the sense
innovation and research center

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Inside The Sense 6-12

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Editorial - Interview with Gerald Howard

How can a scientific ambition be transformed into an international-scale event? Gerald Howard, facilitator at Lausanne Montreux Congress (LMC), shares his vision of the strategic role of scientific conference.

Could you introduce your role at Lausanne Montreux Congress and explain how you support scientific communities in the design and delivery of international conferences?

Gerald Howard : I work for Lausanne Montreux Congress as a facilitator in the creation and development of thematic events related to the economic, educational and research fields. My role is to act as a bridge between the scientific ambitions of researchers and the operational realities of organizing international events.

In practical terms, I support scientists and academic institutions throughout their entire event journey, from assessing a bid to host an international conference through to its full on-site delivery. I work in close coordination with the Congress & Events Department (COMA) of Lausanne Tourism, which is responsible for registrations, accommodation, logistics, financial management, and the administration of scientific abstracts.

My philosophy is that nothing is impossible: it is the way we communicate, coordinate and bring stakeholders together that makes projects achievable. I define myself as a solution maker, passionate about building bridges between science, innovation and event excellence.

A collaboration between Lausanne Montreux Congress and The Sense is currently under consideration. In your view, what would be the main perspectives, the framework conditions to be respected, and the added value for both institutions?

Gerald Howard : Our two organizations share a common DNA rooted in scientific excellence, innovation and societal impact. Any potential partnership would, however, need to be embedded within a precise institutional and political framework, taking into account existing support structures and the resources that can be mobilized at the time of implementation. Such a collaboration could allow The Sense to benefit from increased international visibility through conferences, symposia and workshops, while fostering synergies with opinion leaders and world-renowned researchers affiliated with or connected to the Sense. LMC's expertise in hybrid and virtual events would also provide opportunities to reach scientific communities on a global scale, while developing local and international event formats through the Swiss scientific promotion network.

It is important to emphasize that activities planned on Swiss territory would primarily take place in the canton of Vaud. When events are organized outside this cantonal framework, a prior assessment of support possibilities from our Swiss partners would be required. Similarly, for any initiative outside Switzerland, a specific study and an analysis of funding opportunities and institutional support would be essential.

For LMC, a partnership with The Sense would help strengthen Lausanne's positioning as a "Congress Destination" and as the heart of the Health Valley. It would make it possible to highlight regional academic and hospital institutions—such as UNIL, CHUV or HES-SO Valais-Wallis, among others—while creating bridges with medtech companies, digital health start-ups, foundations and funding bodies. The regional and international ecosystem is rich, interconnected and complementary; cooperation grounded in institutional realities could therefore be beneficial for all stakeholders.

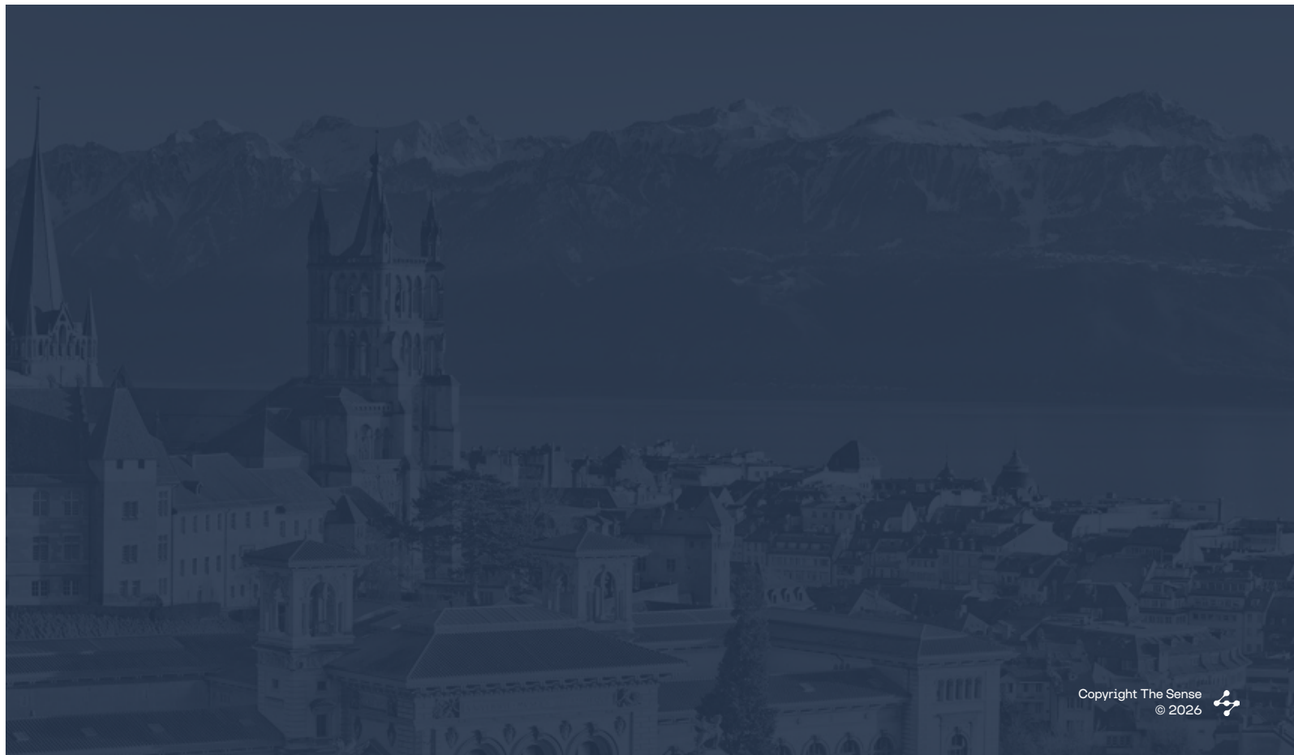
If this partnership were to materialize, what benefits and opportunities do you see emerging for The Sense, for the Lausanne region, and more broadly for Switzerland's scientific positioning at the international level?

Gerald Howard : If this collaboration were to materialize, it could help position Lausanne as a leading European destination for neuroscience and sensory sciences. Each international conference would welcome between 150 and more than 2,000 participants, generating significant economic benefits for hotels, restaurants and the local economy, while attracting leading researchers to the region.

At the national level, such a partnership could strengthen Switzerland's image as a scientific hub by creating synergies between Lausanne, Geneva, Bern and Zurich, while respecting the institutional frameworks specific to each region. Internationally, it could enhance the academic soft power of The Sense through the organization of flagship conferences, facilitate scientific collaborations, joint publications and European projects, and generate revenue that could be reinvested in research.

Thanks to the expertise of the COMA team, Sense researchers would benefit from comprehensive professional support in conference organization: outsourced administrative management, digital tools for hybrid events, direct access to local infrastructure, all integrated into a strategy of sustainability and institutional responsibility.

Several initiatives could thus be developed, depending on the political and institutional support available, while maintaining the flexibility needed to co-build projects with the relevant partners and maximize their scientific, societal and territorial impact.



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News

Sense Retreat 2025 - 2nd edition: Innovation and research in Champéry

Between mountains and innovation, the Palladium de Champéry and the Hôtel Suisse provided an inspiring setting for the second edition of the Sense Retreat, bringing together nearly sixty participants, including Sense affiliates and members of the Scientific Advisory Board (SAB). Three years after the launch of the Sense in 2022, this meeting strengthened scientific collaboration and research excellence in health and neuroscience. “The Sense retreat was a valuable moment of exchange and reflection for all affiliates present. The focus was placed on transparency regarding how the Sense operates and on opportunities to take part in upcoming activities. I was particularly impressed by the scientific excellence and the richness of our work, as well as by the remarkable cohesion of our team. Together, we truly give meaning to the Sense,” said Prof. Micah Murray, Scientific and Academic Director of the Sense.

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Pizza & Science - A new immersion in sensory research at the Mat-Tech Lab

On December 4, The Sense invited around twenty participants to a new edition of Pizza & Science. The event offered an opportunity to discover innovative research projects from the inside... in a friendly atmosphere over pizza.

The program included an exclusive visit to the Mat-Tech Lab at Energypolis (Sion), where cutting-edge mathematical approaches are being developed to better understand the senses and human perception, under the direction of Professor Benedetta Franceschiello.

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News

Swiss-Korean Innovation Week: shaping the future of human augmentation

From May 19 to 23, 2025, the Swiss-Korean Innovation Week took place in Seoul, bringing together Korean and Swiss experts, including several members of the Sense, around the theme of human augmentation. Organized by the Embassy of Switzerland in the Republic of Korea, this annual event aims to strengthen collaboration between the two countries in science, technology, research and innovation.

The 2025 edition highlighted the many facets of human augmentation, a rapidly expanding field at the intersection of neuroscience, biotechnology, artificial intelligence and robotics. Through engaging workshops, interdisciplinary panels, activities and bilateral meetings, participants discussed technologies designed to enhance human capabilities, such as neuroprosthetics, AI-based enhancements and wearable technologies.

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“Closing the Loop”: three days to discuss the role of feedback

From June 23 to 25, 2025, Prof. David Pascucci (PI of The Sense) and Maëlan Menétrey, both from the Laboratory of Psychophysics and Neuronal Dynamics (UNIL/CHUV/The Sense), in collaboration with Prof. Michael Herzog from the EPFL Brain Mind Institute (BMI), brought together specialists from around the world at La Grange (UNIL) for a workshop. Entitled “Closing the Loop: The role of feedback in neural processing and perception”, this event, supported by the Swiss National Science Foundation (SNSF), brought together fifteen internationally renowned speakers from the fields of cognitive science and neuroscience.

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11.3.26

Conference « Médecine complémentaire et médecine intégrative »

Registration

→ ALL OUR EVENTS

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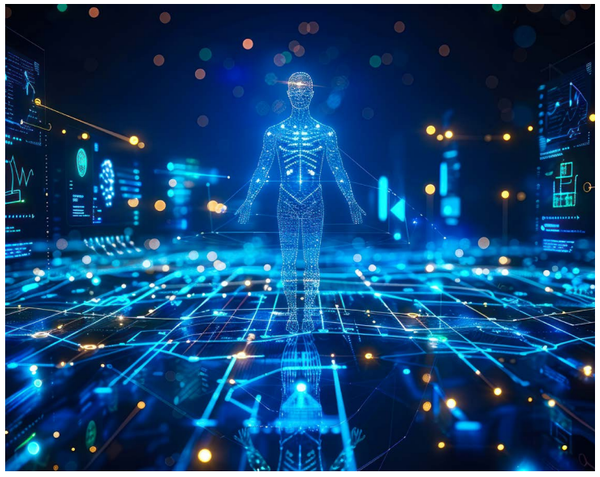
Inside The Sense

Focus on the Knowledge Management & Data Streams unit led by Prof. Jean-Paul Calbimonte, which explores artificial intelligence and data stream analysis to better understand patient trajectories. Also presented are the Multisensory Processes unit led by Prof. Michela Bassolino, specializing in the plasticity of body representations, as well as the nDBS-4-cognition project, an interdisciplinary collaboration bringing together the expertise of Prof. Bassolino, Prof. Paul Matusz and Prof. Friedhelm Hummel (EPFL). This project tests non-invasive brain stimulation to improve spatial memory following traumatic brain injury.



The Knowledge Management & Data Streams unit

Research within the Knowledge Management & Data Streams unit focuses in particular on the development of AI-based knowledge models and the use of ontologies to represent patient-related information. The unit also investigates various methods for analyzing and profiling patient trajectories using machine learning, techniques for managing data streams produced by sensors and other highly dynamic data sources, as well as behavior change models and persuasive technologies in the context of digital health applications.

Jean-Paul Calbimonte

Prof. Jean-Paul Calbimonte is an Associate Professor at the HES-SO Valais-Wallis and a member of the Applied Intelligent Systems Lab (AISLab). His research focuses primarily on the application of artificial intelligence and knowledge management techniques in the health domain. He has a particular interest in data semantics and machine learning applied to data from wearables and sensing devices. His research covers use cases related to chronic diseases, diabetes, active aging and rehabilitation.

Before joining HES-SO Valais-Wallis, he worked as a postdoctoral researcher at EPFL's LSIR, under the supervision of Prof. Karl Aberer. He holds a PhD from the Universidad Politécnica de Madrid, completed under the supervision of Prof. Oscar Corcho, focusing on ontology-based data access for data streams.

He also earned a Master's degree from EPFL, following a Bachelor's degree from the Universidad Católica Boliviana (UCB) in Cochabamba. In addition, he has gained industry experience, notably in the development of medical information systems and application platforms in radiology.

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Current research

Prof. Jean-Paul Calbimonte's team is currently leading several projects in which semantic models and knowledge graphs play a central role, particularly to ensure interoperability and data sharing with AI algorithms.

StreamKG (SNSF): This project explores the combination of dynamic data stream processing algorithms with knowledge graphs integrating temporal and spatial information. Applications include activity detection from video or image data, for example for monitoring physiotherapy exercises.

SmartEdge (Horizon Europe): This project focuses on interoperability and self-configuration of IoT/Edge devices. Using semantic models, these devices can organize themselves into autonomous networks of nodes pursuing shared objectives, with use cases in telerehabilitation.

Decoding Imagination (Sense – doctoral fellowships): This project studies brain activity through EEG signals in order to classify and decode mental imagery. It aims to better understand how the brain creates sensory experiences and how these vary in patients in a hypnotic state. Artificial intelligence is central to this work, particularly for decoding mental images from EEG data.

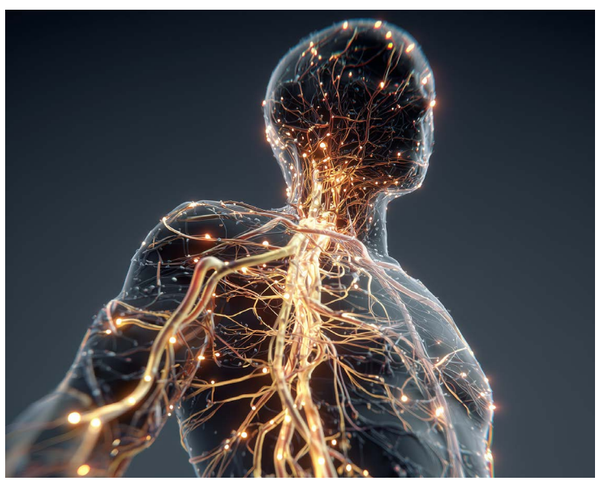
WISER (Innosuisse Flagship, until 2026): This project develops a distributed architecture of interoperable components using knowledge graphs for data exchange, particularly in the field of sustainability. Its outcomes can be transferred to other sectors where autonomous systems are essential.

Future developments and collaborations with the Sense

Prof. Calbimonte's team is strengthening its collaborations within the Sense, notably through the Decoding Imagination project, which creates direct synergies with the Pain & Interoception unit. The team is also developing applied projects with the Center for Integrative and Complementary Medicine (CEMIC) at CHUV: two bachelor projects in Business Information Systems have enabled students to design and test concrete solutions addressing real clinical challenges.

In addition, a new project recently funded by the SNSF and the THCS (Transforming Healthcare Systems) program, entitled Connect-Care, will focus on developing risk detection algorithms and personalized recommendations for adolescents suffering from obesity-related disorders. This project fully aligns with the Sense's dynamics, in connection with its initiatives around AI-driven personalized health.

Inside The Sense



The Multisensory Processes unit

The team led by Michela Bassolino focuses on the sensorimotor foundations and the plasticity of body representations. The body not only allows us to perceive and act upon the world, but also constitutes an object of direct perception for the brain. It is encoded at different levels across multiple cortical structures and gives rise to multiple mental representations, each with specific characteristics and functions. These representations are not fixed: they are built and continuously updated through sensorimotor experiences and multisensory bodily stimuli. They do not always faithfully reflect reality and can sometimes be distorted.

The team aims to understand the role and functions of these representations, how they are constructed and maintained, and why they can become altered. It also investigates their perception in patients with sensorimotor disorders—particularly after stroke, but also in the context of multiple sclerosis or chronic pain—and their impact on recovery and rehabilitation.

Michela Bassolino

From the beginning of her studies, Prof. Michela Bassolino has been interested in the plasticity of body and space representations under both normal and pathological conditions. She studied neuropsychology and cognitive neuroscience at the University of Bologna (Italy), then completed her clinical training in neuropsychology in rehabilitation centers for brain-injured patients. She obtained her PhD in cognitive neuroscience at the Istituto Italiano di Tecnologia (IIT, Genoa), studying sensorimotor plasticity following upper limb immobilization, and then pursued a postdoctoral position on the effects of sensorimotor deprivation on multisensory body representations.

In 2013, she moved to Switzerland to work at the Center for Neuroprosthetics (CNP) at EPFL, contributing to the EPFL Sion branch in collaboration with the Clinique Romande de Réadaptation (SUVA-CRR). From 2016 to 2019, she led a Swiss National Science Foundation (SNSF)-funded project (Ambizione) to study the sensorimotor bases of embodiment and body representations, combining transcranial magnetic stimulation, virtual reality and behavioral assessments in healthy adults and post-stroke patients.

Since September 2019, she has been working at the Institute of Health of the HES-SO Valais-Wallis and leads a project funded by the Mercier Foundation on body representations in older adults. She also collaborates with the MySpace laboratory at CHUV (Prof. Andrea Serino).

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Current research

Prof. Michela Bassolino currently coordinates the European project BB-REBUS, which explores the behavioral and neurophysiological mechanisms of body perception in three pathologies: stroke, multiple sclerosis and spinal cord injury.

In parallel, her team is conducting a fundamental research project funded by the SNSF, focusing on distortions of hand perception in healthy individuals.

She also co-directs the Master Rehab Tech, a joint program between HES-SO Valais-Wallis and the Politecnico di Milano, dedicated to the integration of new technologies in neurorehabilitation.

In addition, she serves as a visiting professor at the new NeuroBRITE research center of the Italian Multiple Sclerosis Foundation. This collaboration aims to better understand body perception in patients with multiple sclerosis and to identify intervention strategies to improve rehabilitation and quality of life.

Future developments and collaborations with the Sense

Among the projects carried out in collaboration with other Sense professors is an exploratory and translational study on proprioception, conducted in partnership with the Pain & Interoception unit.

This research aims to better understand how bodily signals are integrated and perceived, and how this knowledge could contribute to the development of new prevention and rehabilitation strategies in the field of pain and sensorimotor disorders, across various neurological pathologies.

nDVS-4-cognition projet

The nDBS-4-cognition project is the result of an interdisciplinary collaboration between the School of Health Sciences (HEdS) Valais, EPFL Neuro-X, and the Clinique romande de réadaptation SUVA Sion. Funded by the Canton of Valais as part of its program supporting inter-school collaborations, this project aims to develop an innovative non-invasive deep brain stimulation approach to improve spatial memory in individuals who have suffered a traumatic brain injury.
This partnership brings together the complementary expertise of Prof. Michela Bassolino and Prof. Paul Matusz (School of Health Sciences Valais) and Prof. Friedhelm Hummel (EPFL), while strengthening links with the clinical field through SUVA Sion, a long-standing partner in applied rehabilitation research projects.

Interview with Professors Bassolino and Matusz

Traumatic brain injuries are common in Valais. What are the most frequent sequelae your patients face?

Michela Bassolino: Even after a so-called “mild” traumatic brain injury, patients may experience persistent disorders such as behavioral and social changes, reduced concentration and motivation, or memory difficulties, including spatial memory. Spatial memory refers to the ability to orient oneself and move through space, which lies at the heart of our study. These symptoms may appear subtle, but they have a strong impact on quality of life, return to work and social relationships.

Why are these sequelae, even after a “mild” traumatic brain injury, so difficult to treat today?

Paul Matusz: The brain has a natural capacity for recovery, but this is often insufficient. To date, there is no specific treatment that can effectively restore impaired cognitive functions. Care mainly relies on cognitive and motor rehabilitation—an essential approach, but one that is sometimes not enough to ensure full recovery.

Can you explain in simple terms what this new non-invasive technology you are testing consists of?

Michela Bassolino: Through our collaboration with Prof. Friedhelm Hummel, an international expert in this field, the project aims to use an innovative neuromodulation method to non-invasively stimulate certain deep brain areas, such as the hippocampus. Unlike invasive approaches, this technique requires neither surgery nor implants: it is an external, painless and safe stimulation. The goal is to give the brain a small “boost” to support its natural recovery and plasticity mechanisms.

How does this approach differ from current methods of care?

Paul Matusz: Today, we can support patients through cognitive and functional rehabilitation, but we still lack a direct way to act on the brain itself. With this technology, we hope to accelerate and strengthen recovery processes, in addition to existing therapies.

What concrete benefits do you expect for patients?

Michela Bassolino: Our objective is to reduce persistent cognitive impairments, particularly by improving spatial memory, and thus quality of life. This could also facilitate patients’ professional and social reintegration, which is a major challenge after a traumatic brain injury.

What are the next steps of the project?

Michela Bassolino: We will continue the experimental phases to implement this ambitious project, which combines brain stimulation, electroencephalography and virtual reality. This approach allows us to precisely validate the effectiveness of stimulation on spatial memory in naturalistic environments, before testing it on larger patient cohorts.

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Highlights - research axes

Perception & Cognition

Prof. Micah Murray, Scientific and Academic Director, explains in Coop Coopération that intuition is not a mystical sixth sense, but a rational neurobiological process. It is based on our perceptions, our experiences and the synchronization of our brain circuits. Fast, efficient and closely linked to emotions, intuition develops with experience and guides us in our decisions, whether in everyday situations or critical choices.

> READ THE ARTICLE

Action & Repair

Alix Trouillet, a member of the Neuro-Otology unit led by Prof. Lukas Anschuetz, delivered the keynote at the Career and Poster Day of the Master’s program in Medical Biology at CHUV. Her talk, entitled “Bionic Hearing through a Soft Auditory Cortex Implant”, focused on translational research aimed at improving auditory neuroprostheses and developing innovative therapeutic approaches. Students were able to engage directly with her and discover how scientific research can translate into concrete solutions to restore and repair sensory functions.

Devices & Data

During a new edition of Pizza & Science, The Sense opened the doors of the Mat-Tech Lab, a place where innovative devices and complex data come together to explore human perception. Led by Prof. Benedetta Franceschiello, this laboratory develops cutting-edge mathematical and technological approaches to model vision, analyze the eye–brain link and design tools to support research and medicine. From eye-tracking to artificial intelligence, including brain–eye imaging and innovative sensory devices, the Mat-Tech Lab illustrates how data and technology are transforming our understanding of the senses.

> READ THE ARTICLE

Interview
Esteban Crespo | Head of communication

Can you introduce your activities within the Sense?

Esteban Crespo: I am in charge of communications for the Sense. My role is to develop and consolidate the Sense's brand image among all our stakeholders. This involves promoting our affiliates, highlighting our projects, and showcasing the collaborations we maintain with our partners. I ensure that our communication is consistent, engaging and aligned with our strategic positioning. In concrete terms, I am the person behind the website as well as our social media channels (LinkedIn, X and Bluesky). I oversee content creation and distribution, and I also coordinate the coverage of certain events. You may even spot me at events with a camera in hand. My goal is to give the Sense a voice, to build connections with our community, and to strengthen our visibility at the local, national and international levels.

What is your perspective on the evolution of the Sense since its launch?

Esteban Crespo: I had the opportunity to begin my professional career at the same time as the official launch of the Sense. It was a real challenge to lay the foundations for a coherent and recognizable communication strategy, but today I am pleased to see how much we have evolved and gained visibility. Year after year, our brand image has grown stronger, our network has expanded, and partner institutions have placed their trust in us. This journey is a source of pride for me—and a strong motivation to continue helping the Sense shine. In the years to come, I hope to continue regularly announcing new successes through our news and press releases. My ambition is for the Sense to increasingly establish itself as a reference in health innovation, by highlighting a growing number of projects, collaborations and talents.

Can you describe a typical day for you?

Esteban Crespo: It is difficult to speak of a typical day in communications, as the tasks can vary greatly. One constant, however: I often start my day with a morning workout, which helps me get off to a good start. I then head to the office, where I usually spend the morning dealing with emails and taking part in various meetings, both for the Sense and for the School of Health Sciences, where I also work. The afternoon is often devoted to more operational tasks: writing content, graphic production, project follow-up, or creating photo and video visuals. And on some evenings, I also cover events or field activities.

"It was a real challenge to lay the foundations for a coherent and recognizable communication strategy, but today I am pleased to see that we have been able to evolve and gain visibility."

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Sensory awakening
"Improvised" snake illusion

[Find more illusions on Michael Bach's website]

What to observe

The pattern on the right is stationary—but it appears to expand, especially if you do not look at it directly, for example while reading this text.

Not everyone perceives this illusion, for reasons that are still not fully understood.

Comments

When adjusting the brightness of the band, a strong additional motion illusion occurs.

By experimenting with this figure, you will gain the tools needed to create your own version of the snake illusion. You simply need to know these four luminance levels. The ideal luminance can also be achieved through color; blue tends to be relatively dark. However, each color has three dimensions: hue, luminance and saturation.

We have just computed a simple model (preprint) showing that this illusion is a trivial consequence when you couple motion detectors in networks with a small amount of non-linearity.

We have just computed (2020) a simple model showing that this illusion is a direct consequence of non-linearity in networks of standard motion detectors.

Source

The original "Rotating Snakes"

Bach M & Atala-Gérard L (2020) L'illusion des serpents rotatifs est une conséquence directe de la non-linéarité dans les réseaux de détecteurs de mouvement standard, i-Perception 11(5), 1–9

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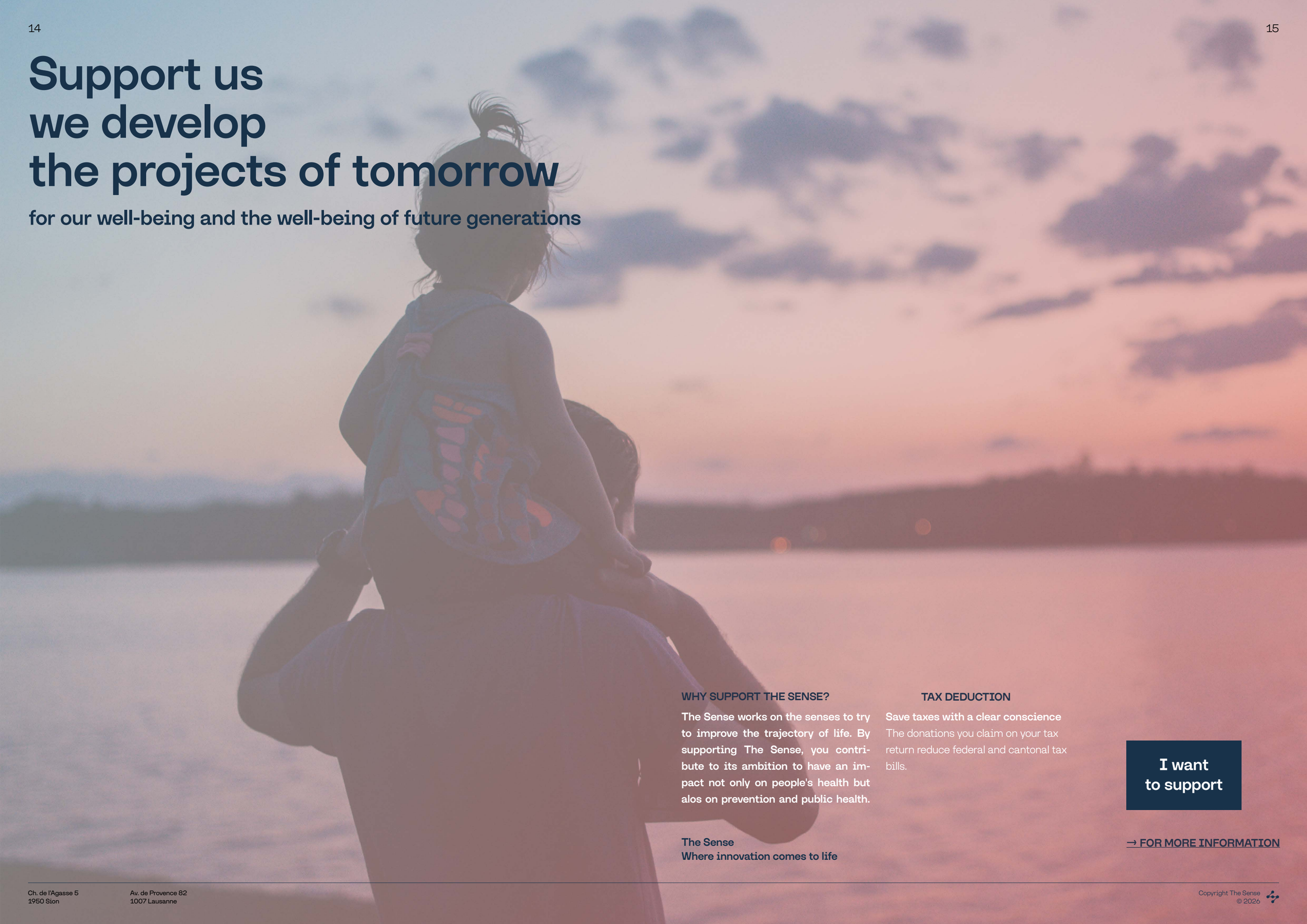
for our well-being and the well-being of future generations



WHY SUPPORT THE SENSE?

The Sense works on the senses to try to improve the trajectory of life. By supporting The Sense, you contribute to its ambition to have an impact not only on people's health but alos on prevention and public health.

The Sense
Where innovation comes to life

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