

From a mission to Mars to your bathroom: harnessing advanced technology for your everyday well-being.

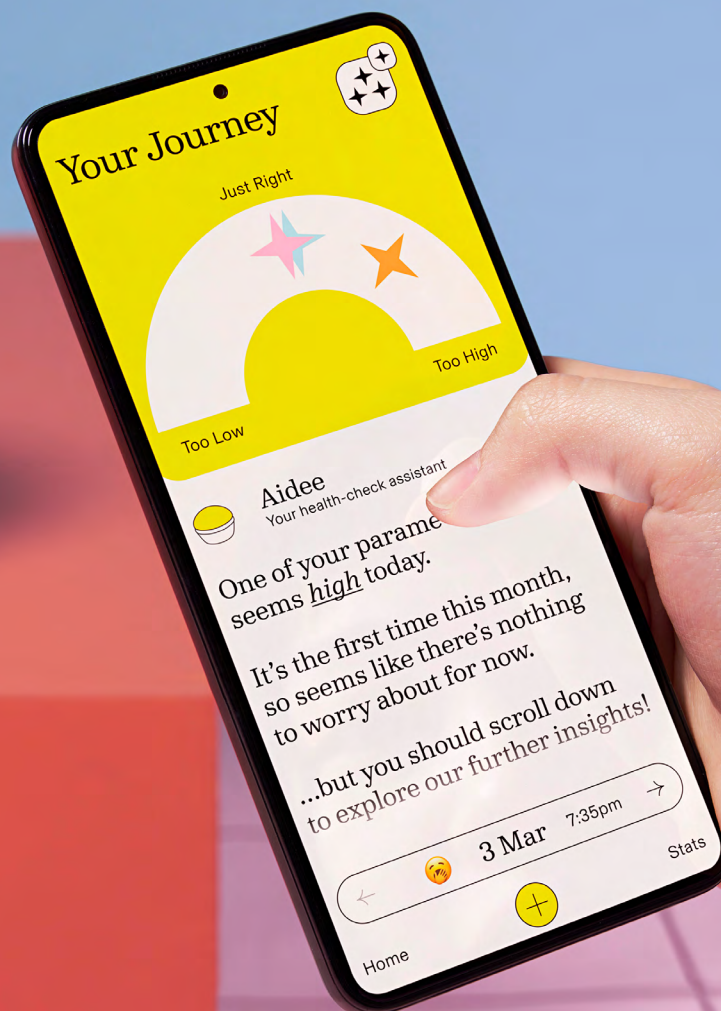
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EPFL+TECAL LAB

PRESS RELEASE

WELLBEING & HEALTH

RESEARCH



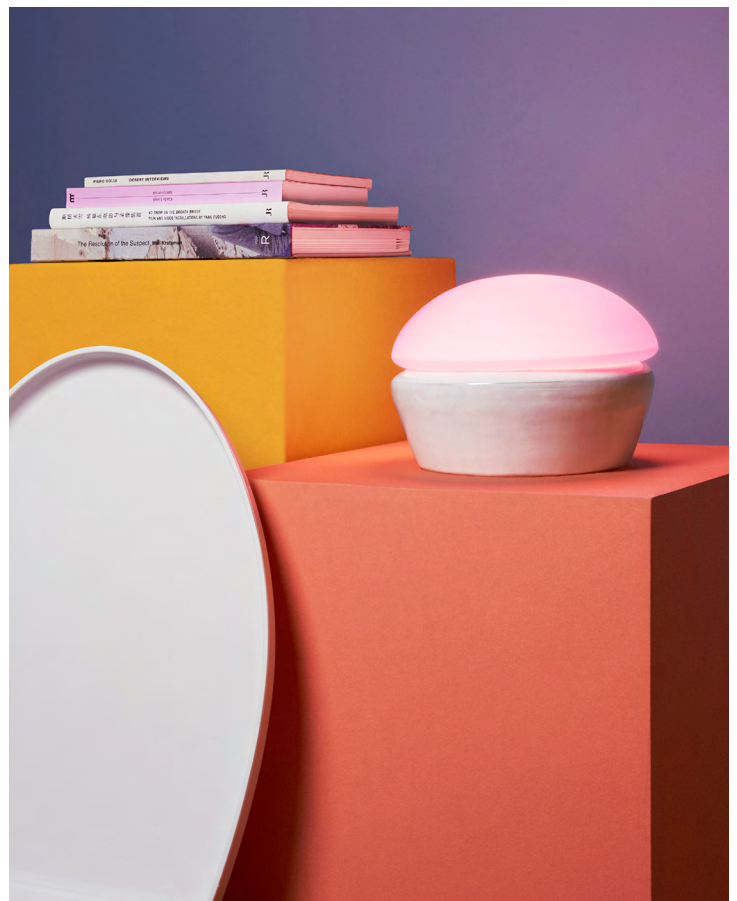
From a mission to Mars to your bathroom: harnessing advanced technology for your everyday well-being.

Tracking our health based on physical indicators, such as heart rate, is now easy. But access to biochemical indicators remains more complex. Especially since we have a delicate relationship with our intimate fluids like urine. How can we make this experience positive and understandable on a daily basis? Research carried out by the EPFL+ECAL Lab shows the key role which design plays in appropriating new perspectives for our well-being. The excellence of this work earned its author, Margherita Motta, the Sylvie Rusconi Foundation Award for young talent in design research, presented on November 14, 2023.

The initial idea was inspired by the work carried out to preserve the health of astronauts on missions to Mars. The assessment of their physiological state is based on complete monitoring, involving not only external sensors, but also biochemical measurements on a bodily fluid. And unlike blood, which requires invasive sampling, urine is readily available.

On a technological level, it was the CSEM – Swiss Center for Electronics and Microtechnology – which explored the possibilities of miniaturization and automation of such a system. The possible compatibility of this technology with our everyday toilets has raised the prospect of a device usable by ordinary Earthlings. However, there remains a major problem: the relationship we have with our bodily fluids is often difficult. We are a long way from wrist measurements with a smart watch. This subject therefore constituted a fertile area for design research. How can we imagine interactions with this device? How to represent the collected data? How to create a favourable context and perception? Two years of observation and creation allowed us to explore approaches able to give the data an expressive quality, but also a more tangible dimension. Ultimately, the experimental device consists of an interface compatible with all smartphones, and a tangible companion object, which creates a form of physical interaction with the data.

The tests, carried out with 81 users, show the benefit of a visualization which serves to transform the technical dimension of values into an expression of well-being. The results indicate that these more advanced aesthetics do not reduce users' ability to understand. The presence of



↑ Aidee (image © EPFL+ECAL Lab / Calypso Mahieu)

the companion object also offers a positive impact by providing greater ease in relation to intimate data directly linked to our health.

Supported by the national Innovation Agency InnoSuisse and led in collaboration with the Swiss company Estee (Earth Space Technical Ecosystem Enterprises), this project was the subject of an article published in the scientific journal *PLOS Digital Health* and a presentation in the form of an academic poster at the Symposium in “Point-of-Care Diagnostics” in Sion. It opens major prospects for developing a better relationship with the parameters that promote our health and well-being.

The main author of the interfaces as well as of the research, Marguerita Motta, a collaborator at the EPFL+ECAL Lab, receives the Sylvie Rusconi Foundation Award for young talent in design research, this Tuesday November 14, on the occasion of the annual *Unseen Insights* event.

ARTICLE PUBLISHED IN THE SCIENTIFIC JOURNAL PLOS DIGITAL HEALTH
Designing self-tracking experiences: A qualitative study of the perceptions of barriers and facilitators to adopting digital health technology for automatic urine analysis at home.

[Read the article](#)



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CONTACT

Nicolas Henchoz
Director
EPFL+ECAL Lab

nicolas.henchoz@epfl.ch

Géraldine Morand
Communication
EPFL+ECAL Lab
+41 78 742 44 08

geraldine.morand@epfl.ch

epfl-ecal-lab.ch