



**SONATA**  
Situation aware Orchestration  
of Adaptive Architecture

# NEWSLETTER #2

## MAY 2025



## Welcome to the 2nd SONATA Newsletter

It has been a busy 2025 so far for SONATA. As the initial phases of our Situational Track, Orchestration Track and real-world workplace Field Track studies progress, our members have also been busy producing our 1<sup>st</sup> “Meet the Partners” video series and attending workshops and events, including the 1<sup>st</sup> SONATA Recommendations Workshop in Aachen in February. Read all about these exciting developments, and more, below.



## 1<sup>st</sup> SONATA Recommendations Workshop, Aachen

On Thursday 6th February 2025 the SONATA project hosted its first hybrid Adaptive Workspace Recommendations Workshop, held at the Reiff-Museum, Faculty of Architecture, RWTH Aachen University, Germany.

The Recommendations Workshop was a key step forward for SONATA, providing the ideal forum to deep-dive into the development of our evidence-based recommendations with internal members of the SONATA consortium and external stakeholders, predominantly from the academic research community. Over fifty participants were introduced to the first SONATA baseline recommendations, developed from the evaluation of results from initial literature reviews and early study tracks.



Guests benefitted from experiencing the orchestrated SONATA adaptive technologies first-hand at the world's first 1:1 prototype of the **adaptive office of the future** at the Aachen Workplace Simulation Laboratory, as well as introductory presentations from host Marcel Schweiker from Uniklinik RWTH Aachen and Andrew Vande Moere from KU Leuven, and an insightful Keynote Presentation from invited speaker Dr. Ir. Rianne Appel-Meulenbroek from Eindhoven University of Technology on "Office workplace design for mental and social health & wellbeing".



With the project background established, the interactive co-design workshop began, with the SONATA recommendations authors introducing their most "controversial" recommendations to small groups, leading to many lively discussions! Each group then fed back their findings, with a meta discussion then facilitating reflection and final contributions.

These invaluable insights have been essential in fine-tuning the SONATA baseline recommendations and giving the partners much food-for-thought as we move forward.

The next SONATA Recommendations Workshop will be taking place in Italy in November. Targeted at policymakers, it will continue the SONATA ethos of collaboration with our key stakeholders, to maximise relevancy and potential impact of our adaptive architectural solutions for healthier future workspaces.

## SONATA Consortium Meeting – Uniklinik RWTH Aachen

The 4th SONATA Consortium Meeting took place on the 5th-6th February 2025, hosted by Uniklinik RWTH Aachen. Our first face-to-face gathering since June 2024, the team had a lot to catch up on!

Much of the two days was dedicated to updates and discussion on progress on each of our eight Work Packages, but plenty of time was dedicated to other key activities, including an **Equality Workshop** from SONATA Wellbeing Manager Sara Arko from IRI UL, and a deep-dive into **Exploitation and Intellectual Property** in a workshop led by SONATA IP Manager Marc Hoppermann from BLDG.Systems and Katharine Houston from Communications, Dissemination and Exploitation partner EValTech R&D. The SONATA PhD students also presented updates on their latest research and experiments.



*Team SONATA at Uniklinik RWTH Aachen*

The team was able to take advantage of the venue and was given a demonstration of the Workplace Simulation Laboratory, and a tour of the fascinating, opinion-dividing Uniklinik RWTH Aachen building. Time was also set aside to enjoy some sight-seeing and socialising, with a guided architectural tour of Aachen's beautiful town centre, some excellent local food and a chatty catch up with colleagues at two working dinners in and around town.



The meeting, as always, was a fruitful experience, fostering lively discussion, exploring how we manage SONATA's research and the consortium itself, as we find ways to maximise the input and contributions from all of our partners, bringing together insights from multi-disciplinary academic research, industry, and target stakeholder group representatives. In this way we continue to ensure that our approach towards developing better, healthier workspaces is as adaptive as our workspace technologies!



## SONATA now on Bluesky

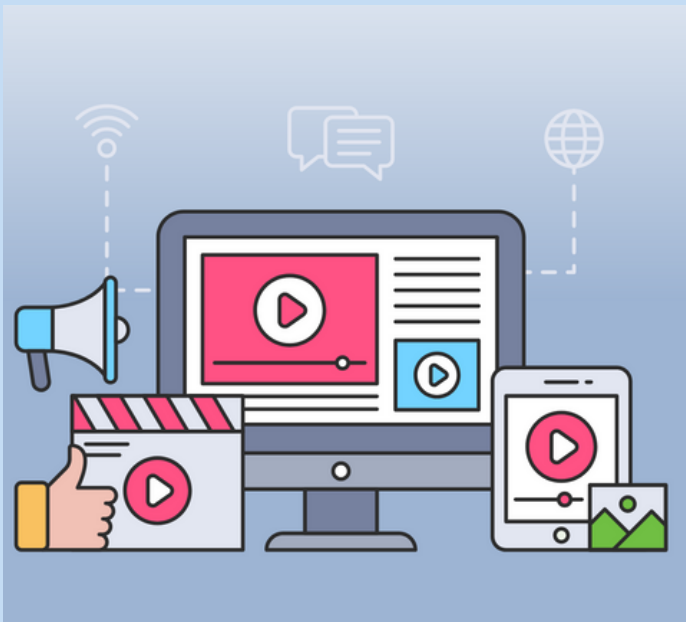
On Bluesky? Follow the new SONATA account to join the conversation on adaptive architecture, the future of workspaces, robotics, or whatever you would like to contribute!

Our tag: [@sonata-horizon.bsky.social](https://bsky.app/profile/@sonata-horizon.bsky.social)

FIND US ON  
BLUESKY

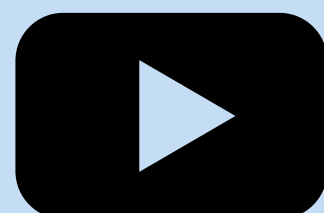


## 1<sup>st</sup> SONATA Video Miniseries “Meet the Partners” Launched



In February, the 1<sup>st</sup> SONATA video miniseries “Meet the Partners” was launched. This series allows the SONATA partners to directly speak to our audience, introducing their field of expertise within our multi-disciplinary consortium, and explaining how they are bringing this to the work of the project. The final video in the series will be from the SONATA Coordinators at KU Leuven, expected in June. Stay tuned!

Head over to the [SONATA YouTube channel](#) to catch up with the latest videos and to subscribe!





## Human-Robot Interaction Conference HRI' 25, Melbourne

On March 5th, Alex Binh Vinh Duc Nguyen from KU Leuven presented his paper "Eliciting Understandable Architectonic Gestures for Robotic Furniture through Co-Design Improvisation" at the premier ACM/IEEE Human-Robot Interaction Conference (HRI' 25) in Melbourne, which ran from the 4th-6th March.



*Alex Nguyen presents at HRI '25 in Melbourne*

The paper explored how adaptive architecture, embodied as a mobile robotic partition, can autonomously gesture towards occupants through its motion and position to convey its intent when autonomously reconfiguring a layout, or even to nudge occupants in relocating to a more suitable location. To design these gestures, the team at Research[x]Design, KU Leuven, collaborated with a diverse group of multidisciplinary experts, including animators, choreographers, cinematographers, scenographers, architects, and roboticists.

**READ THE FULL  
PAPER HERE**

While in Melbourne, Alex took the chance to visit the HCI and robotic labs at Monash University and CSIRO: Commonwealth Scientific and Industrial Research Organisation, Australia's National Science Agency.

This experience offered Alex an invaluable opportunity to meet with Human-Robot Interaction experts from all over the world and discuss the SONATA vision: where buildings can now become robotically-augmented to interact with occupants and improve their health & wellbeing, ultimately bridging the knowledge of Human-Robot Interaction with Human-Building Interaction, environmental psychology, and architectural research, and other disciplines.



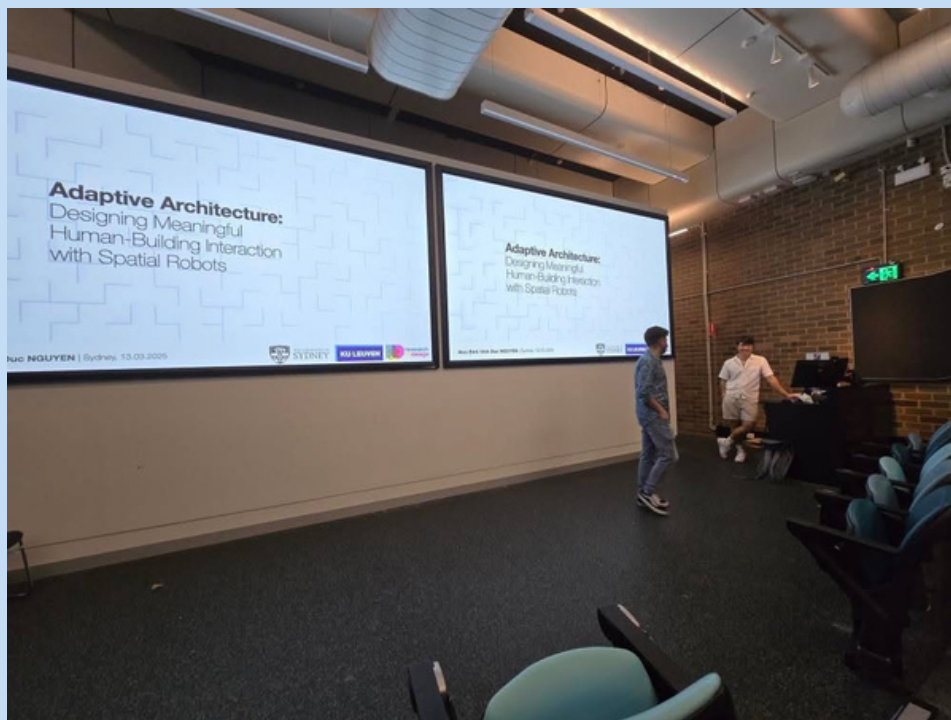
## SONATA at the University of Sydney

The SONATA team is nothing if not efficient! While Alex Binh Vinh Duc Nguyen was in Australia, he widened his SONATA dissemination efforts, having been invited to give a guest lecture on his research by the Urban Interfaces Lab at the University of Sydney.

On March 13<sup>th</sup>, Alex presented his research into the vision of adaptive architecture, or "spatial robots", as the intersection of Human-Robot Interaction and Human-Building Interaction to dynamically transform the built environment to better meet human needs. In his lecture, Alex discussed his work as part of SONATA on how robotic technologies can augment spatio-temporal architectural structures in dynamically adapting to the needs of occupants in shared spaces, 'nudge' their behaviour and communicate intents through movement.

The invited lecture provided Alex with the forum to explore with colleagues at the University of Sydney how the SONATA findings can be transferred to inform the architecturally-appropriate behaviours of other robotic embodiments in urban and public spaces, to enrich the experience of humans, while also improving sustainability.

**READ MORE ABOUT  
THE EVENT HERE**



*Alex Nguyen from KU Leuven at the University of Sydney*



### Rockfon @ Università degli Studi di Perugia

On the 4th of March 2025, the team at the University of Perugia had the pleasure of hosting Pascal van Dort from SONATA partner and experts in acoustics, Rockfon. Pascal delivered a lecture to a rapt group of Master and PhD students, on the importance of acoustics in our built environment and for human health and wellbeing. Pascal shares,



*Pascal van Dort from Rockfon at UNIPG*

“It was a great experience being in Perugia and at UNIPG. I was truly honoured to deliver the guest lecture. I received some wonderful feedback from the students, including one who mentioned that I held his attention for the full two hours, while another expressed her astonishment at learning how significantly the indoor acoustic environment affects our health and wellbeing.”

On two subsequent days acoustic measurements of reverberation time were carried out in the offices in which the SONATA project experiments and studies are taking place. Island and vertical acoustic panels, provided by Rockfon, were tested to assess their impact on the acoustic performance of workspaces. A conference room, still being set up for use, was also analysed, as users had reported a high perceived reverberation time within the space. Results from these tests will soon be shared within the SONATA consortium and more widely to the scientific community. Pascal himself noted that,

“The measurements provided valuable insights into the acoustics in different rooms and the effects of the acoustic floor screens and ceiling islands.”



*Acoustic Experimentations in the Conference Room at UNIPG*



## Orchestration Track Updates at Uniklinik RWTH Aachen

Installation of the Aachen Workplace Simulation Laboratory at Uniklinik RWTH Aachen, the world's first 1:1 prototype of the adaptive office of the future, was initiated in late 2024, incorporating multiple technologies from the SONATA partners, to assess the health benefits of single and then orchestrated technologies, aiming for greater holistic impact than individual interventions alone.

We are delighted to report that the first orchestration study (OT1) was successfully concluded in April 2025, after conducting 96 sessions with 32 participants. Here, Suraksha Vegad from UKA shares updates on the study, its background, and what it has taught us so far:

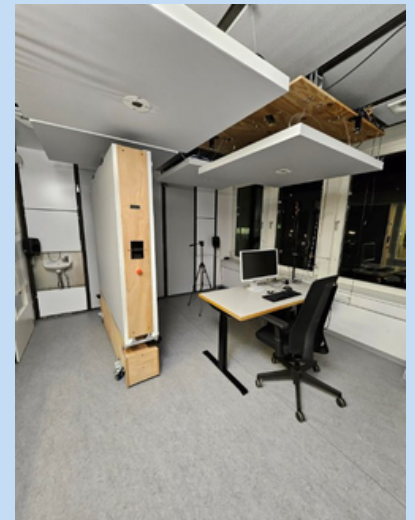
“

The goal of the experiments was to examine how individual architectural elements affect physiological, psychological and cognitive responses under stressful and optimized conditions with the use of the adaptive technologies in a simulated office environment at the Aachen Workplace Simulation Lab. For the physiological responses, data related to heart rate, heart rate variability, blood pressure and brain activity were recorded. The affect of the participants under different conditions, their satisfaction with the conditions and their perceived control over the conditions were assessed to examine the subjective and psychological experience of the participants. Lastly, cognitive responses were assessed using a cognitive task, the Columbia Card Task.

Based on our observations during the sessions, OT1 has taught us that people preferred having control over their environment, indicating the value of adaptive architecture and the need of having control over these adaptive technologies, such as having the opportunity to manually adjust the height of the desk to suit their preferences. Furthermore, during the experimental period, it became apparent that people's physical limitations, such as specific injuries, sensitivities or even habitual movement patterns, can influence the effect of adaptive architecture as some participants were adopting different postures than others in relation to the adaptive technologies. This observation highlighted the importance of considering individual variability and needs within the orchestration of adaptive technologies.

The experience of conducting OT1 was invaluable, and we are now diving deep into data analysis to explore the effects of adaptive architecture on worker's physical and psychological health and well-being and cognitive performance. In the meantime, we are preparing for the next orchestration study (OT2), which is planned to start later in 2025!

As we head forward, we are excited to see what insights OT2 will bring.



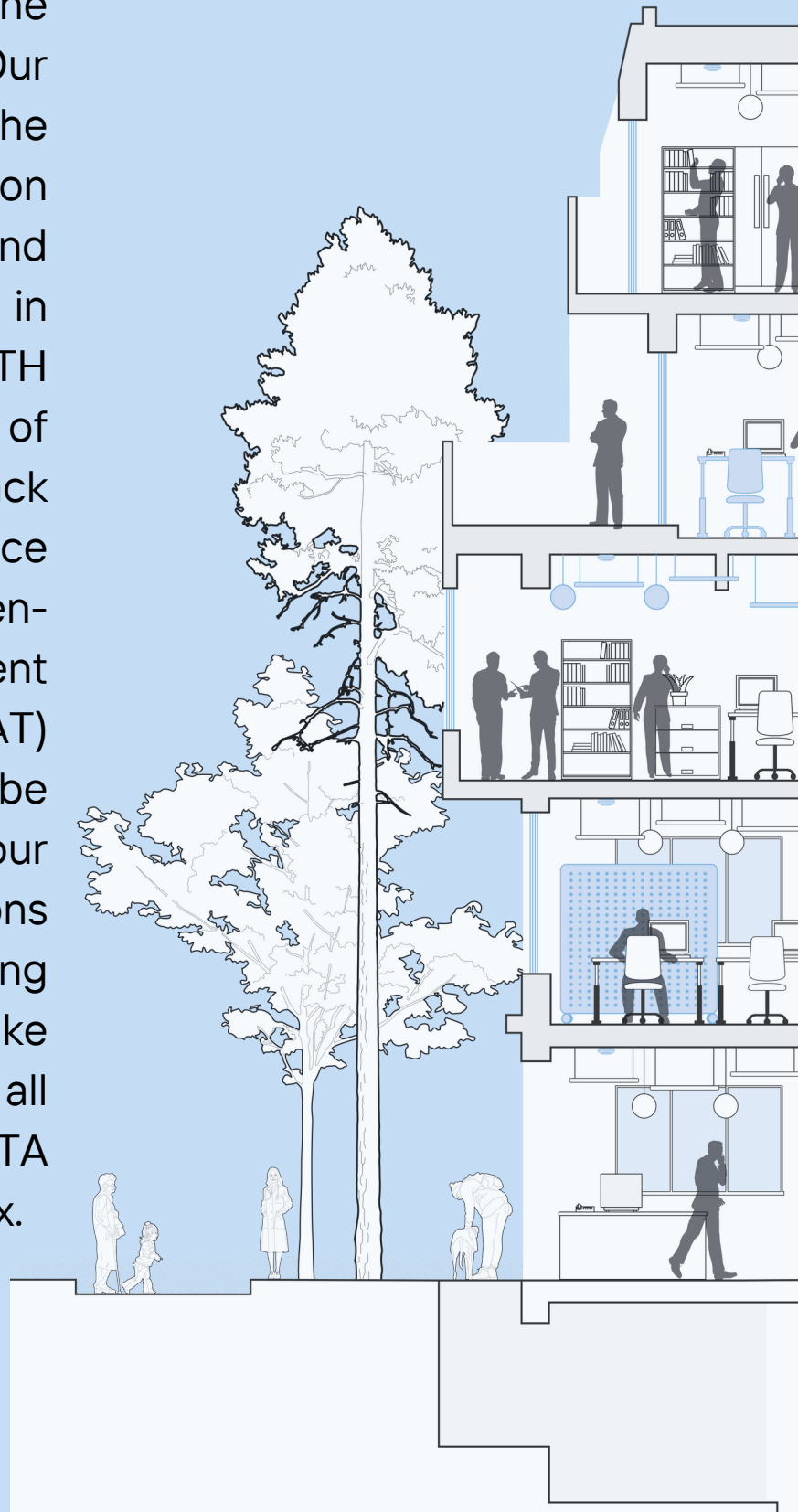
”



## Thank you for reading!

We hope you enjoyed reading the latest news from SONATA. Our next edition will be released in the autumn, with all the updates on the ongoing Situational and Orchestration Track studies in our Living Labs at Uniklinik RWTH Aachen and The University of Perugia, and our Field Track study in a real-world workspace setting in a semi-public, open-plan office within the Department of Electrical Engineering (ESAT) at KU Leuven. We will also be sharing all the information of our upcoming 2<sup>nd</sup> Recommendations Workshop, which will be taking place in Italy in November. Make sure to subscribe to receive all future editions of the SONATA Newsletters direct to your inbox.

**SUBSCRIBE TO THE  
NEWSLETTER**





## Our Team

### Academic Partners



### Companies

