

D9.9 – Dissemination Workshop in Spain: "Smart Stretchable Patches in Medical Applications"

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PU	Public	✓
PP	Restricted to other programme participants (incl. Commission Services)	
RE	Restricted to a group specified by the consortium (incl. Commission Services)	
СО	Confidential, only for the members of the consortium (incl. Commission Services)	



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1 Executive Summary

This deliverable presents the conclusions, organisation details, materials and statistics of the online workshop "Smart Stretchable Patches in Medical Applications" organized by the SINTEC project on the 20th of October 2021.

The workshop objective was to create awareness about the technology and innovations being developed by the SINTEC project. For that purpose, the project organized a round table discussion where experts debated about the possibilities of the results of SINTEC project in the field of health care and medicine. The round table was introduced by the project coordinator Professor Klas Hjort and the WP2 leader Mr. Alessandro Gumiero presenting the SINTEC technology. The round table was chaired by Prof. Leandro Peccia and the warmup by the exploitation manager PhD. Sergio Guillen.

A total of 27 people attended the workshop out of the 42 people who registered on the advertising web page set up for that purpose.



2 Introduction and Workshop Objectives

The workshop "Smart Stretchable Patches in Medical Applications" is one of the programmed dissemination workshops focused on the application of the results of the project in the health/medical sector.

This workshop was planned to be organised in Spain for a professional public (i.e. practitioners, health/hospital mangers, medical devices providers, and researchers among others). Due to the pandemic situation, it was postponed with the hope that the situation came better in the following months to the planned date. Unfortunately, the situation and the restrictions that some countries, including Spain, have imposed on the number of people attending to social events, force us to organize the meeting online. This workshop took place on the 20th October 2021.

This deliverable covers the organisations details and summarises the main conclusions drawn from the panel discussion among the experts invited to the event.

The main objective of the workshop is to create awareness about the technology and innovations being developed by the SINTEC project. In this sense the communication is focused in:

- Smart patches ant its application to medical applications
- Physiological signals and parameters measurement in cardiology and other medical fields
- Available sensors in development
- Usability conditions. Advantages against traditional sensors

3 Structure of the WS and agenda

The structure of the workshop was defined around a panel discussion among four experts selected by their probed knowledge in the field. As an introduction to the panel, two presentations were performed by the project coordinator professor Klas Hjort [KH] and by the WP2 leader Eng. Alessandro Gumiero [AG] to introduce the SINTEC project and the main innovations about the technology and their advantages in the medical applications. Phd. Sergio Guillen also made an introduction to the round table before leaving the floor to the chairman and the panellists.

The agenda of the workshop was the following:

Agenda

Wednesday, 20th October 2021

Welcome and introduction > 15:00 - 15:05 | Dr. Leandro Pecchia (University of Warwick)

SINTEC smart patches: technology and capabilities

>15:05 – 15:30 | Prof. Klas Hjort (Uppsala University) – Alessandro Gumiero (ST Microelectronics) – Sergio Guillen (MySphera)

Round table discussion >15:30 - 16:15



Open Q&A >16:15 - 16:30

Closing > 16:30

4 Dissemination and organisational details

The dissemination of the event has been made through the social channels of the project, including the web portal and the social network of the partners (the complete list of these will be reported in the next dissemination deliverable).

In the following picture we can find the web page for announcing the event, explaining the objectives, agenda, presenters, and page registration.



And the main social media that belongs to the SINTEC project:

- LinkedIn (https://www.linkedin.com/company/sintec-project/posts/?feedView=all),
- Research Gate (<u>https://www.researchgate.net/project/SINTEC-Soft-intelligence-epidermal-communication-platform</u>)
- Twitter (<u>https://twitter.com/sintecproject</u>),



For the registration page, a customization of the zoom meeting registration was made:



As the meeting was organized online, the tool Zoom video webminars (<u>https://explore.zoom.us/en/products/webinar/</u>) was used to control and manage the interventions and slide presentations of the panellists. The previous page for registration was provided by the Zoom tool for sending the corresponding invitations.

The round table, central part of the workshop, was chaired by Professor Leandro Peccia and the round table was represented by panellist experts MD Raul Mallaina, MD. Jacopo Burrello, MD. Iñigo Gabilondo and MD. Gaetano Perchiazzi.



SINTE



SPEAKERS

LEANDRO PECCHIA | University of Warwick Professor of Biomedical Engineering President, European Alliance of Medical and Biological Engineering and Science (EAMBES)



KLAS HJORT | Uppsala University Head of the Microsystem Technology programme at the Dept. Engineering Sciences SINTEC Project Coordinator



SERGIO GUILLEN | MySphera Chief Innovation Officer SINTEC project Exploitation Manager



ALESSANDRO GUMIERO | STMicroelecronics Electronic Designer SINTEC Electronics Hardware development

Figure 1 Presenters and workshop chairman

And the experts:



EXPERTS



RAUL MALLAINA Medical Doctor with speciality in:

- Family practice and community health
- Occupational medicine
- Sports medicine



IÑIGO GABILONDO

Medical Doctor - Specialist in Clinical Neurology PhD and post-doctoral training in visual neuroscience, computational science, medical image processing, neuropsychology and medical technology



JACOPO BURRELLO

Medical Doctor- Specialist in Internal Medicine PhD student in Medical Physiopathology

SINTE



GAETANO PERCHIAZZI

Medical Doctor - Specialist in Anesthesia and Intensive Care Medicine

PhD in Clinical Physiology and Associate Professor in this University. He works clinically in the intensive care units of Akademiska Sjukhuset.

Figure 2 Panel of experts



5 Attendance statistics

A total of 42 people were registered to the event.

The following figure shows the distribution of Job position of the registered people:



Figure 3 Job position distribution between registered people

The number of attendees were 27 people distributed in the following way:





Figure 4 Attendees per country



Figure 5 Attendees per job position



6 Main conclusions

The panel discussion was introduced by the exploitation manager Sergio Guillen [SG] and the panel chairman professor Leandro Pecchia [LP] highlighting the importance of the technology being developed in the project and leading the subsequent discussion on the most important challenges that the technology has to address, the possible applications of the technology and what the benefits would be for patients.

The first point that was highlighted by panellist Raul Mallaina [RM] is its possible use in the field of electroencephalography and the capability of pre- and post-exercise bio-impedance, something that was confirmed, although the project is currently focused on capturing other types of signals, such as ECG or PPG. Klas Hjort [KH] pointed out that the use of flexible patches improves skin contact as well as requiring less energy consumption. The second panellist [JP] was interested in its use for hypertension control through wearable monitoring, and its performance compared to gold standards as a sphygmomanometer. Alessandro Gumiero [AG] indicates that algorithms are being developed to calculate the Blood pressure although they are not yet comparable with the use of a medical device. Inigo Gabilondo [IG] as neurologist recognises it as an attractive technology and is interested in its use in motor monitoring of patients. He appreciated the use of accelerometers and electromyography sensors and he ask for the use of SINTEC patches and sensors to monitor body position and detailed limbs movements for getting information of motor disabilities as, for example, tremor in Parkinson. [HK] agrees that these requirements are very interested and encourages the project for a second phase of research since the project is currently facing more straight forward measurements like bioimpedance, ECG or PPG. [AG] states that the electronics for capturing these measures exists and the combination with stretchable patches make it easier to wear for a long period of time. An interesting challenge is the use of the patches on the head and provide a good contact through the hair, something which is not feasible right now.

There were some questions during the round table asked by the attendances:

- "what is the durability of these devices? How long do they last, specifically asking about the stretchable materials used to develop them? can I patient wear them all the time?" The project is working in a time frame of 24h. The communications are done through Bluetooh Low Energy and trying to increase the battery life. [AG] points out that to augment the battery life it is important to act in the duty cycle of the acquisitions and make some computations directly on board of the devices themselves.
- *"are the devices reusable? can a device used by one patient used by other? because they are being attached to the skin".* The durability is also related to the reusability of the patches, something that the project is also working on. Different patches with mechanical characteristics are being tested.
- Is there reliability study with these stretchable devices? It would be critical to ensure they can have sufficient reliability in application under mechanical and environmental impacts." The more important issues are contact failures that depends on the applications/movements demands.

[LP] Also raised the question of non-technical barriers for the adoption of SINTEC technology. [HJ] thinks that barriers will be overcome in medical applications if the problem solved is important enough. In consumer applications the price/costs could be an issue.

[SG] wraps up the session recognising that the potential uses of the technology, for example, in the recording of neurological signals, blood pressure, Parkinson's, etc is something to be included in the potential



exploitation of the results of the project although it is not the focus of the project for the time being. Also is appreciated the concerns about durability and reliability for a practical future use of the technology. Regarding the barriers, the project has to find the niches of applicability like wellbeing. Another potential field of use is the monitoring of elderly people, as they are very reluctant to use devices that they have to wear obstructively on a daily basis.

As a summary, the discussion has provided very interesting use cases of applications in the medical sector that will be considered in the exploitation plans of the project.

The project wants to thank Professor Leandro Peccia for chairing the session and the panellist experts MD Raul Mallaina, MD. Jacopo Burrello, MD. Iñigo Gabilondo and MD. Gaetano Perchiazzi for contributing to such a fruitful round table.

7 Annex I

7.1 SINTEC workshops coordinated graphic identity

Graphic identity











7.2 Photo Gallery





7.3 SINTEC Presentation











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