

# Flexible & Wearable Electronics

## Flexible Networked Sensors for health & sports applications



### e-Whiz

Design, develop and produce miniaturized RF and Wearable electronics. Custom designed hardware allows to sense any kind of human motion or behaviours, fully ready for machine learning.

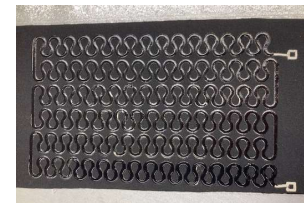
[www.e-whiz.fr](http://www.e-whiz.fr)



**Problem to be solved** - Flexible and stretchable sensors find applications in textiles and sport for monitoring users motions and collecting real-time data useful for qualitative and quantitative analysis of physical efforts. However, the manufacturing of such sensors remains challenging because of the peculiar nature of textile substrates (not rigid) and the several constraints on product use and maintenance. A way to manufacture the sensors is by direct prototyping (i.e. manufactured onto the cloth instead of being produced separately and assembled) with subsequent interconnecting to an electronic circuitry to retrieve sensors data and information. The challenge was to demonstrate that direct manufacturing could be applied to the stretchable sensor manufacturing while guaranteeing that the sensor could be robust enough to undergo a training session and that sensor collected values are directly linked to physical parameters of the motion or the actions.

**Solution provided by SmartEEs** - A pair of gloves, as a novel Human Computer Interaction (HCI) solution for interaction within extended reality environments thanks to advanced finger/hand tracking (22° of freedom and 250x higher accuracy in finger tracking from state of the art) enabled by haptic feedback and a new cabling solution with stable resistance in all mechanical solicitations and dimensions.

**Business model & impact** - The solution provided by SmartEEs helped validating the technical feasibility of the printed textile motion sensor. The seamless Integration opened new perspective of application in the collective sports and also Industrial field. Thanks to SmartEEs, the printed sensor solution will move forward and be tested In other applications where the weight and size of the sensing electronics matter. Studies related to the Interconnection aspects will follow on. As the solution's principle and prototype are validated within new applications, complete finished products can be derived as well as technologies licensing or connection to the printed sensor technology provider. The Impact Is real and strong as the direct printed sensing solution Is brand new for the customers who are experiencing It. It is also opening new applications In terms of potential measurements previously unavailable due to lack of seamless Integrated sensing circuitry.



Larger sensor



Linear motion sensor

