



KEY INNOVATIONS

To pursue its objectives, EU-TRAINS project addresses the following key innovations:

SMART EDGE AI-POWERED WEARABLE SENSORS



integrated in textiles for acceleration detection, heart rate and respiration monitoring supporting running, cycling and functional training



IN-WATER TRANSMISSION TECHNIQUES

for real-time power estimation, exercise tracking, and remote training, reliable heart rate, heart rate variability and immersed respiration monitoring

SMART NON-INVASIVE BIO-CHEMICAL SENSORS



for real-time monitoring of glucose, lactate, electrolytes, and oxygenation levels



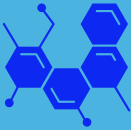
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DEVELOPMENT OF NOVEL MATERIALS

as imprinted polymers to measure analyte concentration and ion-selective membranes electrolyte analytes

ADVANCED DATA FUSION TECHNIQUES



supported by sensors featuring networked ML for remote management of big data, both on-air and in water



ADVANCED ENCRYPTION TECHNIQUES

based on biometric identifications to avoid unauthorized access to and misuse of personal data



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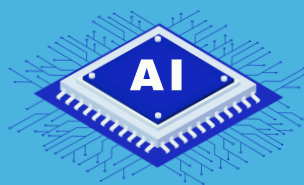


PROTOTYPE FAMILIES

The following prototype families have been targeted as outcomes of the project:

EDGE-AI PROCESSOR

Signal Processing
Sensor Fusion
Tiny ML
Energy Management
Biometric Identification
Communication Unit Water/Air



MULTI NODE & MULTI-SENSOR UNITS



Sensors are integrated into specific sport garments, supporting the HR and HRV monitoring, sweat analysis and movement



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PROTOTYPE FAMILIES

MULTI NODE & MULTI-SENSORIZED SWIMSUIT AND ACCESSORIES

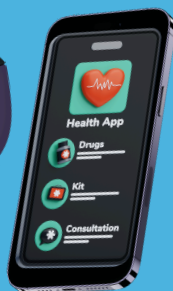


For in-water communication, not only they support precise HR and HRV monitoring during activity, but also movement tracking and power/stroke-efficiency metering



SMART-PHONE AND SMART-WATCH APPLICATIONS

They will support the convergence between PoC (Point of Care) and PoN (Point of Need), both for medical and sport applications



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