

# Smart Health & Sport Tech

## THE CLIENT

The Client is a technology company specializing in the analysis of sports performance for both professional and amateur athletes, sought to develop an innovative solution to enhance performance metrics and minimize health risks associated with intensive physical activities.

## THE CHALLENGE

The client aimed to create a high-tech wearable device capable of monitoring critical health and performance indicators such as ECG, respiration, and the movements of an athlete's torso in space.

The main challenge was to integrate multiple complex sensors in a compact, comfortable form factor that athletes could wear during rigorous activities without hindrance. Additionally, the client required real-time data collection and analysis to provide immediate feedback to athletes and coaches.



80%

reduction in  
sports accidents



## THE SOLUTION

Meteca is developing an IoT sport chest band to monitor heart rate, respiration, and torso movements using advanced sensors and Briki modules for enhanced athlete health insights and performance.

The IoT sport chest band features:

**ECG Sensors:** To monitor heart rate, providing insights into the athlete's cardiovascular health.

**Customized Respiration Sensors:** To track breathing patterns, crucial during both high-intensity workouts and recovery periods. In particular, the elastic band was sensorised by inserting a portion of resistive tissue and thus monitoring the variation in the circumference of the chest cavity and thus the condition of inflated and deflated lungs.

**3D Motion Sensors (IMU):** To analyse the movements of the athlete's torso, offering data on posture and movement efficiency which are vital for both performance enhancement and injury prevention.

One of the great advantages of Meteca's Briki modules is the possibility of choosing to use only one or both microcontrollers, depending on the requirements of the application. In this case, only one CPU was used to improve efficiency and reduce power consumption.

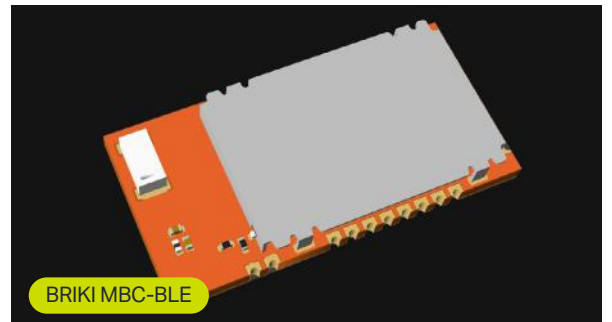
The use of the BLE MCU ensures reduced power consumption without compromising the quality of the analogue-to-digital conversion of the biological signals to be monitored.

**An APP will also be implemented for local monitoring** of the data and for sending the data to the dedicated Cloud platform for more accurate analysis and measurement history.

### IOT KIT

Powered by:  
Briki MBC-BLE  
with Bluetooth Low Power

App + Cloud based Dashboard



## THE RESULTS

The implementation of the IoT wearable will result in significant improvements in athlete training regimes.

Courses and trainers will receive instant feedback on an athlete's physiological and movement data, enabling them to tailor training programs more effectively and react swiftly to any signs of potential injury or exhaustion. Athletes will be able to adjust their techniques in real-time, enhancing performance while reducing the risk of injury.

**Performance Optimization:** Athletes will see measurable improvements in performance due to better-informed training decisions based on the comprehensive data collected.

**Risk Reduction:** Early detection of abnormal physiological markers will help in averting potential health issues.

Meteca's collaboration with the client on this project highlights the potential of IoT technologies in transforming sports training and health management.

The deployment of the IoT band will not only optimize athletic performance but also ensure higher safety standards, demonstrating the powerful capabilities of the Briki MBC and Meteca's commitment to innovation in IoT solutions.

## BENEFITS

Advantages you get with Meteca

- Support in defining the best technological solution
- Hardware design
- Software design
- Prototyping
- Error correction of the first prototyping phase
- Design-for-manufacturing realisation
- APP and Cloud based dashboard
- Field testing and on-going corrections
- Dedicated and continuous technical support
- Assembly and product testing during the MP phase

## METECA COMPANY

Meteca is a swiss company that provides unique electronic tools and support for the development of tangible Internet of Things solutions.

Take your company to the next level, whatever your industry, with an excellent travelling companion. With our innovative Briki technology, we offer you complete and continuous support to achieve your goals with your IoT project.

BEGIN YOUR JOURNEY

[www.meteca.org](http://www.meteca.org)  
[info@meteca.org](mailto:info@meteca.org)