

# SmartX

European Smart Textiles Accelerator



Project Results



EUROPEAN SMART TEXTILES ACCELERATOR



@Smartx\_europe



SmartX Europe



SmartX Europe

[www.smartx-europe.eu](http://www.smartx-europe.eu)





# Foreword

*SmartX | European Smart Textiles Accelerator*



**Michael Kamm**

*Textile ETP President*

« SmartX was the first European project of the Textile ETP. It was a challenging but ultimately very rewarding experience for the small but growing ETP team. It was even more rewarding to see the motivated engagement of our 12 consortium partners and the incredible enthusiasm and industriousness of our 50 supported SMEs and start-ups. The smart textile innovation community created during the project will be maintained and actively nurtured by the Textile ETP in the coming years. Smart Textiles are still a niche market but will provide many opportunities for innovation and profitable growth for many textiles, electronics, and service companies in Europe. The EU-level cascade funding scheme employed by SmartX has enormous potential to seed-fund collaborative SME innovation across Europe. The leverage effect realised from the € 30,000 to € 60,000 funding envelopes combined with expert coaching is, in my opinion, unparalleled in other European public research and innovation funding programmes. I would like to see more of these funding opportunities for the benefit of SME innovators and start-ups in the textile and other industrial ecosystems. »

« It was a great pleasure to manage the SmartX project over the last 3 years, I want to express my appreciation for the motivation and dedication that the whole project team has displayed. Your support was vital to achieving the incredible results of the project. The enthusiasm and persistence showed by the awarded and coached SMEs and Start-Ups were also key to the project's success. To see the innovators eager to learn, overcome difficulties - not least the COVID disruptions, interconnect with other industries and create synergies the way they did, was simply inspirational. I am grateful to have been a part of this intense learning journey and I look forward to seeing our Smart Textile innovation community grow. »



**Judith Bosch**

*SmartX Project Manager*



**Lutz Walter**

*SmartX Coordinator*

« The present brochure provides a glimpse into the results of 3 years of hard, but ultimately very rewarding work of a great team of innovation professionals trying to incubate an entirely new cross-sectoral manufacturing value chain for smart textiles. While the true establishment of an industrial value chain takes a lot longer than that, our 25 trailblazer projects have shown what is already possible today when working with a clear customer pain point in mind, when engaging open-mindedly with innovators from other disciplines and when equipped with an unrelenting drive to succeed. SmartX has not only helped 50 innovative companies to come closer to the market with their smart textile solutions but also incubated a Europe-wide innovation community, which is set to prosper and grow for many years. It was a great pleasure and honour to guide this process over the last 3 years. »



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## Why Funding Smart Textiles Innovation? SmartX, a Unique Accelerator for a Cross-sectoral Innovation Challenge

*SmartX | European Smart Textiles Accelerator*

We have been hearing about innovations in the smart textiles field over the past decade. Still, in recent years e-textiles and wearables have started to move out from research and prototyping stages, building a clear momentum of industry adoption across several promising end markets, which are expected to reach 1.5 billion by 2025 (source: Euratex).

### Market Opportunity

Currently small – but rapidly growing

# € 1.5BN

EU Smart Textiles' market size expected in 2025

Source: EURATEX (2019)

SmartX wearables offer unprecedented opportunities for tackling pressing societal challenges by providing solutions in healthy ageing, patient monitoring, emergency management, safety at work, productivity enhancement, energy management of homes, and others. Several research studies have identified wearables as one of the ten technologies that will change our lives.

There has also been a recent surge in smart textiles innovators trying to satisfy a demand from consumer brands and end-users looking for personalised products and services. This pull followed the technology push observed in the past years, which thus shed light on the missing link in the emerging ecosystem: the industrial manufacturing value chain that can meet the market need in terms of product quality, reliability, scale, and cost-effectiveness. The SmartX project was born to help SMEs across Europe jump into that exponential growth by supporting the establishment of smart textiles manufacturing value chain in Europe and creating cross-sectoral collaborations among different industries.

SmartX defines smart textiles as a fabric-based components with an integrated electronic device that provides a function.

During the 3-year collaborative project, SmartX traveled around Europe looking for cross-sectoral partnerships from e-textiles innovators that could further the goal of establishing new integrated value chains for development, manufacturing, and marketing, thus filling the missing link. To achieve this aim, SmartX established three main objectives:

- Develop a Smart Textiles Manufacturing Value Chain. The key purposes of this task were to develop a strategic framework for a broad scale manufacturing and market exploitation of smart textiles in Europe, identifying and overcoming critical value chain gaps, market adoption bottlenecks, and regulatory barriers existing in each of the three market areas of application.
- Launch three open calls to fund up to 40 SMEs across Europe and associated countries. The awarded SMEs were given acceleration funding, coaching activities, and networking access. The implementation coach was the key element in improving the capacities of the SMEs and their coaches. At the very start of the innovators' journeys, SmartX offered application coaching as well.
- Build a SmartX community full of smart textiles innovators, research centers, universities, associations, and other relevant stakeholders. The goal of the community is facilitating the creation of business partnerships, knowledge sharing, and networking access.

To achieve all these objectives, SmartX created a consortium of 13 partners across Europe from the textile and technology industries, who share a vision of the promising future of European smart textiles. They are focused on manufacturing technology, microelectronics, data processing, and IoT. Partners include Textile ETP (Belgium), EuraMaterials (France), Citta Studi (Italy), Höskolan I Borås (Sweden), Texfor (Spain), Citeve (Portugal), DSP Valley (Belgium), CITC EuraRFID (France), Deutsche Institute für Textil- und Faserforschung (Germany), Centexbel (Belgium), Steinbeis Innovation (Germany), Institut Français de la Mode (France), and Sqetch (Germany).

## 2

### Finding the Best Smart Textiles Innovators in Europe SmartX Open Funding Calls

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SmartX allocated € 2.4 million during the three open calls, plus coaching activities. Each call was open for three months and it was preceded by an Expression of Interest. The first step was introduced to prevent projects that did not meet the requirements from going through the full applications process.

Projects that were eligible to participate in SmartX calls had to meet the following hard criteria: an existing prototype that contained a textile material with an integrated electronic device providing a smart function, have business potential, and technology ready to scale up into one of the three targeted end markets: protection, and sports; health and wellbeing; and industrial applications.

SmartX was overwhelmed by the outreach and participation in the calls. A total of 301 Expressions of Interest were received, out of which 105 turned into applications across the three open calls. Due to budget limitations, only 25 projects by 50 SMEs from 15 different EU countries were awarded.



Those projects received up to € 150,000 in lump sum funding, with a maximum of € 60,000 per SME partner; individual coaching by a selected coach, dissemination opportunities on SmartX online channels, and networking access during community events. Despite SmartX being affected by the Covid outbreak, several online and in-person events (when possible) were organised to encourage awarded SMEs to network. For example, two in-person Hackathons and two virtual brokerage events were organised to promote the interaction and collaboration between SME applicants, and a Value Chain Cross Fertilisation workshop connected funded SMEs with potential business partners.

The outstanding outreach of smart textiles innovators was mainly due to the efforts of the clusters that are part of the SmartX consortium. They have been trusted partners of companies while having the necessary resources to explore the different European opportunities to create cross-sectoral collaborations.





# 3

## **Picking the Best of the Best** **The SmartX Evaluation and Selection Committee**

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11 internationally recognised smart textiles, technology transfer, innovation finance, and end-market experts were chosen by the SmartX partners with the objective of selecting the best applications that could have an impact on the manufacturing value chain.



**Stefano Carosio**

STAM s.r.l, IT

« With SmartX, we were exposed to the latest disruptive innovations in smart textiles. »



**Christian Dalsgaard**

Smart Textile Alliance, UK

« An honour to be involved in bringing exciting new smart textile ideas to life. »



**Etienne Fradin-Beaugerie**

ALDES, FR

« Working on turning ideas & technologies into actual positive impacts. »



**João Gomes**

CENTI, PT

« SmartX pushed smart textiles onto the market & enabled the digitalisation of textile structures. »



**Rainer Günzler**

Hahn-Schickard, DE

« Projects supported by SmartX result in new functionalities & forms a basis for digitalisation. »



**Simon Hjelte**

Inkubatorn i Borås AB, SE

« SmartX proved the potency of EU innovation in a promising fashion. »



**Romano Hoofman**

imec, BE

« Passionate about technology & innovation. Assisting start-ups turn their ideas into prototypes. »



**Raquel Ledo**

CTAG, ES

« SmartX has promoted high-potential projects. I am pleased to be part of the team. »



**Francesca Rosella**

CuteCircuit, UK

« Looking at the future of smart textiles. »



**Henk Vanhoutte**

European Safety Federation, BE

« We need to stimulate innovative SMEs, with financing & coaching to make them successful. Exactly what SmartX is doing. »



**Daniela Zavec**

Titera, SI

« Identifying the gap between smart textiles' technologies & market potential. »



## 4

### **Providing a Helping Hand Throughout the Entire Journey The SmartX Coaching Programme**

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Accelerator*

One of the core activities of SmartX was to identify the needs and struggles of the awarded SMEs to reach the smart textiles market and coach them accordingly. Thanks to The Self-Assessment Tool (SAT), which is available via the SmartX community platform for all members and is a highly recommended instrument for detecting strengths and finding the right coach or development partner.

The 12 in-house coaches led by Steinbeis organised ten different coachinars to address the competencies most lacking in the awarded SMEs as per their SATs. Some of the collective webinars were about recyclability, integration, standardisation, etc., aligning well with the gaps identified in the Value Chain Map. Moreover, a good deal of individual coaching was provided, and the awarded SMEs selected sessions with experts.

All SmartX coaches and experts have worked closely with the 105 SMEs that applied and followed the 25 awarded projects throughout their project journey. **Here's what they thought about their coaching experience:**





**Stéphan Verin**  
Euramaterials

« SmartX cooperation proves the value of the innovation ecosystem in EU. Together we are stronger at the service of SMEs. »



**Virginie Canart**  
Euramaterials

« Supporting SMEs was a meaningful experience. Smart textiles dev. require a good network, technical & business tips. »



**Elke Weidenfelder**  
Steinbeis

« Enabling smart textiles innovators to grow. »



**Danièle Clutier-Léauté**  
IFM

« Working with these committed, expert professionals has been a very stimulating & gratifying experience. »



**Christin Jarchow**  
Sqetch

« The contact with the whole SmartX community was most meaningful to us. »



**Marte Hentschel**  
Sqetch

« A lot of knowledge could be acquired from the SmartX community's innovative mindset. »



**Dilay Kesten Erhart**  
Steinbeis

« As a SmartX coach, I helped to build strong communication in the field of smart textiles. »



**Anna Ribé**  
Texfor

« The SmartX coach has to put all the pieces together for a strategic planning. »



**João Oliveira**  
CITEVE

« We increased our skills & created new cross-sectoral innovation services to support SMEs in being more competitive. »



**Mark Croes**  
Centexbel

« I'm confident that SmartX did everything to help give smart textiles the bright future they deserve. »



**Emilie Defer**  
CITC

« IoT enhances textiles by creating new services. It was a real chance to support projects from different horizons. »



**Heiko Matheis**  
DITF

« It was a pleasure to take on the challenges with the funded SMEs & support them in their innovation process. »



**Pola Henderson**  
SmartX

« I have no doubt that the community will keep getting bigger & stronger in the years to come. »



**Lena-Marie Jensen**  
Smart Textiles

« SmartX has been a joyful journey. It's fantastic what we can achieve together & bring value to the society. »



**Linda Nyden**  
Smart Textiles

« SmartX was an exciting time with impressive product ideas. The SMEs we coached pushed the project & its products forward. »



**Amelie Olesen**  
Smart Textiles

« When developing a smart textile product, keep the end-user in mind, not to lose the purpose of usability in the process. »



**Dieter Stellmach**  
DITF

« An initiative bringing people & SMEs together - the whole is more than the sum of its parts. »



**Anna Ribeiro**  
CITEVE

« We increased our skills & created new cross-sectoral innovation services to support SMEs in being more competitive. »



**Bernard Paquet**  
Centexbel

« My motivation is to accelerate innovative initiatives by assisting with scientific expertise. »



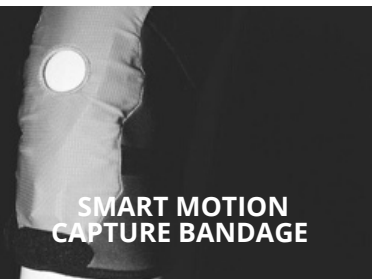
**Paola Fontana**  
Pointex

« Being a SmartX coach has been a great honour and a fantastic opportunity to deepen my knowledge of smart textiles. »

# 5

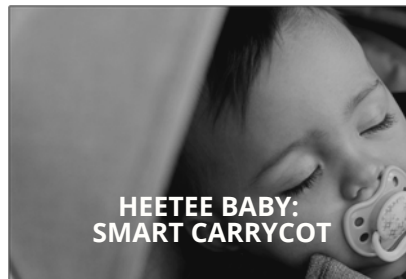
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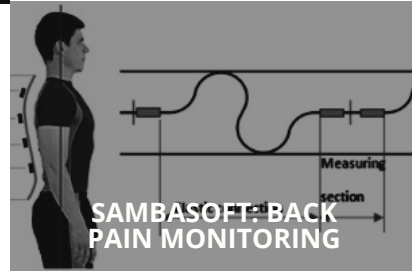
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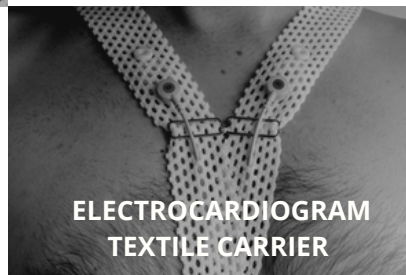
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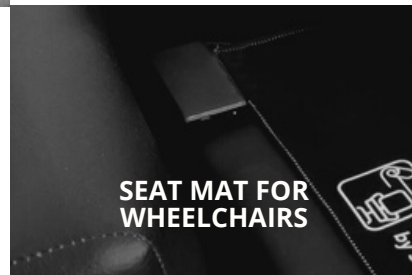
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DYNABACK  
SMART T-SHIRT

# ASTHMAWARE: ASTHMA MONITORING DEVICE

The goal of the Asthmaware project is to provide an objective monitoring device related to asthma and improve the quality of life of people with the condition, especially children. The asthma monitoring device aims to improve the quality of life of people with the condition, especially children. Asthma is the most common chronic disease among children and currently affects about 235 million people.

Asthmaware addresses the above-mentioned issues with a solution that will be of great help in enabling children to control their asthma and therefore contribute considerably to the reduction of asthma-related deaths and to an increase in quality of life for children with asthma.

The goal of Asthmaware is to provide an objective monitoring device related to asthma, which does measuring every night. It's an improvement of the current subjective snapshot diagnosis a GP can make.



## SmartX development of Asthmaware

SmartX has provided very knowledgeable input and guidance through the assigned coach. And through this coach, we also have access to a wide network of partners involved in this area.

## Partners

- Panton is experienced in the design and usability aspects of the system.
- Transfer Company is experienced in textile design and manufacturing.
- Sencure (Formerly ItoM Medical) is experienced in electronics design, regulatory and physiological aspects of the projects.
- Asthmaware is experienced in business development of medical applications.

## Contact

Jurrit Vellinga, [Jurrit.vellinga@sencure.com](mailto:Jurrit.vellinga@sencure.com)



## Interview with Jurryt Vellinga, CEO of Sencure

### What problem or challenge did SmartX help you to overcome?

One of the most important requirements for the Asthmaware product is the comfort to wear, as young children need to be able to sleep in it. For this, the biggest challenge was to develop a producible version of conductive and very elastic material in a textile garment. Within SmartX we were able to achieve this.

### What support activity of SmartX was the most helpful for your project?

During the project, we have had numerous coaching sessions with our SmartX representative, and this has provided focus and guidance in working towards a result. We hope that during the dissemination phase, we will be able to find partners for the next step in our project.

### What are the next opportunities that you plan to tackle based on the results of the SmartX project?

The next steps are aimed at bringing a product to the market. We need to further develop the interface between the shirt and the hardware module and then we will be able to produce the first batch of products which will be used in a first validation study to prove to the world that our solution works.



**Jurryt Vellinga**  
[jurryt.vellinga@sencure.com](mailto:jurryt.vellinga@sencure.com)



# SMART BANDAGE FOR MOTION TRACKING

KINFINITY's Smart Bandage (also referred to as MoCa-Ba, Motion Capture Bandage) tracks motion during sport activity in real time and provides helpful tips.

## How does MoCa-Ba work?

The bandage integrates unique motion capture sensors, originally developed for astronaut applications on the International Space Station. The technology was also used to track human full-body movement in space. Following the highest regulations for space technology, the sensors offer the highest accuracy and reliability, thus allowing for new ways of tracking personal or health-related training. Coupled with a smartphone app, the motion data is easily accessible and understandable to the user and offers intuitive visualisation and feedback of carried-out motions.

## SmartX development of the Smart Bandage

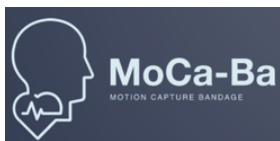
Within the SmartX project, KINFINITY was able to develop the Smart Bandage and test it in several user studies. They also developed a smartphone app for the user.

## The Company

MoCa-Ba is developed by German SME KINFINITY. The company was founded in 2018 as a spin-off of the German Aerospace Center, Robotic and Mechatronic Institute. The sensor technology used in their products was originally developed to track the motion of astronauts during their time on the International Space Station. The technology is also applicable in the fields of robot programming and mixed reality applications, as well as in the research sector. KINFINITY's motto is: Interacting with technology should be as easy as talking to a human.

## Contact

Max Maier, [maier@kinfinity.eu](mailto:maier@kinfinity.eu)





## **Interview with Maximilian Maier, CEO of KINFINITY**

### **What problem or challenge did SmartX help you to overcome?**

SmartX gave us the push in the right new market direction, starting at the beginning of the pandemic everyone had challenging problems to face and solve. Working together was newly defined, daily task changed and all of that combined with a new exciting project from SmartX.

### **What support activity of the SmartX Consortium was the most helpful for your project?**

SmartX offered several very interesting activities from workshops to expert talks. The most helpful one was the selected personal Coach and the additional expert coach within the project. Here we got the help that targeted directly our most actual problems and we could work on the improvement.

### **What are the next steps that you plan to tackle based on the results of the SmartX project?**

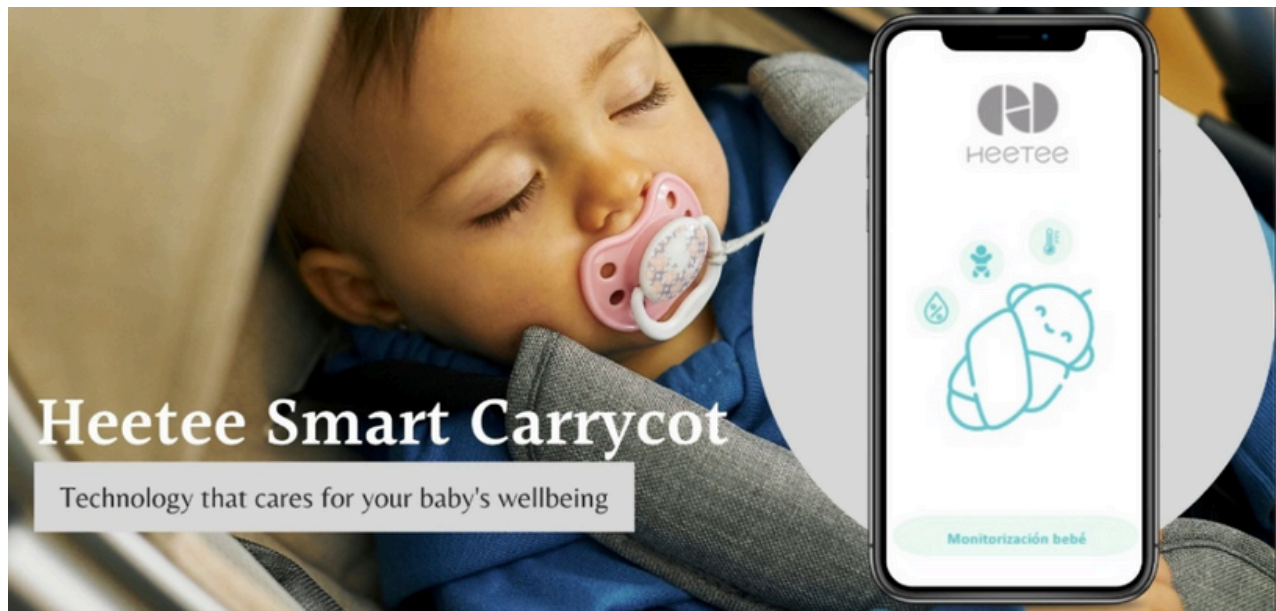
We are now releasing our product into a new market. Therefore, we must tackle regulatory challenges but also learn more about different market fields. We are very excited about the upcoming opportunities and challenges.



**Max Maier**  
**maier@kinfinity.eu**

## HEETEE BABY: SMART CARRYCOT

HEETEE is a new concept of a smart carrycot, which can monitor the baby's health and well-being while parents are on the move. The smart carrycot can acquire physiological parameters from the baby, such as temperature or humidity, so parents can be warned if anything is outside recommended health thresholds. All data gathered can be sent wirelessly to a mobile app for parents to track their child's health and maintain great control over their child's health. All materials are removable and washable.



### How HEETEE Baby works

HEETEE BABY is a technology-start up based company with the aim and the capacity of coming up with more meaningful and attractive products that are innovative and appealing for people designing and manufacturing technological baby and nursery goods that enhance parent and child comfort: The first pushchair designed to help parents and track their child's health.

Modern parents also feel very constrained about their daily routine with such limited time in the day, and no other company has yet attempted to resolve any of these problems. Previously, Heetee Baby has developed the Heetee Mayfair, a baby carriage that deals with most issues regarding comfort and mobility thanks to its patented technology, which incorporates heated seats, a feeding bottle warmer, and a USB port, amongst other design features intended for the safety and rides comfort.

### The partners

AITEX is a technological research centre with high knowledge in science and technology applied to the textile, among other sectors. AITEX has redesigned the embedded sensors on the mattress and the testing trials for washability. It also developed the upgrade of the App.

CONTAVAL, born in 1982, offers its customers industrial automation to integrate all the electronic compounds. It has contributed to electronic development: upgrading and miniaturizing the PCBs for assembling.

### Contact

sgarcia@hee-tee.com  
www.hee-tee.com



## Interview with Samuel García, CEO of Heetee Baby

### What problem or challenge did SmartX help you to overcome?

SmartX has been a great partner going forward for this project. It is challenging to specify a single problem or challenge, as it has been more about the compound effect of the programme rather than the single aspects. Many little facets of the project are dealt with, and it is the sum of all those smaller problems resolved that makes SmartX such a great tool to achieve faster and more efficient results.

There have been many areas where we have got valuable advice, but if I had to pick one specific problem, I would not choose the most technical one but the one we had with washing our fabrics in the washing machine. We were so immersed in the problem itself that the simplest solution came across thanks to brainstorming on that subject with our coaches.

### What was the biggest benefit from joining the SmartX Community & networking activities?

The most significant benefit was the extra knowledge that we got in different key areas where the team lacked specific knowledge. Still, the greatest asset for us is the SmartX network itself and the number of contacts made. Many companies are also into Smart textiles, which at present or soon can be very useful in terms of having the contact to start some type of cooperation or transaction.



### What are the next steps that you plan to tackle based on the results of the SmartX project?

There are many opportunities arising from the project results. The one factor that might be a holder is the market itself, first with the pandemic and now with the loom of war which could have a negative impact on the starting of the recovery from the pandemic. The resulting product of the project is a winner, and the best scenario to release to the market will be the international fair of the industry. Last year it was not possible to release the product due to poor attendance to the fair and general lack of enthusiasm as covid was still hitting hard somehow, but this year could be a big opportunity.



**Samuel García**  
[sgarcia@hee-tee.com](mailto:sgarcia@hee-tee.com)



## ISOFTSLEEP 4.0: SMART HEATING BLANKET

iSoftSleep4.0 is a smart heating blanket with embedded electronic components, capable of actively and autonomously control the temperature according to the needs of each user in three different and independent areas. This ensures the optimal compromise between thermal insulation, breathability, flexibility, and lightness of the structure.

### How iSoftsleep works

iSoftsleep 4.0 is a heating blanket for one or two persons, with 3 independent heating zones (shoulders, back, and feet). Each zone has 3 heating levels with temperatures well studied to the range of human body temperatures.

iSoftsleep 4.0 has all the heating yarns and sensors completely embedded and imperceptible for comfort and security. It has a sensor of presence, humidity, and temperature for the total security of the user.

### The partners

In 2013, Softsleep resulted from an individual project of Têxteis Penedo, with Centi and CITEVE collaboration. iSoftsleep 4.0 intend to modernise the Softsleep heating blanked.

### Contacts

Sandra.Ventura, Sandra.Ventura@tpenedo.pt







## **Interview with Sandra Ventura, R&D Manager at Têxteis Penedo S.A.**

### **What problem or challenge did SmartX help you to overcome?**

The problem we were trying to overcome is the cost of the heating blanket developed in a Project in 2013 and the modernisation of the electronics parts that are integrated in the iSoftsleep 4.0.

### **What support activity of SmartX was the most helpful for your project?**

The project itself has the activity of development that overcame the challenges and could also add some new features like the display being available at the bottom of the blanket. It's an entirely intuitive way of function, and it was made into a two-person blanket with three heating zones each and three levels of temperature on each heating zone.

### **Do you consider SmartX support has allowed you to gain significant knowledge in the areas which are strategically important for your business?**

SmartX project allowed the company to have access to knowledge concerning the development and improvement of our iSoftsleep 4.0 product, marketing strategies, sustainable product development, and how to build products thinking it is ending life recycling. This is very important for our business in a new way to innovation in an environment and sustainable policies, and selling our classical products of home textile, decoration, and hotel ware.



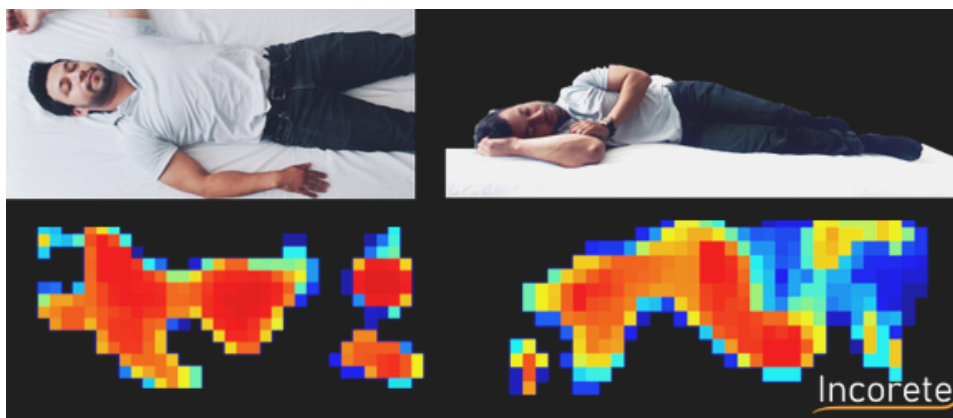
**Sandra Ventura**  
**sandra.ventura@tpenedo.pt**



# MATSCALE: SENSOR SYSTEM FOR SMART MATTRESSES

MatScale aims to implement a fully textile sensor system for smart mattresses, which helps track positioning and movement data, thereby sustainably improving sleep.

MatScale is a fully textile sensor system implemented in an intelligent mattress. By combining Incoretex's state-of-the-art sensor technologies with Farbwerke Herkula's resistive and conductive ink, a fully textile high-precision sensor is installed in beds, enabling a sensor resolution much higher than existing technologies while staying breathable and comfortable at the same time. This technology allows accurate and reliable gathering of movement and positioning data which can then be used to improve and optimise sleep.



A textile pressure sensor implemented into a mattress can analyse movements and sleeping positions. The prototype shown in the picture represents the current status. Combining both partners' expertise, their strong cooperation, and SmartX funding has allowed for continuous improvements and refinements of the sensor system. The project is carried out with the collaboration of Incoretex, who builds the necessary sensor electronics, software solutions, and AI, and Farbwerke Herkula, who develops resistive and conductive inks. The objective was the creation of a fully textile sensor.

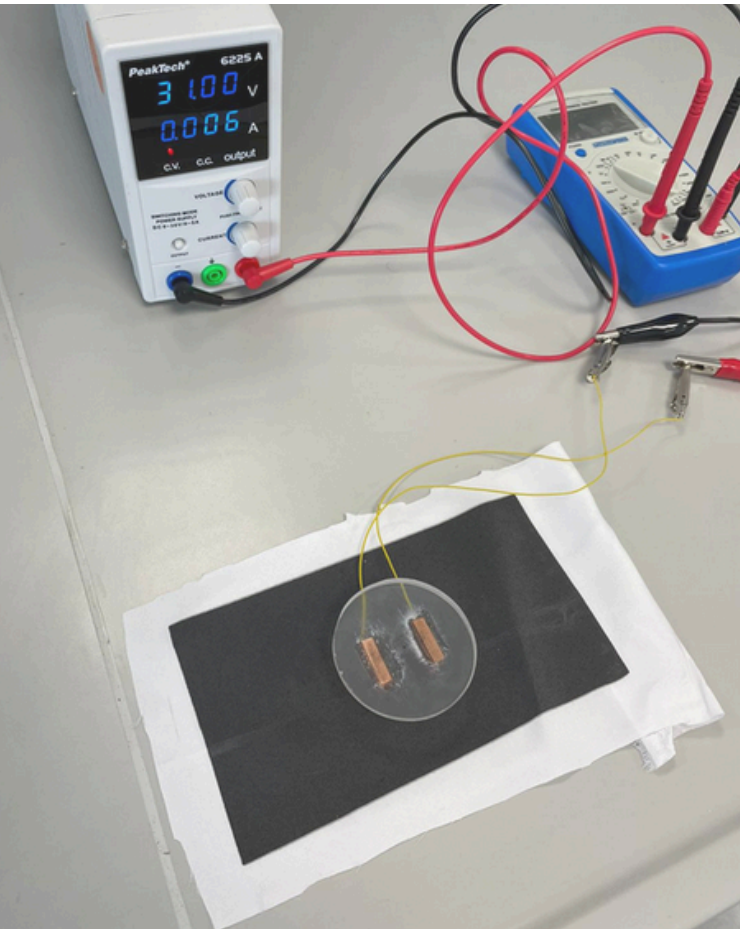
## Consortium

Incoretex GmbH, Germany, textile sensor technology  
Alexander Kirch, kirch@incoretex.de  
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Farbwerke Herkula SA, inks and coatings, ca.  
Kai DUDDE, k.dudde@herkula.com  
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## Interview with Martin Riebe, Managing Director of Incoretex



### What problem or challenge did SmartX help you to overcome?

Incoretex and Herkula took on the task of making a fully textile, breathable, flexible, noiseless pressure sensor with a great long-term performance for the application of sleep tracking. The biggest challenge Incoretex overcame was to make the system super cost-efficient to complete the application economically viable for various applications.

### What support activity of SmartX was the most helpful for your project?

The project and the coaching provided the means and know-how to test the technology thoroughly. Thanks to the resources of SmartX and the coaching provided, Incoretex, in cooperation with Herkula was able to validate our technology according to current scientific standards and thus prove that the technology is perfectly fitted for various use cases.

### What are the next steps/ opportunities that you plan to tackle based on the results of the SmartX project?

Next, the goal is to transfer the technology into scalable products and develop the technology further. Accordingly, the consortium is currently working with leading companies from various industries to integrate the technology into series products. Incoretex is connecting with additional partners from the sleep sector to smartify their products.



**Martin Riebe**  
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# SLEEPEE: TEXTILE-BASED WET DETECTING SYSTEM

Sleepee is a textile-based wet detecting system for domestic use. It's a non-invasive device for children that aims to prevent bedwetting by gently awakening them as soon as the first urine drips appear.

The Sleepee solution works with conductive yarns integrated inside the child's underwear, made with eco-friendly bamboo fibers. When the Sleepee device is snapped onto the underwear, the yarns allow for detection of the first urine drips that could appear. The alarm is then activated (ringing/vibrating) to wake up the child and help them get rid of enuresis.

Sleepee provides a comfortable, innovative, and easy-to-use anti-enuresis solution. A part of the sensor is directly embedded in the underwear without further discomfort for the wearer. SmartX has supported the optimisation of the conductivity and integration of conductive yarns in the underwear.

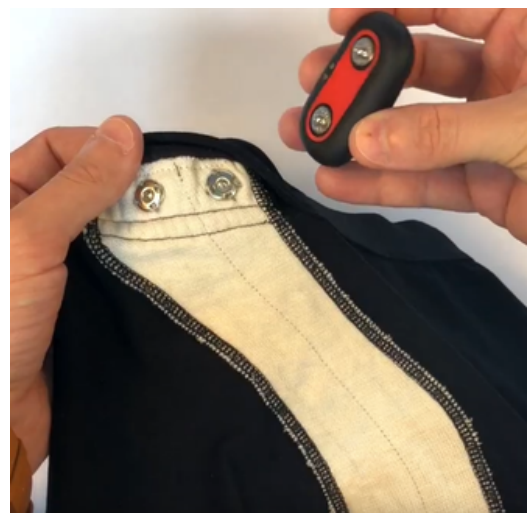
## Consortium & Contacts

BLUEGRiOT is a designer and manufacturer of various connected objects. This French company was established in 2017 and is the project coordinator of Sleepee. Ramuntcho GASSIAT, co-founder of BLUEGRiOT - [rgassiat@bluegriot.com](mailto:rgassiat@bluegriot.com).

IMATTEC, based in France (Tourcoing), has expertise in transforming synthetic, natural, artificial, and mineral fibres into yarns and fabrics. Mathieu GAROTIN, Marketing & Sales of Imattec - [m.garotin@imattec.com](mailto:m.garotin@imattec.com).

BAMBOO is based in Belgium. Its core business from Hechtel-Eksel is the manufacturing of durable garments and underwear. Fina, Founder of Bamboo - [info@bamboobelgium.be](mailto:info@bamboobelgium.be).

EMISYS is specialised in project management, located at the convergence of the worlds of consulting, engineering, and project management. Gratien HUMBERT, Consultant at Emisys - [ghumbert@emisys.fr](mailto:ghumbert@emisys.fr), Pauline DHORDAIN, Project manager at Emisys - [pdhordain@emisys.fr](mailto:pdhordain@emisys.fr).



# Interview with Rudy Houque, Co-Founder BLUEGRioT

## What problem or challenge did SmartX help you to overcome?

BLUEGRioT is a design house specialised in smart object development. We managed to create some prototypes integrating out-of-shelf smart textile pieces, but this was a completely new challenge when it came to industrialisation.

First, it was reassuring that our project and consortium were awarded at the SmartX call. The team started a new step of the project with confidence and enthusiasm.

Then, we knew what we were going to face with the industrialisation of the electronic part: concerning the amount of work and the associated costs. Because of that, the funding of SmartX is for sure huge support for an SME as BLUEGRioT.

The rest of the solutions to industrialise would never have been possible without our partners.

Imattec worked on a technical yarn for which a specific machine has been developed, produced, installed, and can now deliver kilometers of our sensor. Bamboo worked on integrating the whole solution, designing underwear, integrating the technical yarn, and being able to accept the electronic device.

## What was the most significant benefit of joining the SmartX Community & networking activities?

Probably having access to experts. Each partner excels in its area of expertise, but it is necessary to take a step back and have an overview of certain critical moments of industrialisation.

The expert Florence BOST met the project team at the BLUEGRioT premises. She was able to analyse the solution and the scope of each person's intervention. She finally submitted a report where she points out the good points, those that can be improved, and those that represent a risk of failure for the solution.

There is also a meeting of which I have fond memories: the one in Paris with all the teams from the projects selected by SmartX. This gathering us. Allowed to have in 2 days a broad vision of the projects in progress, the stakes, and the technical challenges that everyone faces.

## What are the next opportunities that you plan to tackle based on the results of the SmartX project?

Industrialisation is now 80% done, some more investments and work are mandatory before going through production. We first need to finalise the running clinical tests campaign, the certification of the solution, and the packaging prototype.

Then the production will need a series of investments to produce thousands of underwear, and hundreds of electronic devices.

After that, the solution needs to meet the little patients. We worked with MDxp and wrote the roadmap corresponding to the medical sector.

We had the chance to be advised by a pediatrician specialised in enuresis during the entire project. As she's giving some conferences, she proposed doing a demonstration in the following months in front of pediatricians from the whole region.



**Rudy Houque**  
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## **RVHEAT: HANDS-FREE HEATING SYSTEM FOR RECREATIONAL VEHICLES**

RVheat project aimed at modernising the conventional heating systems in the recreational vehicle sector by bringing the benefits of flexible and wearable electronics and smart textiles to create a textile-based heating system integrated with existing textiles in the vehicle.

### **How does RVheat work?**

The RVheat solution is a set of heat pads distributed along with the living space of caravans and motorhomes (mattresses, seat and curtains) that are driven by a smart living solution developed by ComSensus, which allows to autonomously and independently control of the heat pads based on data gathered from existing sensors in the vehicles as well as manual operation through a mobile app.

### **SmartX development of RVheat**

SmartX has helped us assess the feasibility of textile-based heating solutions for the automotive segment in close collaboration with key stakeholders in both the textile and the automotive segments, which resulted in a more robust implementation due to the constant feedback of domain experts.

### **The partners**

ComSensus(SL) is an SME focused on developing highly customised IoT solutions for diverse domains. The company is specialised in designing and prototyping embedded systems and sensor networks for remote and real-time monitoring and control solutions. Embro(DE) develops and produces next-generation textiles and embroidery for diverse application areas, specialising in integrating semiconductor components into textiles and designing wearable and connectivity solutions for the textile domain.

### **Contacts**

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CEO - Embro





## **Interview with David Carro Santome, Project Manager at ComSensus and Markus Flechsing, CEO of Embro**

### **What problem or challenge did SmartX help you to overcome?**

SmartX has allowed us to assess the feasibility of textile-based heating solutions for the automotive segment in close collaboration with key stakeholders in both the textile and the automotive segments, which resulted in a more robust implementation due to the constant feedback of domain experts.

### **What was the most significant benefit of joining the SmartX Community & networking activities?**

The most significant benefit was the vast number of opportunities (events, workshops, social media posts, etc.) to disseminate the project throughout its execution and give international visibility to the results and, even more importantly, to both companies participating in the project.

### **What are the next opportunities that you plan to tackle based on the results of the SmartX project?**

The project results will be commercially exploited, and the efforts are now focused on developing a joint go-to-market strategy with the pilot partner Adria Mobil towards the next winter season (Q3 2022). Additional improvements/adjustments on the final prototype are also foreseen for the next three months.

### **Do you consider SmartX support has allowed you to gain significant knowledge in the strategically important areas for your business?**

By the time of application to the SmartX funding, our knowledge in the smart textile domain was scarce. Participating in this project has given us a much broader and more accurate vision of such market's challenges, barriers, and opportunities and allowed us to build potential synergies with domain experts.

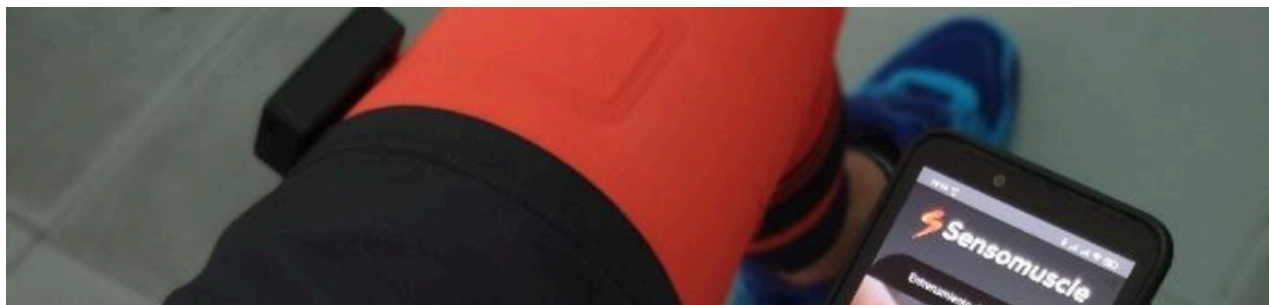


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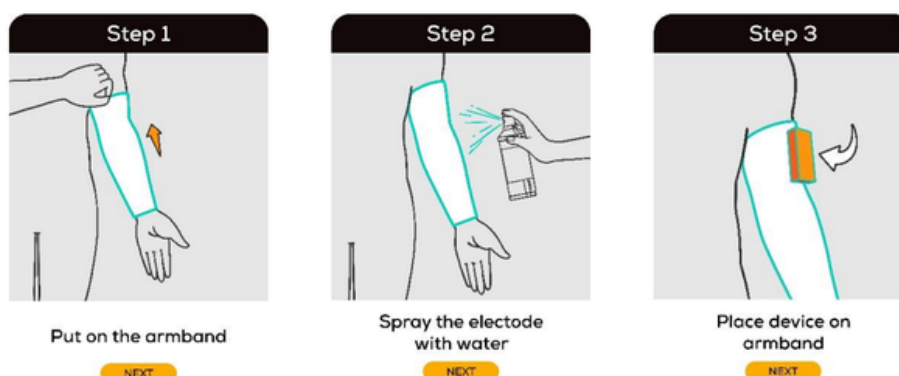
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# SENSOMUSCLE: ELECTROSTIMULATION DEVICE FOR MUSCLE RECOVERY



SENSOMUSCLE is an innovative electrostimulation and washable wearable that can be used in relaxation and muscle recovery after sports training as if it were a physiotherapist. Athletes need the right tools to ensure that they can control the entire cycle of sports activity.

You can select the program predefined in the App "Strength workout" and "Training recovery." The app also has a manual management option where it is the user who decides which program to use and with what intensity.



## How does SENSOMUSCLE work?

International Austral Sport S.A. is a sportswear company and a leading brand in the Spanish market with 43 years (founded in 1976) of experience, defined by passion and innovation. Austral carries out all the steps of manufacturing and the whole production 100% in Spain (raw materials included). Austral participates in major Sports events such as Olympics, basketball leagues, and cycling. It has long been known for its actively committed to social responsibility, having undertaken essential projects in this area.

## The partners

AITEX is a technological research centre with high knowledge in science and technology applied to R+D+I projects to obtain smart textiles and innovation in ICT solutions for the textile sector, as well as the transfer of new technologies to companies: Textronic components and laboratory, electronic printing circuits on fabrics and embroidery conductive yarn machines.

## Contact

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## Interview with Raul de Paolo, CEO of Austral

### What problem or challenge did SmartX help you to overcome?

The main challenge that AUSTRAL faces in developing the product has gone from a prototype to a commercial product. SmartX has helped reduce the gap between a laboratory prototype and a commercial garment. Another important aspect has been the support to certify electronics.



### What was the most significant benefit of joining the SmartX Community & networking activities?

Joining the SmartX community has allowed AUSTRAL to meet and speak with companies that are experts in the development of smart textiles. In this sense, we have advanced faster by contacting experts in conductive fabric, integration, electronics, recycling, etc.

### What are the next opportunities that you plan to tackle based on the results of the SmartX project?

The next steps in the SENSOMUSCLE product are to receive feedback from customers who have tried the product. The next step is to make minor adjustments and improvements to the garment and the control app. Finally, the launch of the first batch of SENSOMUSCLE kits will take place.



**Raul de Paolo**  
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# REAL-TIME RESPIRATION MONITORING DEVICE

The new REAL-TIME RESPIRATION MONITORING DEVICE by StepUp Health and Imbut integrates new sensor technology into a wearable smart device for accurate, real-time respiration monitoring of humans and racehorses.

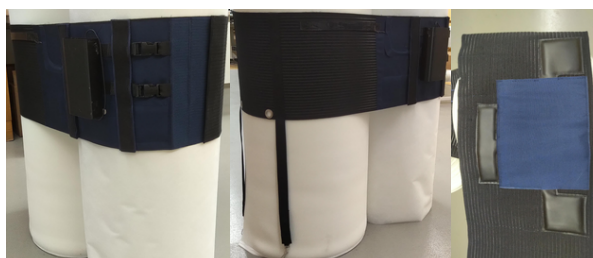
## How does the Real-time Respiration Monitoring Device work?

The wearable device with a built-in sensor, wirelessly connected to a smartphone app, monitors patients in real-time, anywhere, anywhere. It detects even small changes in a patient's breathing pattern, tidal volume, and other vital signs to provide immediate, early warning signs of deterioration in lung function. This data enables an improved COPD disease treatment strategy and reduces disease management costs.



## SmartX development of REAL-TIME RESPIRATION MONITORING DEVICE

The consortium manufactured prototypes to test the integration of the available sensors. A small series will be manufactured to test the usability and validate the manufacturing process. SmartX has supported the optimal integration of sensors and wearables and kept turning the wearables into mass manufacturable prototypes.



## Consortium

Imbut GmbH (D) is a specialist retailer for e-textile components and a development service provider for special textiles and flexible materials. Imbut specialises in developing and producing small series of unique textile solutions, textile finishing, and the manufacturing of e-textiles.

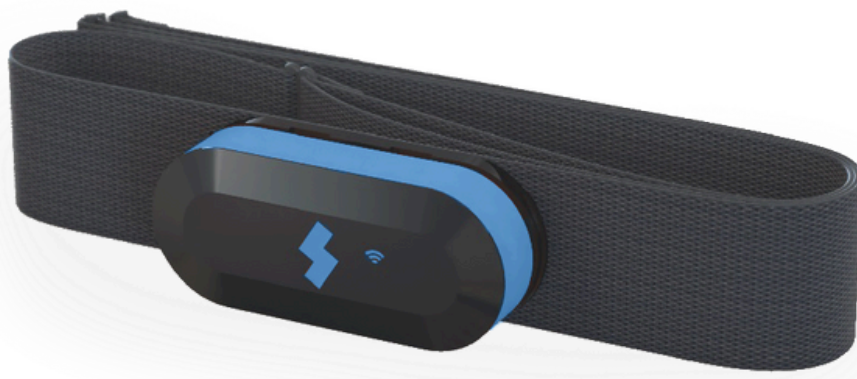
StepUp Solutions IVS (DK) is a startup on a mission to make breathing measurements as easy as those of the heart rate. Applying the latest innovations in sensor technologies and fusion and machine learning algorithms provides powerful and easy-to-use analytics based on cardio-respiratory parameters.

## Contact

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## **Interview with Charles Gayot, CEO of StepUp Solutions & Kay Ullrich, Project Manager at Imbut**

### **What problem or challenge did SmartX help you to overcome?**

Designing wearables today requires knowledge in many fields, from app development to textile. We at StepUp, are experts in electronics and software and have always struggled with integrating our work into textile. Thanks to SmartX, we bridged this gap and found the perfect partner to create a viable product.

### **What support activity of SmartX was the most helpful for your project?**

SmartX offered us the perfect combination between networking and financial support. Even though we have been actively looking for a smart textile partner to help us develop our product for three years, we could not find anyone relevant. The SmartX organisers were able to get us in touch with the right company to boost our development and provided the means to make it happen.

### **What are the next steps/ opportunities that you plan to tackle based on the results of the SmartX project?**

SmartX is the steppingstone that enables us to take our healthcare product one step further into early clinical testing and our equine development to the market. After having explored many solutions, we are very confident of the fit of our product.



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**Kay Ullrich**  
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# BODYCARE FOR BEDSORE PREVENTION

BodyCare is an innovative sensorised mat to be installed on hospital beds to identify and measure critical bedsores parameters. The sensors will be able to detect anomalies and send the information directly to healthcare professionals.

## How does BodyCare work?

BodyCare consists of piezoresistive sensors printed on textile material to obtain pressure data at each point. With the data collected, it is possible to make a history of pressure body distribution and identify areas at risk of pressure ulcers. With this information, caregivers can act preventively with bedridden people.

## SmartX development of BodyCare Nova

BodyCare was developed with materials for use in a hospital environment. Its software provides information in real-time and saves data for each patient. BodyCare is printed with novel electroactive inks using emerging printing technologies, increasing sensibility compared to current solutions.

## The partners

Sensing Future Technologies designs, develops, and implements medical devices with a high degree of innovation, functionality, and applicability in balance platforms for use in physical and vestibular rehabilitation.

Nanopaint develops and commercialises functional inks based on a patented technology that can be used for different types of printed sensors with multiple applications in the automotive industry, healthcare and well-being, military applications, packaging, sports, and wearable and smart textile industries. Nanopaint's team also has extensive knowledge of electroactive materials and provides customised printed sensors.



## Contacts

Sensing Future: Luís Ferreira (luisferreira@sensingfuture.pt), [www.sensingfuture.pt](http://www.sensingfuture.pt)

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sensingfu+ure





## **Interview with Juliana Oliveira, CEO of Nanopaint, and Luís Ferreira, CTO of SensingFuture.**

### **What problem or challenge did SmartX help you to overcome?**

Pressure ulcers (PUs) are injuries to the skin and underlying tissue, primarily caused by prolonged pressure on the skin. PUs usually affects people confined to bed or sitting in a wheelchair for extended periods.

PUs is particularly common in the elderly. According to the European Wound Management Association, it is estimated that approximately 4% of annual healthcare budgets in Europe are being spent on PUs.

Sensing Future Technologies (SFT) and Nanopaint (NP) developed an innovative sensorised mat installed on hospital beds to identify and measure critical bedsores parameters. The sensors will be able to detect anomalies and send the information directly to healthcare professionals.

SmartX was essential to transform an initial prototype into a product capable of being tested by healthcare professionals and putting what was previously just an idea into real environments.

### **What are the next opportunities that you plan to tackle based on the results of the SmartX project?**

The following steps are related to the market and potential distribution networks. Before implementing the project, SFT and NP already knew that this issue is critical in a hospital environment, especially in the elderly population. There is also an intense demand for technology by manufacturers of hospital supplies with the clear objective of differentiating themselves from the competition and obtaining better and better products.

Now it is necessary to adapt the product's value proposition as closely as possible and ensure that the planned distribution channels will work and are sustainable in terms of business.

### **Do you consider SmartX support has allowed you to gain significant knowledge in the strategically important areas for your business?**

Without SmartX support, the project would still be in the prototype phase. The most significant knowledge gained took place in the textile area and the ability to apply technology to textiles. SFT and NP believe that SmartX was fundamental to obtaining a final solution in a short period through the project planning and the support given.

SFT and NP believe that SmartX will also enhance interaction with the textile sector and benefit potential users in the health area. This connection between different areas (textile, inks, software, electronics, healthcare) can significantly boost the economy and contribute to the economic development of Europe.



**Juliana Oliveira**

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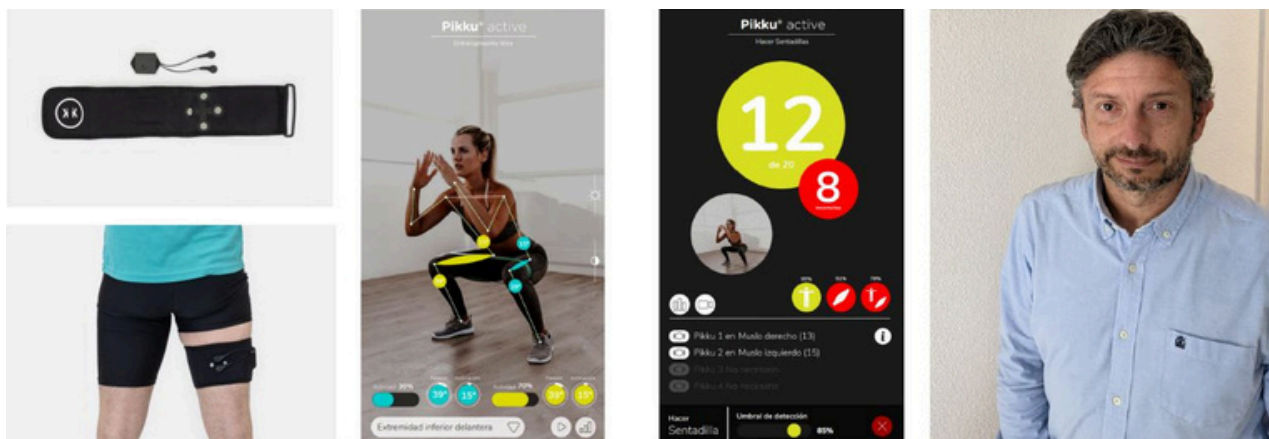
**Luís Ferreira**

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# PIKKU ACTIVE FOR MEASUREMENT OF MUSCLE ACTIVITY

PIKKU® ACTIVE is a smart garment for the measurement of muscle activity. It aids the analysis of athletes' daily work and recovery exercises and physiotherapy during injury recovery. This new product includes measuring muscle activity (electromyography or EMG) and advanced motion-sensing devices, smart video analysis, and artificial intelligence algorithms.



## How does it work?

Blautic Designs SL is a high-tech company specializing in developing and manufacturing electronic products based on wireless technologies, advanced sensors, artificial intelligence, and mobile applications: IoT, AR, SmartCities, Wearables, and Energy Harvesting. Blautic creates electronic devices that obtain and communicate information with very low energy consumption and in application sectors such as industry, sports, health-wellbeing, textile, and education. Blautic has already launched the product called Pikku® for the sports sector. Blautic Designs SL develops Pikku® ACTIVE from Spain.

## The partners

Pikku® ACTIVE is developed by Blautic Designs SL from Spain, a high-tech company specialised in the development and manufacturing of electronic products based on wireless technologies, advanced sensors, artificial intelligence, and mobile applications.

### TECHNOLOGY



### SMART TEXTILE DESIGN



### TEXTILE MANUFACTURING



### REAL USER TEST



## Contact

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## **Interview with Javier Soriano, CEO & Founder of Blautic**

### **What problem or challenge did SmartX help you to overcome?**

The SmartX project has allowed us to receive support from experts in the smart textile sector to experiment and find the best solutions to join our electronics with a smart textile that gathers muscle activity data placed quickly and comfortably. The trip has been very enriching, and multiple proposals and ideas have been put into practice to reach the goal.

### **What are the next opportunities that you plan to tackle based on the results of the SmartX project?**

We plan to start introducing the developed technology within the daily routines of professionals in rehabilitation and personal training. We aim to incorporate more artificial intelligence models to monitor the correct execution of exercises controlling muscle activity and movement.

### **Do you consider SmartX support has allowed you to gain significant knowledge in the strategically important areas for your business?**

Without a doubt, the support of SmartX has allowed us to gain knowledge in the world of smart textiles and intellectual property. In the future, these topics will help us make the right decisions in designing more innovative products and the evolution of the current ones. SMEs need this type of backup to overcome the many challenges we face to continue with our activity in sectors where large companies tend to dominate the market. We're grateful to the EU and SmartX for their support.



**Javier Soriano**

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# MONITORING UNDERSHIRT FOR MOTOR RACING DRIVERS

Marina Race Wear S.L. incorporates biometric sensors into the undershirt of competition automobile pilots regulated by the International Automobile Federation (FIA). The solution provides real-time or deferred data on the behaviour of the driver's body during the race to improve athlete performance or detect potential accident risks.

## How does the company work?

Marina Racewear was founded in 2016 as a start-up of Marina Textil S.L. Our commitment is to create a new concept for FIA homologated racing clothing, guaranteeing the quality of all our products at a fair price. We are the only brand that uses its fabrics to make its products: new fibres and combinations within a world in which only one type of material was known, always prioritising user protection. As manufacturers, we can adapt all the client's requirements into the production processes and be more efficient and innovative due to our Test & Quality laboratory and R&D department.

## The Company

Marina Textil has also been actively engaged as a manufacturer of the technical flame retardant and conductive fabrics required by the FIA standard. The I+D team is constantly creating new fabrics and combinations to find better solutions for those who share a passion for racing and actively work closely with Marina Racewear.

## Contacts

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<https://marinatextil.com>



## Interview with Cesc Ginestà, CEO of MARINARACEWEAR



### **What problem or challenge did SmartX help you to overcome?**

On the market, there's no flame retardant + conductive fabric, or at least, enough conductive as we need to get the biometric data. So, this was the first challenge that we should get, create a flame retardant conductive fabric.

### **What support activity of SmartX was the most helpful for your project?**

The continuous support of our coach Anna Ribé was helpful for us.

### **What was the most important learning from your SmartX Funded project?**

There's a lot in this specific world to do. We discovered a potential niche for our group. Workwear is a market where fashion and digital tools are not the most common technologies. This project shows us how we can mix all of them in just one garment.

### **Do you consider SmartX support has allowed you to gain significant knowledge in the strategically important areas for your business?**

Data is one of the most valuable things in the race. After SmartX, we now understand how we can take it, keeping all the safety and comfort. The next step could be testing this article to move the same technology to other markets, always talking about the fire protection world.



**Cesc Ginestà**

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# CARBABYALERT FOR CHILD CAR SAFETY

RemmyTEMPAD is a smart anti-abandon device that provides comfort and safety for young children during car trips by reminding parents of their presence (avoiding accidental abandonment) and alerting them to dangerous conditions, such as overheating.

## How does it work?

RemmyTEMPAD features a large fabric child seat cover designed to fit snugly over car seats. The cover combines tufted organic cotton with two fabric sensors: a presence sensor located in the seating area to detect an improperly seated child or a child accidentally left in the vehicle and a temperature sensor to detect the general comfort level of the child.

## SmartX development

SmartX has supported the integration and implementation of our smart fabric sensors to design this new innovative product. SmartX funding has also helped modify the textile machine to industrialise presence and temperature sensors and develop the mobile application.



## The partners

Remmy Srl was born in 2013 when two fathers heard about the tragic event of a child dying because accidentally abandoned in a car; to prevent these accidents, in just four months, they designed the first anti-abandon device available in the world. In 2019 Remmy won the gold award at the Product Safety Award organised by the European Commission.

Knitronix Srl is a start-up based in Florence, a producer of textile components capable of sensing pressure, temperature, and the presence of liquids.

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**Knitronix**  
industrial flexible sensors



## **Interview with Michele Servalli, Founder & CEO of Remmy CarBabyAlert**

### **What was the biggest benefit from joining the SmartX Community & networking activities?**

The most significant benefit was meeting companies from all over Europe that, just like us, develop new technologies to improve everyday life with an important look to the future. Knowing and dealing with companies of this type has allowed us to improve our knowledge of the world of smart textiles, evaluate new opportunities, and stimulate our entire team even more in search of increasingly effective and innovative solutions. More than that, we have established relationships with companies active in our sector with which we hope to develop interesting and profitable partnerships in the future.

### **What are the next opportunities that you plan to tackle based on the results of the SmartX project?**

Thanks to this project, we have developed, optimised, and industrialised various technologies; therefore, we will be able to bring to the market several new innovative products and our Remmy TEMPAD finalised in the last year. Safety and comfort will always have a central role in our projects; participation in SmartX, together with other prestigious awards, has increased our visibility and credibility and will allow us to expand our business by bringing our products to different European markets.

### **Do you consider SmartX support has allowed you to gain significant knowledge in the strategically important areas for your business?**

Thanks to the support of SmartX, we have grown as a company and have increased the preparation of our human capital. The Self-Assessment Tool allowed us to identify our strengths and our needs better; this evaluation led to the practice of a coaching plan designed to improve our knowledge in various areas, especially the most strategic ones for our company. We had the opportunity to interact with highly trained professionals through webinars and online meetings. Another interesting fact was that all the activities were internationally oriented; our team was able to learn new techniques and consider different points of view.



**Michele Servalli**  
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# WEARABLE EEG FOR SLEEP MONITORING & ASSESSMENT



While sleep is essential for our health, sleep disorders are highly prevalent worldwide. Existing technologies used for sleep diagnostics are expensive and intrusive for patients. Accurate monitoring requires at least one night in a sleep laboratory and time-consuming setup by technicians. As a result, waiting times for diagnostics are often longer than six months, denying many patients effective treatment.

Bitbrain set out to solve this problem by developing a comfortable sleep monitoring device that everyone can use to assess their sleep without the help of a medical professional. This technology greatly simplifies sleep diagnostics and brings sleep medicine closer to the patient. To reach this goal, smart textiles enable Bitbrain to join medical-grade accuracy with maximal comfort for the patient.

## How the wearable EEG works

The main component of Bitbrain's technology is a textile headband that can be worn during sleep. It records the patient's brain activity, movement, blood pressure, and oxygenation. An artificial intelligence analyses the entire night of sleep and gives the patient, or their valuable doctor feedback based on the acquired signals.

## SmartX development of the wearable EEG

SmartX helped Bitbrain bring its technology from prototype to production. Particularly for the task of connecting smart textiles with conventional electronics, SmartX made connections with experienced partners across Europe. This way, the most advanced textile technologies can make their way into Bitbrain's final product.

## The Company

Bitbrain is a brain technology company with 10+ years of experience developing brain-sensing devices, biomedical data analysis, and neurotech applications. Bitbrain set out to revolutionise the market for easy-to-use self-managed biomedical devices, including monitoring sleep.

## Contact

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## Interview with Alex Alda Ciriano, Senior Industrial Designer at Bitbrain

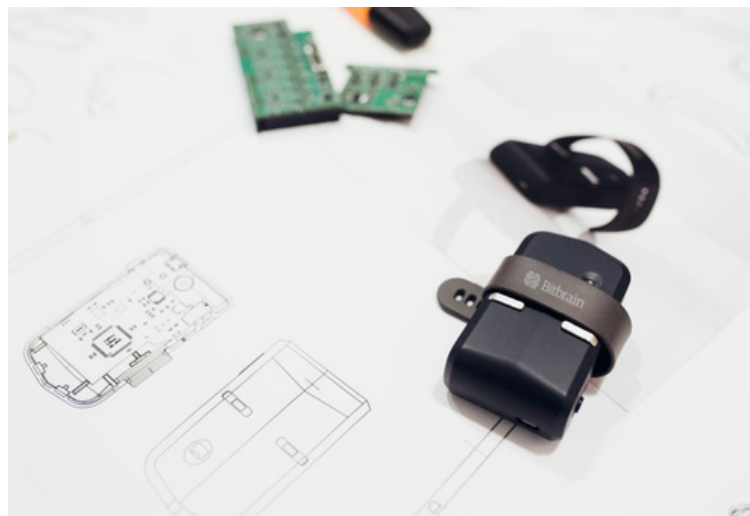


Alex Alda

[alex.alda@bitbrain.es](mailto:alex.alda@bitbrain.es)

### What problem or challenge did SmartX help you to overcome?

We are a neurotechnology company with some experience in using Smart textiles to measure brain activity. Our challenge was to move from a research prototype to an exceptionally reliable medical product. The main idea behind our efforts is to develop self-management neurotechnology to measure brain electrical activity during wakefulness and sleep. The rationale of our product is to be an entry point for novel digital diagnostics and treatments for neurological diseases. We increased our competence in smart textiles during the project, improved its integration within our brain technology portfolio, ensured compliance with medical regulations, and learned how to perform the shift from prototype to product.



### What support activity of SmartX was the most helpful for your project?

Since the field of smart textiles is very new, we profited from meetings with experts in the field and made numerous valuable contacts. From an engineering point of view, we had immediate support and feedback during the development phases, where we had critical issues in integrating smart textiles with brain technology.

### What was the most significant benefit of joining the SmartX Community & networking activities?

It was helpful to see the other SmartX projects during the remote meetings. We are also very much looking forward to the upcoming real-life events, in our case in Barcelona and Brussels.



# SAMBASOFT: BACK PAIN MONITORING

The SAMBASOFT back pain monitoring project aims to develop a lightweight and wearable device to track spinal movement in real-time. As low back pain is largely spread worldwide, SAMBASOFT seeks to prevent this pathology by measuring the proper and improper positioning of the spine for several days.

The SAMBASOFT back pain monitoring project aimed to develop a complete ambulatory device based on a single optical fiber containing multiple sensing points (using the fiber Bragg grating (FBG) technology), embedded in a patch and placed at the back of a T-shirt. To provide measurements during daily life activities, a smart interrogator is also developed - it is small, lightweight, has low power consumption, and can be attached to the belt.

SmartX support allowed the consortium to develop the complete solution, combining textile, optical fiber, and advanced electronics. This involved the integration of the FBGs in a dedicated textile for accurate positioning over the spine, integrating the interrogation unit in a small box that can be anchored on the belt, and integrating signal analysis into a user-friendly reading for doctors or nurses.

## Consortium

B-SENS develops fully customisable sensing solutions based on two complementary technologies, optical fiber gratings & semiconductors.

Somni Solutions develops pressure, temperature, strain, acceleration, tilt (angle), and acoustics (sound) sensors. Each sensor development is unique, and often our customers ask us to push the fiber optic technology to its limits. We either need to be the best in class regarding sensitivity and dynamic range, or sometimes we are challenged by dimensional or environmental constraints, unlike anything we have ever seen before.

Elasta has a long experience weaving, braiding, and knitting all kinds of narrow fabrics, ribbons, and laces, elastic and non-elastic.

A lot of unique products are being developed and produced for several industries. In close cooperation with our customers, we develop new and innovative products. The spectrum of possibilities is almost infinite as we dispose of different production methods and techniques.

## Contacts

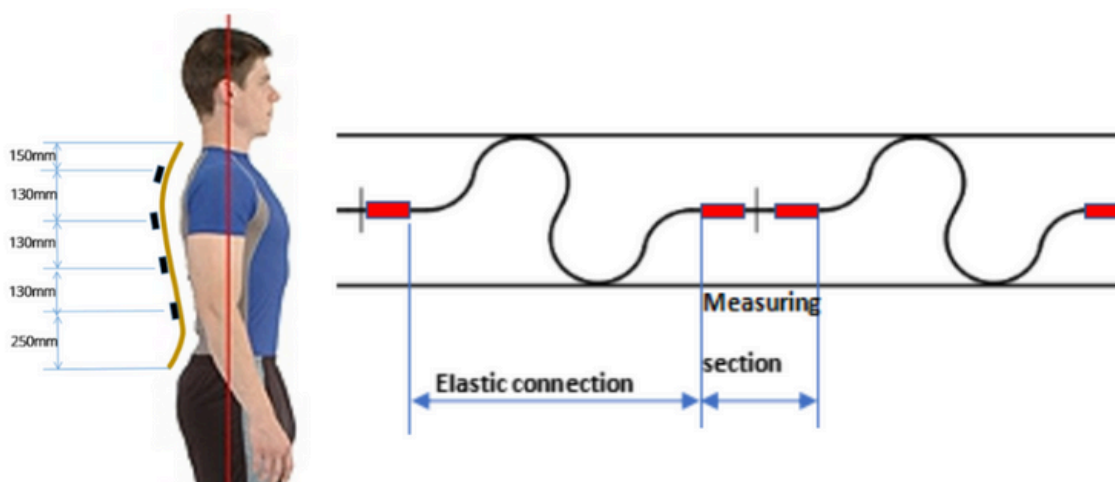
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 **B-SENS**  
Creative Sensing Solutions



  
Somni



## **Interview with Christophe Caucheteur, Managing Associate at B-SENS**

### **What problem or challenge did SmartX help you to overcome?**

SmartX enabled the collaboration of the Belgium – Dutch consortium. We combined the expertise and competences to make enormous steps in developing a smart textile using novel fiber optic sensing technology.

A consortium in which the competences of different partners are combined is necessary for the success of the development. Without SmartX, such a collaboration would have been impossible. The technology readiness level was such that the risks to invest in such a development were too high, while at the same time, nobody had all the expertise required to pull this off.

### **What support activity of SmartX was the most helpful for your project?**

The self-assessment tool clearly indicated the lack of competences within the three partners but also showed how complementary we are together.

### **What was the most important learning from your SmartX Funded project?**

Through the discussions with our appointed SmartX coach, specifically on the regulatory medical topics, we learned that the right market approach would be to engage the well-being market and market the product like the smartwatches. Earlier ideas were to target the medical market, which has not left the roadmap but could be years ahead in the future given the stringent regulatory requirements.

### **What are the next opportunities that you plan to tackle based on the results of the SmartX project?**

The SmartX project developed a complete functioning prototype of a smart textile enabling the dynamic and static measurements of the spinal cord position and bending. The project has reached a status where we can target large sportswear companies to attract their attention. Without the SmartX project, we would still be at the draft idea stage, which we could market using PowerPoint presentations.



**Christophe Caucheteur**

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## HIP AIRBAG FOR PREVENTING FRACTURES

The Wolk Hip Airbag is a smart device that aims to prevent hip fractures and other injuries in the case of a fall. Designed for the healthcare market, in particular elderly people living alone or in nursing homes.

### How does Wolk Hip Airbag work?

There are 1.5 million elderly worldwide who suffer from a hip fracture. 1 out of 3 dies within the following year. 50% never re-attains the pre-fracture level of mobility. And the average costs of a hip fracture are over \$40.000. This is where Wolk comes in.

Wolk Hip Airbag is a smart, ergonomic and invisible belt that the elderly can wear underneath their clothing. Six motion sensors in the belt register every movement 500 times per second. The software processes all the data and determines continuously whether the user might be falling. When the advanced algorithm recognises a fall, the belt will inflate and protect the hip against injury, such as a hip fracture.

### Development of Wolk Hip Airbag

After five years of development, Wolk introduced the hip airbag to market in April 2018. Two years later, the Wolk PRO model was launched with new features, such as GPS, a real-time dashboard, and a built-in alarm to alert caregivers in an emergency (e.g., a fall).

The objective of this project was to create a new version of the Wolk Hip Airbag sleeve - a redesign that would reduce costs and improve durability, comfort, and user-friendliness. While the technology is ready for the market, the design needs acceptability, durability, and cost-efficiency improvement. A list of requirements was made with input from existing customers to achieve this. An important requirement was to create a piece of clothing that people already knew.

A material study investigated new high-quality textiles for the prototypes, aimed explicitly at higher comfort and durability. Using those materials, new prototypes were made, after which existing customers and potential users were interviewed to provide feedback on the models. Based on that input, four new prototypes were produced. Finally, one model was chosen for the next step: finalising the design and starting production of a 0-series of 200 products. The first 200 models in four sizes (S/M/L/XL) were ready to be introduced in September 2021.

### Contact

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**WOLK**



## **Interview with Filippo van Hellenberg Hubar, Managing Director of Wolk**

### **What problem or challenge did SmartX help you to overcome?**

The support and funding of SmartX helped Wolk develop a new version of the product, which is more suitable for a large target group. Recent research into how the target group received the product has shown that 92% of the population would recommend the new product!

### **What support activity of SmartX was the most helpful for your project?**

The personal coach helped structure the project and therefore ensured a positive outcome.

### **What was the most significant benefit of joining the SmartX Community & networking activities?**

Gain insight into state-of-the-art technology involving textiles through the many organised workshops and webinars.

### **What was the most important learning from your SmartX Funded project?**

The smart textile industry is still in a developing phase. Expertise is spread out over many places and countries. This provides opportunities to search for strong partners in different geographic locations.

### **What are the next steps that you plan to tackle based on the results of the SmartX project?**

To start the commercialisation phase of the new product.

### **Do you consider SmartX support has allowed you to gain significant knowledge in the strategically important areas for your business?**

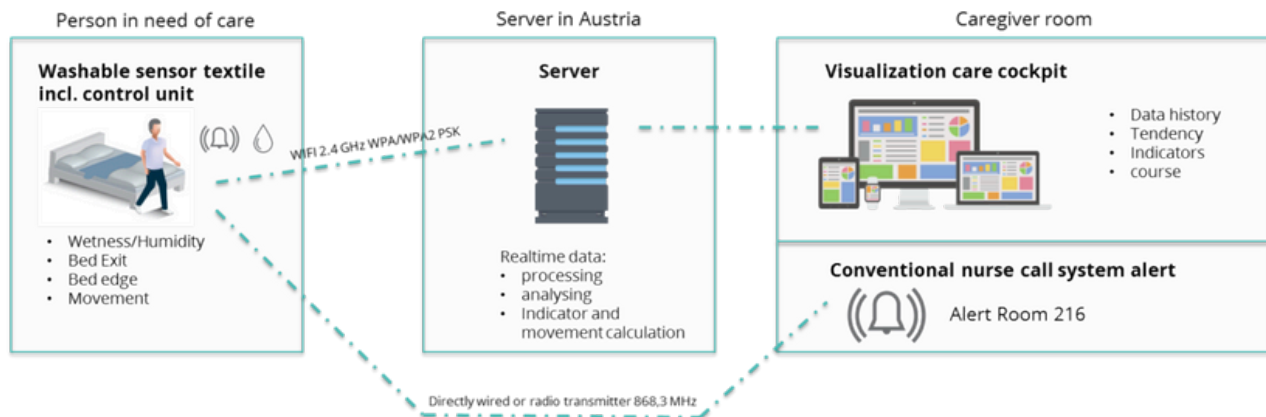
SmartX has helped us develop knowledge that we can now start to capitalise on.



**Filippo van Hellenberg Hubar**  
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# SMART CARE TEXTILE FOR CAREGIVER SUPPORT



## Overview of Smart Care Textile

Care for the elderly is a central issue in European social policy. There is a shortage of skilled workers, such as caregivers, which is forecasted to increase due to demographic changes. Nursing teams need digital and technical support to cope with the rising number of people in need of care and documentation requirements. Smart Care Textile is a new solution for care support. The innovative sensor textile, which is not noticeably positioned under the bedsheet, provides the caregiver with all care-related information and, if necessary, triggers alarms over the nurse call system.

## The benefits

- Relief and more security for the caregiver through optimised processes and more information;
- Cost-saving for nursing home management and social insurance agencies;
- More safety and a higher standard of care for those in need of care;
- Certainty and safety for relatives and private caregivers;
- Fewer false alarms thanks to a fully monitored bed.

## Project development & SmartX support

A significant difficulty in the smart textiles value chain is the lack of understanding and collaboration among the various disciplines: IT, electronics, textiles, and plastics.

New product solutions cannot be developed alone, but only in an interdisciplinary team with different expertise. This is where SmartX comes in.

Through SmartX, we could participate in coaching sessions to cover open questions and topics beyond our in-house competencies. This helped enormously develop the best possible product, which would not be possible to this extent without SmartX. The support allowed us to drive this interdisciplinary collaboration and further develop our current product Wisbi.

## Meet the team

Smart Care Textile is developed by four SMEs: TEXTIBLE GmbH (project lead), Sturiatronic Projektmanagement GmbH and Arkulpa GmbH from Austria, and FMB care GmbH from Germany. TEXTIBLE is a spin off of the University of Innsbruck and specialized in smart textile solutions. They support companies and research institutes from the idea until mass production.

## Contact

Sarah Seyr, [sarah.seyr@texible.com](mailto:sarah.seyr@texible.com)

## **Interview with Sarah Seyr, Project Manager at Texible**

### **What problem or challenge did SmartX help you to overcome?**

A big difficulty in the smart textiles value chain is the lack of understanding and collaboration among the various disciplines: IT, electronics, textiles, and plastics. New product solutions cannot be developed alone, but only in an interdisciplinary team with different expertise.

### **What was the most significant benefit of joining the SmartX Community & networking activities?**

For our side, the most significant benefit, besides the funding which enabled the project to be executed at all, where the networking events organised across Europe. We could talk to the other winners to discuss the projects and find synergies to make collaborations beyond SmartX. Our main expertise is the textile part, especially integrating sensors and electronics and making them washable. This is a big issue in many projects, and we are convinced that we will meet some other SmartX winners again in other projects as partners.

Besides the winners, relevant business partners took part in these networking events and mindful discussions about collaborations, opportunities, and ideas.

Additionally, we also had the opportunity to participate in coaching sessions to cover open questions and topics beyond our in-house competencies. This helped enormously develop the best possible product, which would not be possible to this extent without SmartX.

### **What are the next opportunities that you plan to tackle based on the results of the SmartX project?**

Currently, we are in the Roll-out of our testing phase. The prototypes are finalised, and the last in-house trials are executed. We are in contact with care homes in Austria and Germany to execute the first test phase to demonstrate in "Real-Life" the benefits of our Smart Care Textile. The objective of these trials is to make final usability adjustments, start mass production, and realise our market launch for this innovative and supportive care product.



**Sarah Seyr**

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# HOWDY BABY: WEARABLE MONITORING SYSTEM



HOWDY® BABY by ComfTech is a textile-based baby monitoring system for hospital use. HOWDY® BABY allows for non-invasive and highly comfortable monitoring of vital parameters in the hospital, for all newborns during bonding with their moms.

## How does HOWDY® BABY work?

HOWDY® BABY allows heart rate detection and real-time ECG tracing, respiratory rate, and body position. HOWDY® BABY is composed of an electronic unit, the app, and a sensorised textile belt. Once the baby's belt is placed on the newborn baby and connected, medical staff can view vital signs on the app adding objective data to the normal observation of newborns.

## SmartX development

Within the SmartX project, we could test different kinds of textile belts. Furtherly, the project gave us a first chance to reach testers abroad; subscribing to a partnership with an important Belgian association of the healthcare system, we opened an essential door for hospitals and clinics.

## The partners

ComfTech is an Italian company leader in the design and manufacture of wearable monitoring systems integrating textile sensors for clinical purposes and prevention and sport. With over ten years of experience, we are specialists in the neonatal field.

Unessa is a non-profit Belgian association that coordinates organisations, structures, initiatives, and institutions working with health, care, and help for people. The general health sector is represented by 18 private hospitals covering 46% of approved beds in Walloon public hospitals.

## Contacts

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HOWDY  
baby

by

Comf  
Tech  
We care with Comfortable Technology

UNESSA



# Interview with Alessia Moltani, CEO of Comftech

## What problem or challenge did SmartX help you to overcome?

SmartX mainly helped us overcome the challenge of reaching testers abroad, namely in Belgium, for our technology: by giving us the chance to propose and subscribe to a partnership with a significant national association of the healthcare system, the project opened an important door towards hospitals and university clinics.

## What was the most important learning from your SmartX Funded project?

We have dealt with rules/procedures for clinical trials different from the Italian ones, managing complex matters with insurance companies, the hospital's legal department, and external committees. This will help us approach the healthcare system, especially in Belgium (one of the first countries to refund clinical apps) and France.

## What are the next steps that you plan to tackle based on the results of the SmartX project?

We will further extend our experimentations abroad within an EIC accelerator project to be submitted in March (stage I), engaging clinics in Belgium, leveraging on the partnership we created with Unessa, Spain, and Germany. We will further implement our system within this project by developing an algorithm for measuring heart disease risks.



**Alessia Moltani**

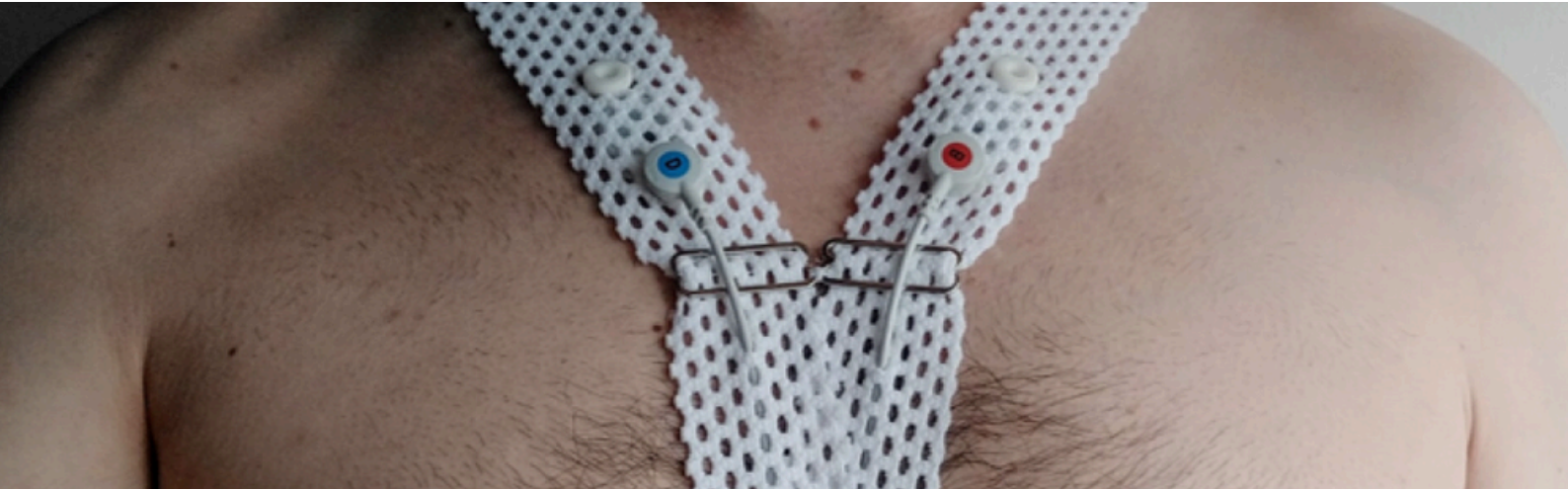
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# ELECTROCARDIOGRAM TEXTILE CARRIER

The Nahtlos ECG Textile Carrier is a medical electrocardiogram (ECG) solution for continuous, long-term cardiac activity monitoring. It records a medical long-term 3-lead ECG (over one week) with an existing standard ECG Holter.



## How Nahtlos ECG Textile Carrier works?

The carrier consists of a ribbon system that can quickly adapt to different body shapes. Moreover, Nahtlos developed special clip-in electrodes based on its patented electrode structure. The ribbon and the clip-in electrodes result in a modular and highly adaptive ECG system for different body shapes and sizes. The electrodes provide up to 14 days of gold standard signal quality.

## SmartX Development of Nahtlos ECG Textile Carrier

Through SmartX we developed Nahtlos ECG textile carrier into a working prototype at Technology Readiness Level (TRL) 8. As a next step, Nahtlos is confident of achieving gold standard signal quality and higher patient comfort than gel electrodes in a study at the Cantonal Hospital of St. Gallen (Summer 2022). Patients wear the ECG carrier (including standard Holter device) for one week after they have had a cardiac nerve ablation.

## The Partners

The ECG textile carrier is developed by Nahtlos AG from Switzerland with medical yarn from W. Zimmermann GmbH & Co. KG and technical ribbons from Fritz Moll Textilwerke GmbH & Co. KG (Both partners from Germany).

## Contacts

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## Interview with José Näf, Co-Founder of Nahtlos

### What problem or challenge did SmartX help you to overcome?

SmartX was a great help. On the one hand, it helped us deepen our general knowledge about the Smart Textile market. And on the other hand, we also got precise knowledge through the coaching offer (e.g., production and regulation in medical technology). Furthermore, the SmartX Platform helped us to find further suppliers and partners.

### What was the most important learning from your SmartX Funded project?

Although there is a big hype regarding smart textiles and biomonitoring, only a few solutions based on textiles make sense. This is because existing medical solutions for biomonitoring, such as the gel electrode, are very cost-efficient and provide already excellent ECG data. Therefore, it is crucial to offer solutions in medicine that create real added value compared to existing solutions or emerging wearable technologies.

### What are the next steps that you plan to tackle based on the results of the SmartX project?

Based on the excellent result of our ECG carrier, we realised that we could create with the same technology an adhesive electrode, which becomes the first real alternative to 60-years-old gel-electrodes and which can be established in the existing medical process of the medical service provider.



**José Näf**

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# SWEMAX: WEARABLE BIOSENSOR

SWEMAX by Biometrica is a wearable real-time monitoring system of sweat and salt loss, based on a biosensor and integrated into textile fibres.

## How does SWEMAX work?

The device performs an electrochemical analysis of sweat in real-time. SWEMAX is based on a smart shirt (or another suitable garment) with read-out electronics connected to a textile patch containing an innovative biosensor. The electronic component communicates biological data in real-time to the SWEMAX app on the user's smartphone. Thanks to this data on sweat, it is possible to optimise hydration and salts reintegration, improving fitness conditions and preparation for competitive events. Designed for sports applications, in particular athletes, the SWEMAX wearable biosensor aims to reduce the state of exhaustion due to dehydration and loss of salts during training and physical activity.

## Developing SWEMAX

SWEMAX creators improved electronics, reduced dimensions, and expanded data storage in the first three months of development. The biosensor patch was enhanced in sensitivity and stability, and the perfect-fit T-shirt was designed to hold the electronic system. Additionally, various prototypes were tested with athletes. The existing prototype has been developed into a market-ready solution by further improving the electronics, patch, T-shirt, and software using SmartX funding. The system is continuously tested with professional athletes and in expert centres for sports analysis. Worldwide marketing activity has also been launched to sell the product to the endurance athlete segment.



## Meet the team

SWEMAX is developed by Italian technological start-up Biometrica, in partnership with two SMEs: Staff Jersey (Also from Italy) and Worldklaas from Belgium.

Biometrica is devoted to producing innovative biosensors for the analysis of human sweat. In 2019, the company was named "Best Biotechnological Start-up" by the MISTER consortium.

Staff Jersey from Carpi provides high-quality fabrics for the textile industry. Their sports division is equipped with seamless machines of different gauges to develop hi-tech and high-quality seamless garments.

Worldklaas is a leading business development and marketing company, providing comprehensive market analyses and information about technical products.

## Contact

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# Interview with Matteo Beccatelli, CTO of Biometrica Sensors



**Matteo Beccatelli**  
[m.beccatelli@biometrica.tech](mailto:m.beccatelli@biometrica.tech)

## **What problem or challenge did SmartX help you to overcome?**

Funding is always the main challenge to leaping from a well-functioning prototype toward market readiness and mass production. For Biologa (now Swemax), the SmartX project came just on time to make the necessary steps and reach a level of technology where the current investors came on board.

## **What support activity of SmartX was the most helpful for your project?**

The SmartX funding helped to do the important transition from pre-industrial samples towards serial production-ready products and having a production line built within only 15 months. The coaching & the community were rather a “motivator” than a partner in SWEMAX’s transition towards today’s crowdfunding campaign.

## **What was the most significant benefit of joining the SmartX Community & networking activities?**

Of course, everyone is very focused on his own innovation and feeling of a bright future for his own product, however, the biggest benefit of the community & networking can be found in the fact that there are so many other bright ideas & products that will solve market needs. The motivational & social aspect of being in contact with “innovation siblings” stands beyond any doubt. We met different people from other parts of Europe, which helped us to improve our idea. We also compared Biometrica and its technological level with other European industries, trying to get the best from this.

## **What was the most important learning from your SmartX Funded project?**

SmartX confirmed that many brilliant ideas and technological innovations can only be successful when the partners can make abstraction of the excessive dreams and keep the necessary commercial realism. Dreams about a golden future are possible, however, they can only come through with the necessary technological realism and business sense.

## **What are the next steps/ opportunities that you plan to tackle based on the results of the SmartX project?**

The current SWEMAX Indiegogo crowdfunding campaign (which marked a step of the SmartX project) will be the step up towards the continuity in sales and will lead to long-term steady growth.

## **Do you consider SmartX support has allowed you to gain significant knowledge in the areas which are strategically important for your business?**

Within SmartX it was very interesting to share with other entrepreneurs and startups our ideas by networking and getting to know people with common goals like ours. Now we just have to keep doing better and better and satisfy our customers more and more.



# KITT: WEARABLE MOTION TRACKER

## Current development of KiTT

Our recent prototypes have focused on improving the sensor response and removing anomalies in the data collection. We opted for a lighter, more breathable material in large parts of the sleeve with enhanced movement behind the knee and developed our electronics module for improved communication and accuracy.

As we advance, Footfalls & Heartbeats will focus on further developing the core technology behind KiTT, optimising the knitted protocol to improve the sensor response and results, and extracting data from the sleeve. Their project also includes the development of a software application to accompany KiTT. The application will give the user detailed tracking and insight into their performance and offer training and organisational features for coaches and physiotherapists. Thanks to their partnership with loetec and Revolve, strong data security and privacy will be incorporated into the final design.

KiTT is a next-generation wearable motion tracker which monitors joint movement in real-time. KiTT contains an advanced textile sensor within a breathable knee sleeve, which allows it to track a wide range of exercises and movements both indoors and outdoors. KiTT is aimed at the sports, fitness, and physiotherapy markets. It is precious for athletes recovering from injuries, giving them and physiotherapists an accurate, seamless way to track recovery and return to play without uncomfortable equipment that could worsen the injury.

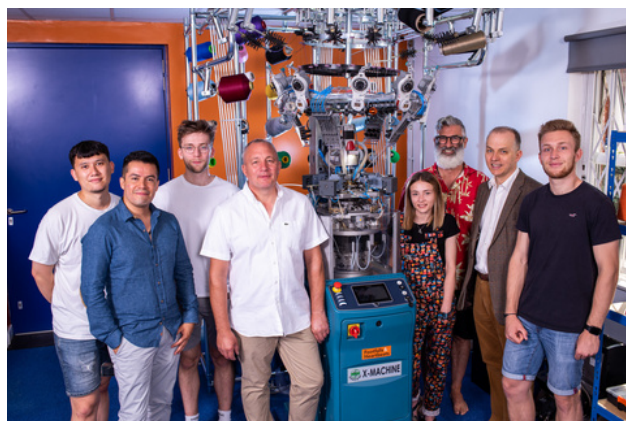
## Meet the team

Three SMEs developed kiTT: Footfalls & Heartbeats (Based in Nottingham, UK), loetec also, from the UK (Sheffield), and Revolve Healthcare from Katowice, Poland.

Footfalls & Heartbeats are the lead SME for the project and experts in smart knitted textiles. Initially conceived in New Zealand, the company is committed to researching, designing, and developing smart knitted textiles.

loetec is a firmware, hardware, and Internet of Things Security firm, specialising in securing data for IoT-based devices. loetec is committed to ensuring that data communication and movement are secure, private, and trusted.

Revolve is a software and app development agency specialising in creating software for healthcare that puts quality, security, and privacy at the forefront. Revolve also focus on maintaining the software once released.



## Contact

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## Interview with Andrew Garland, CEO of Footfalls and Heartbeats

### What problem or challenge did SmartX help you to overcome?

SmartX played a vital role in helping overcome the challenge of taking an early proof of concept to a commercially viable, consistently performing sensor. SmartX support allowed us to improve the design of the sensor and sleeve as well as its durability. The creation of a demo app gave the sleeve an attractive and easy-to-understand user interface.

### What support activity of SmartX was the most helpful for your project?

We found the SmartX support coaching to be invaluable. Dieter, our coach, offered expertise as well as helped us flesh out the best route to commercialisation. His unique position as somebody outside our company but still immersed in the smart textile world was extremely beneficial and gave us a whole new perspective on our project.

### What was the most important learning from your SmartX Funded project?

The collaborative development of a demo app and the accompanying emphasis on cyber security were both important learning opportunities for the company. Working with Revolve Software helped us learn about the process needed to develop a robust demo app. We also worked closely with IOETEC to ensure strict privacy and cyber security.



Andrew Garland

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## NOVA: SMART GLOVE FOR VR TRAINING

Nova by SenseGlove is a glove that offers sensorial feedback for VR training. SenseGlove allows you to feel the shapes, textures, stiffness, impacts, and resistance of any virtual object to experience digital worlds through intuitive real-world behaviour.

### How SenseGlove works

SenseGlove is a wearable force and haptic feedback glove. Advanced motion tracking for each hand joint enables the user to feel the stiffness and size of virtual objects. Every interaction renders a virtual reality feel like a physical, real-world environment. This translation is a game-changer in training, simulation, and design tasks within VR and AR.

### SmartX development of SenseGlove Nova

SenseGlove Nova, with a textile soft glove base, provides comfort and ease of use. It interfaces seamlessly with SenseGlove's unique functionalities: tracking, vibrotactile feedback, and force feedback. SmartX has supported the optimal integration in the glove of smart textiles with embedded sensors and conductive yarn.

### The Partners

SenseGlove (NL) was born in 2017 when the first haptic VR use case was made. Since then, the team has developed scalable solutions for complex digital interactions with user-driven technology that feels real and accessible to every professional.

Select Fashion (D) is a prototyping shop for knitted textiles, developing technical textiles for the medical and military market. This expertise in rugged construction serves well in the virtual training market, with patterns that can handle the rough life of industrial textile.

### Contacts

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SENSEGLOVE





# Interview with Anne Hermans, Product & Project Manager at SenseGlove Nova

## Do you consider SmartX support has allowed you to gain significant knowledge in the areas which are strategically important for your business?

To introduce a haptic glove with a soft, user-friendly textile base, we were lacking in experience working with fabrics! Working with Select under the guidance of the SmartX organisation has allowed us to learn a lot about smart textiles in general, and technical knitting in particular. Thanks to the webinars, coaching, networking, and collaboration with Select, we are now in a much better position to develop smart textile devices.

## What support activity of SmartX was the most helpful for your project?

All activities were very helpful. Throughout the entire process Danièle has been a great support, giving valuable advice and critical feedback, Florence, sharing her expert insights into the connectors and conductivity; and Damien, who prototyped great ideas to improve the knit. All was very hands-on, immediately useful. The coaches also provided contacts with other interesting parties, such as yarn suppliers. When you're new in the field of textile, such pointers are critical.

## What are the next steps that you plan to tackle based on the results of the SmartX project?

We are further improving the manufacturability of the textile gloves, making them come out of the knitting machine with fewer errors and with fewer required post-assembly steps. This is vital as we are planning to scale up sales of the Nova gloves.

## What was the most important learning from your SmartX Funded project?

Knitting seamless gloves with integrated conductive traces is an enormous challenge! We learned a lot about both the possibilities as well as limitations of the automated knitting process, giving us a solid foundation to continue working on our goal: providing customers with the most user-friendly, most intuitive, and most immersive virtual reality experience.



**Anne Hermans**  
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# SEAT MAT FOR WHEELCHAIRS



The Seat Mat is being developed to take advantage of the collected pressure mapping on the surfaces we sit on and is a modular system for Seating Trackers. The main application is a smart wheelchair pad connected to a smartphone that monitors the users and gives them recommendations on actions to take to prevent pressure sores from appearing.

## How does Seat Mat work?

The purpose of the Seat Mat system is to deliver qualitative raw data (from pressure maps) to recognise high-quality magnitudes by using the latest data analytics, delivering data for tracking postural analysis, detecting hotspots, and recommending repositioning.

## SmartX development of Seat Mat

Seat Mat by Sensing Tex is an OEM white label product based on our Seating Mat dev kit (TRL7) to be applied for seating at the main purpose of a wheelchair for pressure ulcer prevention as the main vertical application.

The Seat Mat is a TRL8 next generation that will be marketed under Seating Mat dev kit 1.9 (Seat Mat).

## About Sensing Tex

Sensing Tex is a company Headquartered in Barcelona and specialised in developing end-to-end solutions based on its proprietary Sensing Mat platform for sectors such as sports, wellness, and healthcare.

Sensing Tex offers innovative solutions and support to guide customers from the early stage to manufacturing integrated finished products combining Sensing Mats with cutting-edge electronic and software technologies. We work with brands worldwide and participate in several international projects contributing with know-how, experience, technology, and products.

## Contact

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## Interview with Miguel Ridao, CEO of Sensing Tex

### What problem or challenge did SmartX help you to overcome?

SmartX helped us bring different resources to move forward on a product/solution form factor from the Seating Mat Platform to be marketed. We have been able to gather tech and business advice, financing, and the possibility to disseminate to talk to stakeholders that could help us bring our solution to the market.

### What are the next opportunities that you plan to tackle based on the results of the SmartX project?

We are planning to partner and learn more about the specific use cases we plan for the new Seat Mat solutions and talk to players and prepare pilots around the use of our system for Pressure Injury prevention.

### Do you consider SmartX support has allowed you to gain significant knowledge in the strategically important areas for your business?

SmartX has allowed Sensing Tex to gain knowledge on the use of our systems within the consumer health and medical devices area and initial market know-how about how our tech can provide a solution to the Seating health business.



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## MOTORCYCLE AIRBAG JEANS

The Airbag jeans are made for motorcycle riders and offer impact and abrasion protection in case of an accident. Protecting the lower body with airbag technology has not been possible until now.

### How the Airbag jeans works

The first version of the Airbag jeans has a tether connected to the motorcycle; if the rider gets separated from the motorcycle, the tether will be pulled and activate the airbag. The second version uses sensors and algorithms to determine if an accident is about to activate the airbag.

### SmartX development of the Airbag jeans

SmartX had supported the development of the airbag jeans from a mechanical version into an electronic version. The airbag module inside the jeans has been adapted, and the electronic parts are in development thanks to SmartX.

### The partners

- Airbag Inside Sweden AB (SE) – Develop, design, and sell airbag clothing under the brand Mo'cycle®.
- Helite (FR) – Is an airbag manufacturer that provides services such as production and development for the Airbag jeans.
- Detecht technologies AB (SE) – Is a software company that focuses on fall algorithms for motorcycle riders.
- Avilar AB (SE) – Is a prototype development company that focuses on developing electronic hardware.
- Monlid Srl. (IT) – Is a textile cutting factory with generations of experience producing garments such as jeans.

### Contact

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## **Interview with Moses Shahrivar, Founder of Airbag inside**

### **What problem or challenge did SmartX help you to overcome?**

Our challenge was to develop our mechanical airbag jeans into an electronic version of them. SmartX enabled us to crystallise how to go about when creating an electronic version of our product. Our initial plans were changed, for the better, due to the process of the SmartX project.

### **What was the most significant benefit of joining the SmartX Community & networking activities?**

One benefit is the use of the EU logo on our website, we have noticed that people, contacting us, tend to see the project more seriously when they see that the project has the support of the EU. Several news articles that have covered our story mention the EU project.

### **What are the next opportunities that you plan to tackle based on the results of the SmartX project?**

The SmartX project has created more opportunities when it comes to future products. We have broadened our collaboration with our airbag manufacturer due to the SmartX project, which gives us more opportunities for product development and global sales.



**Moses Shahrivar**

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# DYNABACK: SMART T-SHIRT

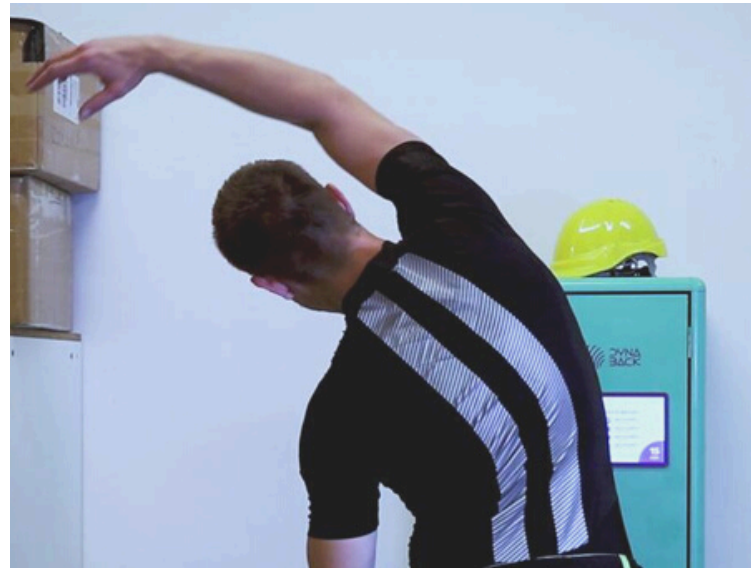
Using data on human movements to better understand the reasons for musculoskeletal problems, Dynaback smart T-shirt makes a full back diagnosis to decrease musculoskeletal risk at work and boost employees' productivity and well-being in the long term.

## How the Dynaback T-shirt works

Through an array of sensors connected to an electronic chip and battery, the Dynaback T-shirt captures the user's body movements. The captured data is then stored and processed on a server, according to ergonomic standards. The report allows experts to reduce the ergonomic risk and optimize the working environment.

## SmartX development of Dynaback smart T-shirt

SmartX support helped Dynaback partners finalise the design, develop the necessary equipment, and test, and validate the final garment. It features an elastic ribbon, automatically populated with sensors. The whole process, especially the integration and silicon encapsulation of the sensors, can now be carried out on an industrial scale.



## The partners

Madesign is a Bulgarian start-up specialised in measuring and analysing body movements to alert the user of incorrect posturing or lack of exercise. It was founded by engineers Sabri Mahdaoui and Val Stavrev.

Amohr is a German-based company, producing technical narrow fabrics for more than 100 years, focusing on developing conductive textiles. Amohr converts textile and metallic yarns into SmartTextiles with functionality requested by their customers.

## Contacts

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# Interview with Sabri Mahdaoui, CEO of DYNABACK

## What problem or challenge did SmartX help you to overcome?

SmartX support enabled us to find a suitable solution for an elastic conductive 4-wire-tape in terms of:

- Integration with given T-shirt cloth;
- Variability for different T-shirt sizes in the final application;
- Offering indication to where automatically connect to PCB;
- Choosing and testing a wire fulfilling all electronic and production needs.

What support activity of SmartX was the most helpful for your project?

The coaching sessions made available to us have been really helpful to understand better how to reach mass production.

## What was the most significant benefit of joining the SmartX Community & networking activities?

The biggest benefit is to connect and discuss with companies across Europe that meet the same challenges as us on a daily basis, to find the right partners and even customers, and to have a good overview of the Smart Textile landscape in Europe.

## What was the most important learning from your SmartX Funded project?

In one SmartX webinar, we learned that most Smart Textiles commercial products use classic electrical cables and removable electronics in order to be easier to reuse, and probably cheaper for the end-user.

This is opposite to our approach which consists of full integration of the electronics for ease-of-use, and increased comfort. However, this design decision leads to a longer development time, which was supported by SmartX, and more care is given to end-of-life products.

## What are the next steps that you plan to tackle based on the results of the SmartX project?

Together with MADESIGN, Amohr wants to make our development a serial product with MADESIGN selling their DYNABACK product and AMOHR producing the conductive tape needed.

## Do you consider SmartX support has allowed you to gain significant knowledge in the strategically important areas for your business?

SmartX has allowed for further validation not only the design and production of the Dynaback uniform but also to test it with major companies, thus bringing it closer to the market and helping to fine-tune the business strategy.



**Sabri Mahdaoui**  
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# 6

## The Smart Textiles Manufacturing Value Chain

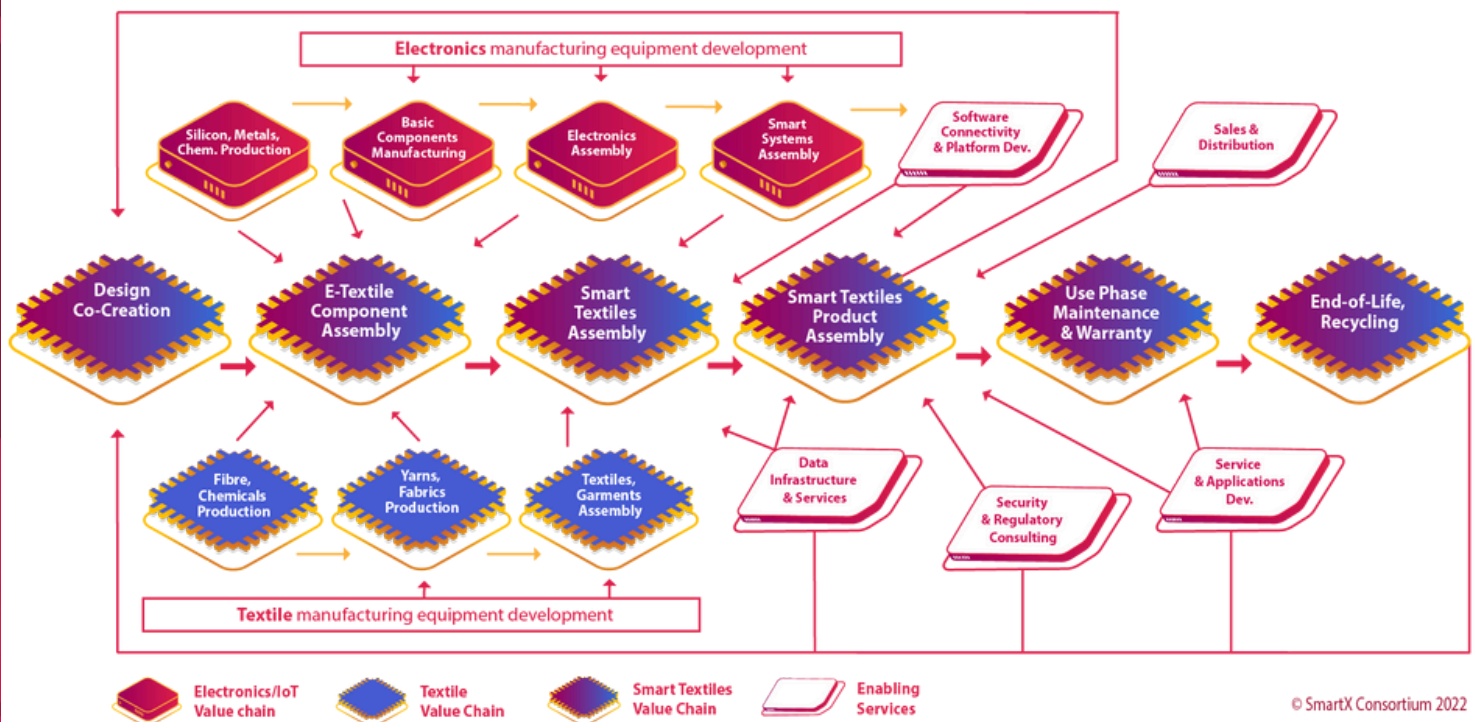
SmartX | European Smart Textiles Accelerator

### Building the Smart Textile Value Chain – Complex but Highly Valuable

The smart textiles value chain comprises multiple actors from three distinctive industries: electronics, textile, and ICT (Information and Communications Technology). This underlines the need for cross-sectoral partnerships and how challenging it is to bring together competencies, energies, and strategies based on three different industries, viewpoints, and mindsets.

Currently, product development is predominantly driven by a technology push. Many products only reach the prototype stage because of the absence of (large-scale) manufacturing capabilities and the challenges related to the difficulty of finding the right long-lasting partnerships.

### Smart Textiles Value Chain



The above infographic shows the full value chain map of smart textiles. The cross-sectoral value chain covers the hardware part, the software part, the textile part, and the end-product.



## A European Smart Textiles Ecosystem Built to Last

*SmartX | European Smart Textiles Accelerator*

The SmartX project interconnects cross-sectoral innovation partners from textiles, IoT, electronics, software, design, and end markets with the purpose of building a new industrial ecosystem that can propel the smart textiles market forward for years to come. Over its 3-year duration, SmartX built an interactive community of more than 800 members including large industry leaders, SME niche players, start-ups, applied research organisations, universities, clusters, associations, and other multipliers from all over Europe. They all came together on a community platform where they could seek collaboration partners, launch inquiries, complete and analyse a self-assessment survey, and access interesting smart textiles documentation. A monthly newsletter kept community members informed about the latest developments and events in the world of smart textiles. Regular free-of-charge webinars provided a wealth of information on the main innovation aspects of smart textiles and featured leading researchers and industry thought leaders from around Europe.

In parallel to the SmartX programme, the Textile ETP developed and launched a European Masterclass on Smart Textile Innovation. This 15-months learning journey followed a structured curriculum composed of 7 thematic modules delivered through 12 monthly webinars. It featured over 50 technology developers, industry innovators, and end-market experts at the leading edge of smart textiles innovation. The Masterclass has currently 52 subscriber organisations from industry, clusters, universities, and research centers and is actively followed by more than 250 individual experts. The learning journey of the Smart Textiles Masterclass is ending in June 2022 with a final in-presence conference.

After the project end of SmartX and the conclusion of the Masterclass, the Textile ETP will merge these two communities into a single European Smart Textiles Community with potentially over 1000 active experts. Apart from a collaboration platform, the community will continue to hold regular expert webinars on topics of highest interest to community members, will organise physical meet-ups at major industry fairs and conferences or virtual lab and industry tours, will maintain a searchable directory of reviewed expert coaches on all smart textile knowledge domains and build an online library of studies, presentations, interviews, and articles on smart textile innovation. A members' newsletter will keep everybody informed about the latest developments and events. It will be the 'go-to place' for any professional interested in smart textiles in Europe. Customised subscription fees will make it accessible to a wide range of subscribers in the function of their level of engagement and financial capacity.

Stay tuned about all new development by subscribing at [smartx-europe.eu/register](https://smartx-europe.eu/register)



**@Smartx\_europe**

**SmartX Europe**

**SmartX Europe**



SmartX was a 3-year (2019-2022) collaborative project that received funding from the EU's Horizon 2020 research and innovation programme to support the establishment of smart textiles manufacturing value chain in Europe through acceleration funding and coaching of SMEs and start-ups.

The main results of the SmartX include:

- € 2.35 million of acceleration funding allocated to 25 innovative projects involving 50 SMEs from 17 European countries, combined with customised coaching to help them achieve close-to-market readiness for their internal smart textile developments;
- A community of over 800 smart textile experts and related professionals that is regularly interacting and steadily growing across Europe;
- A community platform incl. a members directory, an inquiries function, a knowledge base, and a self-assessment tool for smart textile innovation readiness;
- A series of knowledge-sharing and partnership-building events, workshops, and webinars;
- A Smart Textiles Value Chain map describing all stages and actors that need to be orchestrated to successfully design, manufacture, and market smart textile products;
- Policy recommendations on how to effectively support SMEs and start-ups in cross-sectoral high-tech manufacturing innovation through accelerator funding, expert coaching, and brokerage activities;
- Best practices for innovation cluster management and SME support services.

After the end of the SmartX project, the Smart Textiles Innovation Community will be further developed into THE European reference point for networking, knowledge sharing, open innovation and collaborative project development on smart textiles. It will be hosted and managed by the European Textile Technology Platform.

## SmartX partners





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