the University of Zurich and facilitates contributions by a global research community.

Girls' Day Workshop with Sandra Cortesi. Photo: TUM Think Tank

AI Youth Work Navigator

This Eramus+ project aims to understand the needs of professionals who work with youth across Europe and provide them with learning capsules to reap the benefits of AI tools in their context to improve youth (information) workers' daily work. Our partners include Jugendagentur gGmbH Baden-Württemberg (Germany), Dorea Educational Institute (Cyprus), Udruga Mladih "mladi u europskoj uniji" (Croatia), the European Youth Information and Counselling Agency (Luxembourg), and the Responsible Technology Hub e.V. (Germany.)

As digital technology advances, so do the ways young people engage with it. The Youth and Media Lab is committed to exploring how the digital environment can be co-designed to respect and promote youth rights, agency, and well-being, while fostering participation, learning, creativity, and connection. We believe the digital ecosystem should be a space of endless possibilities where young people can thrive.

Digital Child Safety Meeting in October. Photo: TUM Think Tank

Friedrich Schiedel Fellowship for Technology in Society - Building Bridges across Disciplines and to the Public

Over the next five years, we have the exciting opportunity to further develop and shape the Friedrich Schiedel Fellowship Program for Technology in Society at the TUM School of Social Sciences and Technology. Jointly established by the Friedrich Schiedel Foundation and TUM, this flagship program fosters cutting-edge interdisciplinary research at the intersection of technology, society, and the public interest.

The fellowship is designed to support early-career researchers at TUM whose projects address the ethical, social, political, economic, and legal dimensions of science and technology. It emphasizes interdisciplinary approaches, encouraging projects that bridge the social sciences with disciplines such as natural sciences, engineering, life sciences, health sciences, economics, and medicine. Fellows are hosted by the TUM Think Tank and actively engage with TUM's broader research community, fostering dialogue, collaboration, and impact beyond academic boundaries.

In doing so, the program reflects Friedrich Schiedel's legacy as a visionary entrepreneur who championed corporate social responsibility and a commitment to societal innovation.

For the inaugural cohort, nine fellows were selected from a highly competitive pool of applicants. Their projects span diverse and pressing topics—from AI ethics, combating hate speech, and privacy-respecting immersive environments to sustainable urban development, climate-tech innovation, and establishing a hub at the intersection of finance, law, and technology. Each initiative is designed to generate insights that translate into practical, societal value.

Focus on Co-Creation and Impact

A defining element of the fellowship is its commitment to real-world impact and co-creation. The fellows' work extends beyond academic publication. It is about developing projects in dialogue with stakeholders, translating complex research into accessible formats, and influencing decision-making and public debates. Ultimately, the fellowship ensures that technological innovation aligns with societal values.

The Kickoff Event in June 2024 brought together fellows, mentors, students, and experts from TUM's diverse schools and departments. The focus was on exploring research approaches, understanding societal impacts, and identifying pathways to bring projects into practice. Throughout the year, fellows organized various events, workshops, and peer-learning sessions, strengthening interdisciplinary exchange and fostering new ideas for translating research into actionable outcomes.

Looking Ahead: Building a Community of Interdisciplinary Change Makers

In an era of rapid technological disruption, society needs credible ways to navigate ongoing transformation. The Friedrich Schiedel Fellowship Program demonstrates that technology and society are not opposing forces but components of a shared future that can be designed collaboratively.

In 2025, we will welcome Batch #02 with fellows from even more diverse disciplines and backgrounds. We aim to explore new ways of building a strong and engaged fellowship community while expanding the program as a platform for interdisciplinary research and collaboration—across TUM and with the broader public.

We are grateful that through the Friedrich Schiedel Fellowship, TUM and the Friedrich Schiedel Foundation reaffirm their commitment to advancing research that bridges technology and society — creating knowledge that not only informs but transforms.

Meet the Fellows of Batch #01

Auxane Boch

Auxane Boch is developing a multicultural framework for systematically assessing the psychological impacts of AI systems. Through participatory workshops and consultations with diverse stakeholders, she aims to define culturally informed evaluation criteria and produce actionable recommendations that ensure user well-being and trust in AI applications.
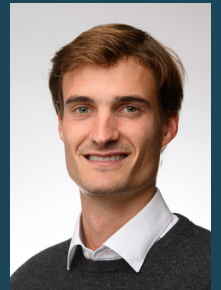
Efe Bozkir

Efe Bozkir explores privacy concerns surrounding large language model powered chat agents in immersive environments. By conducting user studies to understand privacy preferences and risks, he helps design better consent processes and privacy-aware solutions, enhancing trust and promoting privacy-conscious AI integration.

Barış C. Cantürk

Barış C. Cantürk founded a hub at the intersection of law, technology, and finance as a bottom-up initiative. The hub develops innovative, multi-disciplinary frameworks for understanding and regulating digital finance, with a focus on Germany and Europe.

Daryna Dementieva

Daryna Dementieva advocates for a nuanced approach to moderating harmful speech online, recommending varied interventions such as detoxification, counter-speech, or human moderation. In doing so, she aims to refine moderation strategies and contribute to safer digital environments.

Mennatullah Hendawy

Mennatullah Hendawy leverages generative AI to facilitate conflict resolution in the sustainable development of critical metals and minerals. She is developing a platform to support transparent, inclusive stakeholder discussions, ensuring balanced consideration of environmental, economic, and social sustainability.

Franziska Poszler

Franziska Poszler combines AI ethics research with performing arts. By translating qualitative research on AI's ethical implications into theater performances, she engages the public in critical discussions about technology and society.

Malte Toetzke

Malte Toetzke envisions a real-time mapping system for climate-tech innovation. Using AI-driven analysis of global collaboration networks, he identifies actionable insights for policymakers and industry leaders to foster innovation and accelerate the climate transition.

Chiara Ullstein

Chiara Ullstein develops a participatory approach to AI system auditing under the EU AI Act. By drawing on established compliance practices, her framework ensures that diverse stakeholders are included in conformity assessments, promoting inclusive, robust, and ethical AI development.

Niklas Wais

Niklas Wais is creating an interdisciplinary online course addressing legal implications in AI. The course fosters understanding among technologists and legal professionals, encouraging responsible AI design practices aligned with data protection and anti-discrimination laws.

Actionable Insights for a Changing World:
Our Fellows of Practice Program

We believe that tackling the world's most pressing challenges requires more than research—it demands action. Our Fellowship of Practice was created to bridge the gap between science and practice, bringing together researchers, policymakers, industry leaders, and civil society to collaborate on evidence-based solutions for today's most urgent societal issues.

TUM Think Tank Fellows of Practice engage in joint research, policy co-creation, and hands-on projects, ensuring that academic expertise translates into real-world impact. Fellows actively participate in workshops, mentoring, and collaborative projects, with the flexibility to shape their engagement according to their availability. The Fellowship of Practice is carried out in a personal capacity.

In 2024, we welcomed three outstanding Fellows of Practice, each leading a project at the intersection of technology, governance, and democracy.

Looking Ahead: A Fellowship That Drives Impact

The TUM Think Tank Fellowship of Practice is more than a platform for collaboration — it is a catalyst for action. Through their work, our 2024 Fellows shape discussions on AI governance, digital sovereignty, and election integrity, ensuring that research doesn't just stay in academic papers, but directly informs policy, technology, and society. As we continue to grow this initiative, we look forward to welcoming more change-makers who are eager to bridge science and practice, drive real-world impact, and tackle the challenges of the digital age.

Understanding the Role of Generative AI in Elections.

A project by Dr. Amélie Hennemann-Heldt; Deputy Head of Division General Digital Policy at the German Federal Chancellery.

2024 is a historic year for democracy, with over 70 countries holding national elections. At the same time, Generative AI is changing the way political campaigns, misinformation, and voter influence operate. Research shows that AI-generated misinformation spreads up to six times faster than factual news, raising urgent questions about election integrity, disinformation risks, and regulatory responses.

Amélie's Fellowship focuses on:

- Mapping AI's Role in Elections – Analyzing how GenAI has been used in campaigns, voter outreach, and misinformation tactics worldwide.

- Drawing Lessons from 2024 Elections – Studying global case studies to identify risks and opportunities.

- Developing Strategies for 2025 and Beyond – Exploring solutions to counter misinformation and enhance electoral transparency, particularly in the context of the 2025 German election.

Amélie collaborates with the Civic Machines Lab, the Content Moderation Lab, and members of the GenAI Taskforce to advance research, policy, and public awareness on the growing intersection of AI and democracy.

Turning Digital Sovereignty-in-the-Cloud from Theory to Action.

A project by Dr. Philipp S. Müller; Vice President for the Public Sector at DriveLock SE.

As geopolitical tensions rise and digital infrastructure becomes a battleground for cyber threats, data control, and national security, Europe faces an urgent challenge: ensuring digital sovereignty in the cloud. While European governments have taken steps toward cloud sovereignty, the focus has been on where data is stored, rather than how it is managed and protected. To truly secure strategic autonomy, public administrations need practical tools to navigate the complexity of multi-cloud environments while maintaining compliance, resilience, and independence.

Philipp's Fellowship is focused on operationalizing digital sovereignty through:

- Bridging Policy & Technology – Developing a practical framework to align regulatory, legal, and security requirements with technical implementation.

- Testing Sovereign Cloud Strategies – Partnering with cloud providers and public institutions to conduct a real-world proof-of-concept pilot.

- Knowledge Transfer & Capacity-Building – Creating a "Sovereignty-in-the-Cloud" playbook and teaching cases to train policymakers and IT decision-makers.

Through this project, Philipp is helping public institutions move beyond theoretical discussions and take action to strengthen Europe's digital autonomy and resilience. In doing so, he closely collaborates with the Community of Practice on Digital Sovereignty which he co-leads together with Sofie Schönborn.

Advancing Public Interest AI for Sustainable and Inclusive Societies.

A project by Nicole Manger, German Federal Foreign Office Coordination Unit on AI in Foreign Policy for Global AI Governance and Digital Cooperation.

Artificial Intelligence is reshaping societies at an unprecedented pace. But while AI governance frameworks are being drafted at the global level, moving from high-level commitments to tangible impact remains a challenge. The adoption of the UN's Global Digital Compact (GDC) at the Summit of the Future in 2024 marked an important milestone, setting the stage for an open, free, secure, and inclusive digital future. However, turning AI governance principles into concrete solutions requires a science-driven, multi-stakeholder approach.

Throughout her fellowship, Nicole is leading efforts to advance open, public-interest AI by developing a research-to-action community that brings together governments, industry, and civil society. Her work focuses on:

- Mapping AI Governance Best Practices – Analyzing national and regional AI strategies and their alignment with the GDC.

- Developing Open AI Solutions – Co-designing AI sandboxes to test responsible AI governance and risk assessment approaches.

- Empowering Communities – Building AI and data literacy programs to equip policymakers and practitioners with the tools to navigate AI responsibly.

Nicole collaborates closely with the Global Network of Centers (NoC), the GovTech Initiative, the Ethical Data Initiative, the Civic Machines Lab and the Urban Digitainability Lab to drive forward practical solutions for AI governance, regulation, and capacity-building worldwide.

Digital Sovereignity Talks
From Debate to Direction

At the TUM Think Tank, we believe that building communities of practice is essential to addressing the multifaceted challenges of digital sovereignty. That's why we launched the "Digital Sovereignty Talk" series - bringing together policymakers, technologists, legal experts, and academics to reflect on how democratic institutions can maintain agency in an increasingly digital and interconnected world. The series is more than a platform for discussion; it is a growing community dedicated to exploring responsible governance in the digital age.

One of the core outputs of this community is our Food4Thought paper series. In five editions so far, we've explored the conceptual foundations and practical implications of digital sovereignty - reframing it not as a defensive buzzword, but as a dynamic balancing act.

Across the series, we tackled diverse and substantive topics. We understand digital sovereignty as a form of "ambidexterity": the ability to balance national resilience with international cooperation. We furthermore explored how trust in emerging technologies like AI and cloud computing can be built through auditable standards and regulatory ecosystems - highlighting their potential not just for compliance, but for projecting soft power. In another edition, we examined the CrowdStrike incident, using it to reflect on cybersecurity philosophies rather than simply questioning sovereignty in geopolitical terms. Germany's strategic role in international cybersecurity cooperation also emerged as a key theme. A deep dive into the work of the Federal Criminal Police Office (BKA) illustrated how "Cyberfighting-as-a-Service" models and strong, empowered leadership can enhance both national and transnational digital resilience.

Throughout our talks, recurring themes have guided our thinking: the need for trust through multilateral engagement; the evolving responsibilities of government in shaping digital ecosystems; the balancing of autonomy and functionality; the centrality of education and innovation; and the importance of moving from theory to institutional learning.

Digital sovereignty is not just about infrastructure - it's about agency, values, and choices. Looking ahead to 2025, we will continue to grow this community of practice, deepen our dialogue with partners across sectors, and use the Digital Sovereignty Talks as a space for critical reflection, collaborative learning, and forward-looking governance thinking.

The Digital Sovereignity Talk Series

The Digital Sovereignity Talk Series hosting a side event during the Munich Security Conference

Insights from the Platform

TUM THINK TANK

Technology Communication in Transition
A Challenge at the Interface with Society

Technology permeates our daily lives, often without us fully understanding it. Artificial intelligence, robotics, and quantum technologies offer immense opportunities but also raise societal questions: Who benefits from these technologies? What risks do they pose? How can we ensure that technological developments are shaped in the interest of society?

This is where our work at the TUM Think Tank comes in. As an interface between academia, politics, industry, and society, we strive to convey complex topics in ways that are not only understandable but also encourage critical thinking and reflection.

Addressing Diverse Information Needs

A key challenge in technology communication is addressing the diverse information needs and expectations of different target groups. Researchers require factual and in-depth exchanges, decision-makers need clear, concise policy options, and the general public wants to understand the personal and societal implications of technological advancements. At the TUM Think Tank, we utilize a variety of communication formats to meet these diverse needs, ensuring that complex information is accessible and relevant to each audience.

Insights from the Learning Workshop on Technology Communication at acatech

The Learning Workshop on Technology Communication, organized by acatech - National Academy of Science and Engineering, provided valuable insights. Through lectures, discussions, and workshops, the event underscored that science communication must go beyond simply transmitting facts.

- Democratic Technology Communication: Cordula Kropp, sociologist and acatech member, emphasized the need for democratic engagement in technology communication—one that informs while actively listening to societal concerns.

- Communicating Complex Topics: Lioba Suchenwirth, press officer at the German Aerospace Center (DLR), highlighted the challenges of communicating about robotics, an area marked by both utopian visions and dystopian fears.

- Science Communication for Societal Impact: Michael Wingens, science communication expert at Wissenschaft im Dialog, stressed the importance of developing targeted communication strategies that lead to measurable societal impact, from resource planning to evaluating outcomes.

Sparking Dialogue and Encouraging Critical Engagement

The insights from the Learning Workshop reinforce our approach at the TUM Think Tank: to not only disseminate information but to ignite critical debates and contextual discussions. We aim to place technological developments within their broader societal context and actively engage all relevant stakeholders.

To achieve this, we employ a diverse range of creative formats:

- Augmented Reality Experiences: We are developing an interactive AR tour, allowing visitors to explore the TUM Think Tank's topics in an immersive way.

- Playful Engagement: Children can engage with AI through a photo printer that generates fantasy creatures based on their prompts, while adults explore societal questions via simulation games.

- Artistic Collaborations: By working with artists, we aim to make abstract technological concepts tangible and invite new perspectives.

Traditional Communication Channels: We continue to utilize newsletters, social media, policy briefs, and academic publications to provide reliable and comprehensive information.

Looking Ahead: Evolving Communication for Greater Impact

The Learning Workshop has shown that technology communication can be a powerful tool for societal change. By addressing the specific needs of diverse target groups, we can foster informed and critical engagement with technological developments, encouraging dialogue and mutual learning.

At the TUM Think Tank, we carry these insights forward. As we evolve and expand our communication strategies in 2025, we remain committed to fostering meaningful exchanges that empower society to shape the future of technology.

Former white house advisor and Friedrich Schiedel Prize for Social Sciences and Technology Awardee, Alondra Nelson at the TUM Think Tank. Photos: TUM Think Tank
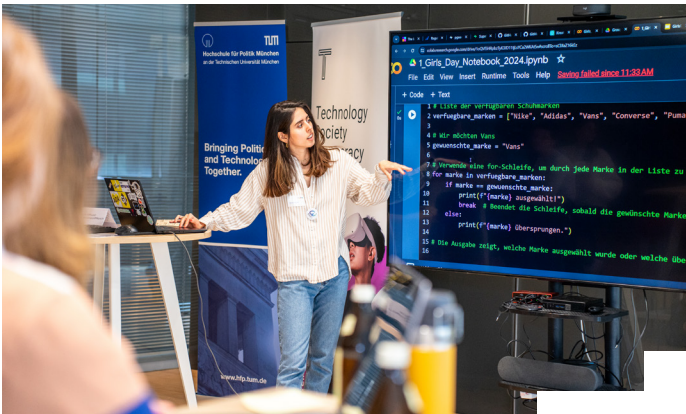

Summit of the Future Action Days at the UN General Assembly: The Power of the Commons, co-organized with the Wikimedia Foundation, the Global Network of Centers and other partners. Photo: UN

Festival of the Future at Deutsches Museum.
Photo: TUM Think Tank

AI Roadshow at the Bavarian State Ministry of Digital Affairs, co-organized with Byte. Photo: TUM Think Tank

Girls' Day at the TUM Think Tank. Photo: TUM Think Tank

Redefining Relevance: Innovating Think Tank Models for Greater Impact

The landscape of think tanks is undergoing a profound transformation. Rapid technological advancements, shifting societal needs, geopolitical transformations, and tighter policy cycles demand that think tanks move beyond traditional roles of policy consultation. They must become agile, innovative, and embedded across the full policy process—from problem definition to implementation. At the TUM Think Tank, we are actively embracing this shift, defining our role as a catalyst for mission-driven research and innovation ecosystems that advance public interest technology.

Learning for Impact: Insights from the Leadership & Management Training Program

In autumn 2024, Felix Beer, Ecosystem Manager at the TUM Think Tank, participated in the Think Tank Lab's Leadership & Management Training, jointly organized by the German Council on Foreign Relations (DGAP) and the Mercator Institute for China Studies (MERICS). This three-month program, led by seasoned think tank leaders, provided critical insights that are shaping our strategic direction.

Key learnings from the training can be summarized as follows:

* Adapt to Sectoral Change: Today's think tank sector faces tighter funding, faster issue life-cycles, and increasing complexity. Moving beyond traditional advisory roles, think tanks need to adopt flexible, proactive models—incorporating scenario planning and cross-sector collaborations that span the entire policy process.

* Strengthen Organizational Identity: Understanding and articulating the unique value or "think tank DNA"—whether through expertise, convening power, or rapid knowledge mobilization—is vital for strategic positioning within broader ecosystems.

* Developing Mission-Driven Leadership: Having a clear mission is vital for guiding long-term strategy and maintaining coherence across projects. Mission-oriented leadership helps forge enduring partnerships, align diverse stakeholders, and focus efforts on driving systemic change.

* From "What" to "How": The sector's stakeholders increasingly demand not just ideas but actionable, implementable solutions. Multidisciplinary teams and robust partnerships are crucial to translating recommendations into measurable outputs.

* Embrace Co-Creation: Working directly with stakeholders, from policymakers to communities, enables the development of solutions that are both innovative and grounded in real-world needs.

* Foster a Culture of Organizational Learning: Many think tanks confront similar obstacles but often operate in silos. Strengthening inter-organizational networks can unlock collective impact—amplifying resources, insights, and reach. Within an organization, continuous learning, mentorship, and open feedback loops are essential for resilience and long-term impact.

Looking Ahead: Advancing Innovation Ecosystems

These insights resonate deeply with the TUM Think Tank's mission and have been instrumental in refining our approach for 2025 and beyond. We will continue focusing on advancing research initiatives that tackle urgent societal challenges, and building bridges across sectors, disciplines, and communities to foster innovation ecosystems where cutting-edge research is transformed into tangible, impactful solutions. This means not only identifying the "what" of policy questions but actively working on the "how" of implementation.

All of this requires forging strong partnerships with public sector institutions, academia, industry, startups, and civil society. We invite partners, collaborators, and curious thinkers to join us in shaping the future of science-practice interfaces. Together, we can redefine the role of think tanks and the transfer from research into practice, foster impactful collaborations, and develop pathways that lead from knowledge to meaningful societal impact.

Girls' Day at the TUM Think Tank. Photo: TUM Think Tank

TUM Sustainability Day at Campus Garching.
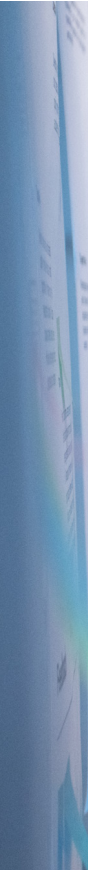Photo: TUM Think Tank

Conference: The World at a Digital Crossroads: Navigating Uncertainty, Seizing Opportunity. Hosted by the Network of Centers and the Digital Asia Hub Thailand in Bangkok. Photo: Network of Centers

Lecture Series on Digital Democracy. Photo: TUM Think Tank

Nick Clegg (former president of global affairs at Meta) at a fireside chat at the TUM Think Tank during the Munich Security Conference. Photo: TUM Think Tank

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