

Espad: Embedded Sport Performance Analysis Data

Background

The Espad project targets the portable sports equipment market, for people who want to **enjoy exercise risk-free and track their performance more effectively**.

Most portable sports devices on the market display parcels of real-time data. However they do not generally offer storage capabilities, and they are not especially accurate or reliable. **Espad aims to develop a comprehensive, modular system using wireless communication that is compatible with all sensors**.

This system will be able to synchronize and analyze physiological, biomechanical, and trajectory data to help athletes better understand their performance and learn new sports techniques. The new system will be used initially in three disciplines (motor sports, winter sports, and rowing) to develop the core technology and three prototypes.

Partners

SME

ART Grand Prix - Fédération Française de Ski - Ligue Rhône-Alpes d'Aviron - Skis Lacroix - TES Electronic Solution - **TracEdge** - Véga RC

Research laboratories

INRIA Grenoble (staff from ARES, DEMAR and SED)
- INSA Lyon CBS

Key figures

Budget: €2 million

Duration: 24 months

Human resources allocated: 22 FTE

Innovation

The Espad project aims to design a network of heterogeneous, embedded sensors that use wireless communication along with configuration and control software. The network will be modular, making it easy-to-use, and will meet athletes' evolving needs for fun, safety, health, comfort, and performance.

Amid the many challenges facing the Espad project, the project team will focus on the following questions:

- How will the intelligence be distributed —will it be centralized or stored in individual sensors?
- What wireless technology should be used for communications between the sensors and central control component?
- Which software, hardware, and communication architecture (network design) should be used?

Espad will also study the following topics:

- Communication protocols that save energy and provide a deterministic response
- Resource optimization (wireless communications, networks, and systems) while the system is in use
- System compatibility
- Network reliability
- Potential overlap among communication fields