Collaborative Research on Science and Society (CROSS) Program
CROSS Conference 2024

Friday 13 Dec. 2024, EPFL

REPORT

The CROSS Conference 2024, organized by the College of Humanities (CDH) of EPFL, showcased twelve CROSS projects of the last three years (2022 "Responsible innovation", 2023 "Crisis", and 2024 "Open theme"). Grantees presented and discussed their research results and experiences with members of CROSS scientific committee and the public based on the following aspects: interdisciplinary collaboration, social impact and perspectives and future directions. Principal investigators, postdoctoral researchers and doctoral students, members of the research teams both from EPFL and UNIL participated enthusiastically in the different panels.

Welcome / Presentation of CROSS Program

In the welcome part, Dr. Gabriela Tejada, Deputy Director of the CDH and manager of CROSS introduced the CROSS program which consists of an annual Call for interdisciplinary projects addressing current social and technological issues stemming from EPFL and UNIL research teams. The annual budget of CHF 360k supports maximum 6 proposals with potential to develop into large-scale interdisciplinary research projects.

CROSS scientific committee members are:

- From EPFL: Prof. Annalisa Buffa (until 31.12.24 it was Prof. Andreas Mortensen), Prof. Jamie Paik, Prof. Emre Telatar, and Prof. Frederic Kaplan (who is the Director of the CDH and Director of CROSS)
- From UNIL: Prof. Estelle Doudet, Prof. Giorgio Zanetti and Prof. Alain Kaufmann
- The management of CROSS is secured by the CDH (Gabriela Tejada and Estelle Quinton) and the contact person at UNIL is Claire Arnold.

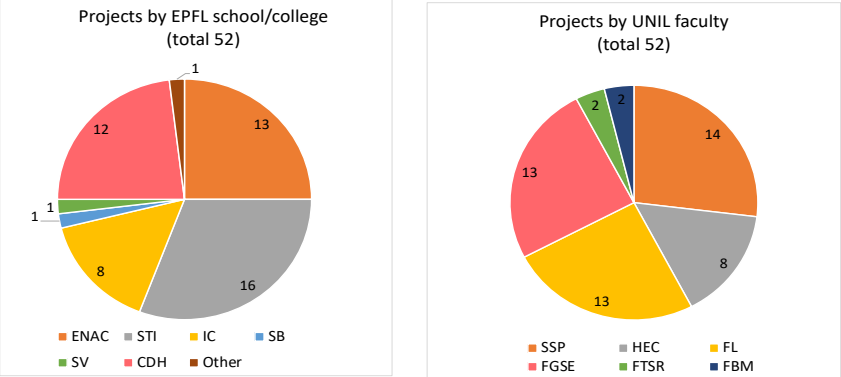
From the inaugural call for projects in 2013 through to 2025, a total of 13 calls have been launched, resulting in 52 proposals being awarded out of 152 received, reflecting a success rate of 34%, with a total of CHF 3'016'000 disbursed. While most calls focused on specific themes, the scientific committee opted to keep the theme open for the final two calls (Fig. 1).

Fig. 1: CROSS Calls 2013 - 2025
Topics / Projects received vs. projects granted / Success rate

Call year	Topic	Total projects received	Total projects granted	Success rate
2013	energy	7	4	57.1
2014	memory	9	6	66.7
2015	circulation	11	3	27.3
2016	perceptions	15	4	26.7
2017	traces	13	2	15.4
2018	imitation	11	3	27.3
2019	resistance	12	4	33.3
2020	mobility	20	6	30.0
2021	digital humanities	9	4	44.4
2022	responsible innovation	10	3	30.0
2023	crisis	9	6	66.7
2024	open call	17	3	17.6
2025	open call	9	4	44.4
TOTAL		**152**	**52**	**34.2** (avg)

A breakdown of EPFL and UNIL participation by schools/colleges and faculties shows increased representation of disciplines in funded projects (Fig. 2). The CROSS 2025 project *"Nattoralik": A balloon on a quest to comprehend the mysteries of "Sila"* by Prof. J. Schmale (EPFL) and Prof. L. Chanteloup (UNIL) featured at UNISCOPE was mentioned.

Fig. 2: CROSS Program 2013 - 2025
Projects granted by EPFL school / colleges and UNIL faculties



Panel 1: Interdisciplinary Collaboration
Projects:

- Developing responsible models for the deployment of robotics in agricultural systems (CROSS 2022): J. Hughes, EPFL and D. Barjolee, UNIL
- Extended-range warnings for heatwaves in Switzerland – HEATaware (CROSS 2023): D. Domeisen, UNIL and M. Lehning, EPFL
- Improving understanding of the biodiversity crisis resulting from glacial retreat through robotic data capture (CROSS 2023): J. Hughes, EPFL and G. Losapio, UNIL
- Making it together: Interfacing human-robot teams for collaborative construction (CROSS 2024): S. Parascho, EPFL and M. Audetat, UNIL

Moderated by **Prof. Jamie Paik**, Director of Reconfigurable Robotics Lab (STI, EPFL), the panel on **interdisciplinary collaboration** explored the benefits and challenges of working across multiple disciplines in research. Researchers shared how these collaborations enriched their projects, often leading to the development of new knowledge and methods that extended beyond individual fields. They reflected on the specific challenges they faced when integrating diverse disciplines, particularly when teams worked together for the first time. Despite these initial hurdles, the collaboration ultimately evolved to focus on improving quality of life. The CROSS grant played a crucial role by providing an opportunity to test partnerships, explore innovative methods, and take risks, setting the foundation for future long-term collaborations.

The CROSS grant also acted as seed funding, allowing researchers to secure additional support from Swiss and other agencies, thus advancing their work. Some teams, especially those with pre-existing relationships, found smoother collaboration, particularly in areas like construction robotics, where adaptability in research methods bridged the gap between industry and academia. The grant facilitated meaningful collaboration between science, technology, and society, with local authorities and non-academic stakeholders contributing to the adoption of findings and their societal impact. This engagement with stakeholders was challenging at times, but it proved essential in ensuring the research had real-world relevance and could drive social change.

The panel also emphasized the importance of flexibility and adaptability when working on interdisciplinary projects, especially when addressing complex societal issues. The broader impact of these projects included exploring robotics' role in society, particularly in relation to ecological concerns, and fostering mutual learning across disciplines. The CROSS program encouraged researchers to consider the social implications of their technical work, an approach that had not been fully integrated before. Ultimately, the experience demonstrated that interdisciplinary collaboration, while challenging at the outset, can lead to valuable and impactful outcomes, especially when teams are adaptable and engage non-academic partners.

Panel 2: Social Impact
Projects:

- Analysis and modelling of dissemination and social impact of scientific preprints during crises (CROSS 2023): D. Probst, EPFL and M. Piotrowski, UNIL *(this project was not presented)*
- Investigating industrial pollution: an interdisciplinary approach (CROSS 2023): A. Berthet, UNIL and A. Elsig, EPFL
- Multi-criteria decision-making approach using remote sensing and GIS for drought impacts assessment on vegetable health (CROSS 2023): J. Chenal, EPFL and O. Gallay, UNIL
- Disruptive virtual agent for ideation (CROSS 2024): D. Gillet, EPFL and S. Bendahan, UNIL

The panel on **social impact**, moderated by **Prof. Alain Kaufmann**, Director of Le ColLaboratoire (UNIL), explored several key questions regarding the relevance, engagement, and long-term effects of their research. The projects focused on addressing societal needs and challenges by collaborating with local communities and authorities to raise public awareness and ensure long-term impact. Follow-up projects were planned to continue these efforts. The panel emphasized that collaboration should go beyond meeting funding deadlines, allowing for the exchange of ideas and refinement of methods to align with real-world realities. It was noted that the initial approach didn't always match the on-the-ground conditions, for example in cases where the political context delayed implementation, but the CROSS project provided flexibility to adapt and improve.

In one of the projects, historical and archival studies of pollution were highlighted as crucial for understanding past mistakes, informing better management practices, and avoiding future errors in industrial pollution. The project emphasized working with local communities to produce meaningful results, adapting data outputs like cartography to enhance accessibility, and addressing the lack of resources to store and use large quantities of data. In another project, discussions with communities revealed gaps in existing policies, prompting further comparative research in regions like Kenya and East Africa to analyze different policy approaches. This interdisciplinary collaboration, combining historical, sociological, and environmental perspectives, enriched both the researchers and the communities, encouraging mutual learning and method adaptation. Experiences of researchers make clear that CROSS provides the opportunity to reflect differently and aim more clearly to societal impact.

In one project, researchers investigated the use of artificial agents by introducing a disruptive virtual agent to enrich collaborative ideation processes. The integration of automatic methods, such as language models, helped broaden the evaluation of originality. The project also blended theoretical models with practical applications, refining methods through both lab and fieldwork involving students in the classroom. Virtual agents were utilized to explore their impact on creativity and problem-solving within group dynamics. The project stressed the importance of developing transversal skills and fostering creativity, using AI as a tool to enhance group dynamics and address knowledge gaps. However, challenges such as power dynamics in group activities and the integration of virtual agents require further exploration. Future research will focus on understanding the long-term effects of AI and digital tools on group interaction.

Panel 3: Perspectives and Future Directions
Projects:

- Tracing irresponsible innovation through patents: a historical data science investigation (CROSS 2022): J. Baudry, EPFL and C. Humair, UNIL
- From Farm to Fork: The True Cost of Food (CROSS 2022): Ph. Thalmann, EPFL and C. Rozenblat, UNIL
- Understanding local Risk culture(s) in the context of climate Crisis: Avalanche hazard from the perspective of anthropology and natural sciences and technologies (CROSS 2023): F. Graezer-Bideau, EPFL and M. Jabodeyoff, UNIL
- LOCAL: Lifestyles and Carbon emissions in the Arc Lemanique territory (CROSS 2024): C. Binder, EPFL and J. Steinberger, UNIL

The panel on **perspectives and future directions**, moderated by **Prof. Frederic Kaplan**, Director of the Laboratory of Digital Humanities and Director of the CDH (EPFL) focused on the future of interdisciplinary research supported by CROSS and its broader societal and technological implications. Researchers reflected on the next steps for their projects, focusing on further exploration of key research questions and methods based on initial findings. They highlighted efforts to secure additional funding and institutional support to expand their work. Despite challenges posed by limited resources, the CROSS framework provided vital for testing innovative ideas and fostering

interdisciplinary collaboration connections across labs. This led to the creation of new research hubs and impactful collaborations, particularly in user experience design, scientific dissemination, and civil society partnerships. CROSS helped integrate EPFL's research capabilities with those of UNIL, ultimately leading to major funding proposals.

The panel also discussed the broader societal and technological implications of their work, noting its potential to influence global challenges. They emphasized the importance of incorporating local knowledge and cultural perspectives, particularly through case studies on avalanche risks and traditional resource management. The work with local communities, including workshops on sustainable development and safety culture, demonstrated how research can inform policies in fields like heritage sciences. CROSS encouraged researchers to seek diverse expertise, take risks and embrace failure, fostering a more focused approach to future stages. Additionally, having a CROSS grant boosted credibility with funding agencies for larger grants.

In discussions on responsible innovation, researchers reflected on how their perspectives on ethical and social responsibility have evolved. They stressed the importance of conducting research that is both socially impactful and ethically sound. However, they also noted the ongoing challenge of balancing the immediate expectations of academia with the need for long-term outcomes. Researchers emphasized the importance of documenting interdisciplinary knowledge over time and expressed the need for ongoing funding to sustain CROSS's transformative potential. Some projects successfully secured additional support, including the AGORA grant from SNSF, to showcase their work and enhance public outreach. Ultimately, CROSS served as a catalyst for larger interdisciplinary projects addressing environmental, social and health challenges funded by various national and international agencies (SNSF Project Funding, Sinergia, Horizon Europe, etc.).

Final Part: Open dialogue on the CROSS Program

A final dialogue on the administration and effectiveness of the CROSS Program was moderated by **Dr. Gabriela Tejada,** Deputy Director CDH, EPFL, and **Dr. Claire Arnold**, Administration and Strategy Officer, UNIL. The discussion on the utility and effectiveness of CROSS funding highlighted its significant impact, as well as some limitations. Researchers acknowledged that the CHF 60,000 funding cap was crucial for the initial phase of their projects, enabling activities that would otherwise be impossible. While suitable for early stages, some felt that a higher cap or longer funding period could have further improved outcomes. The program's focus on preparatory work was particularly beneficial for interdisciplinary projects, especially those integrating human and engineering sciences, although challenges remained. CROSS's flexibility in fostering new collaborations was also appreciated for bringing fresh perspectives.

CROSS played a crucial role in helping researchers secure additional funding for subsequent larger projects. While the CHF 60,000 serves as effective seed funding for ambitious interdisciplinary initiatives at EPFL and UNIL, it is sometimes insufficient to fully launch new projects. The program's administrative processes are efficient, though challenges arose regarding unexpected changes in funding usage and the inability to transfer funds between institutions.

The program's thematic flexibility allowed researchers to explore their work within a broad framework, encouraging exploration of timely topics linked to society and technologies and increasing chances for further funding. CROSS also promoted collaboration across diverse fields, such as robotics and sustainability or history and computer science, fostering cross-disciplinary insights. Involving non-academic stakeholders enhanced the social impact of projects. Researchers viewed CROSS as a rare opportunity for early-stage interdisciplinary work that allowed them to explore new approaches and expand their knowledge.

Despite some challenges, such as delays in contract establishment and difficulties in navigating different disciplinary languages, CROSS provided valuable opportunities for groundbreaking research. The program encouraged researchers to step outside their comfort zones and fostered unexpected collaborations. Suggestions for improvement included extending the funding period, increasing the funding cap, and addressing institutional funding process issues. Participants were encouraged to apply for the 2026 Call, emphasizing the importance of clearly showcasing the interdisciplinary approach and its potential for supporting larger future proposals, key factors in the selection process.