



# The leading Railway Cluster of Italy

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**DITECFER**  
DISTRICT FOR RAIL TECHNOLOGIES  
HIGH SPEED SAFETY & SECURITY

I L T E  
E T Y

# WE CAN BRING EXCELLENCE IN THESE FIELDS

IP1 01 02 03

Acoustics Health Monitoring  
Composite Materials  
3D Printing Noise  
Running Gear Innovations

All IPs

Dissemination & Communication

IP5

Real time Monitoring & Diagnostics  
Preventive Maintenance  
Obstacle Detection

01

02

IP2 01 02

Formal Methods  
Decision Support System Platform

IP3 01

Digital Twin

IP4 01

Simulation of crowds

CCA

Noise & Vibration  
Virtual Certification  
Simulation tools

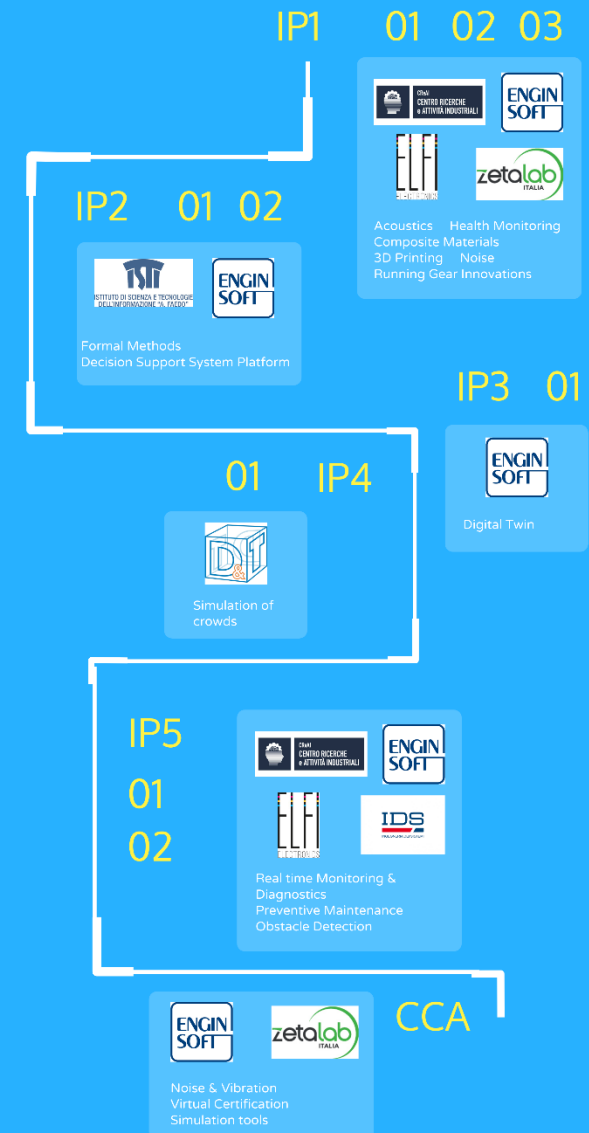
## SOME DETAILS ON PROJECT IDEAS

### IP1-02 / IP5-01

to **instrument bogies** in order to monitor the actual mission profile in real time, to diagnose the status and to collect data for carrying out maintenance on condition and fault prediction, in order to increase their reliability and to reduce the life-cycle-cost. Methods and algorithms used by our company in other research projects can be improved in order to **monitor frame and suspension in addition to wheelset and bearings**.

### IP1-01

to **redesign structural members and panels with integrated sensors and low voltage circuits** to monitor stresses, vibrations, noise, temperature, air quality, smoke and fire in order to analyze the actual mission profile in real time, to diagnose the status and to collect data for carrying out maintenance on condition and fault prediction. Moreover, lighting system can be redesigned with **Li-Fi capability** for data broadcasting and communications.



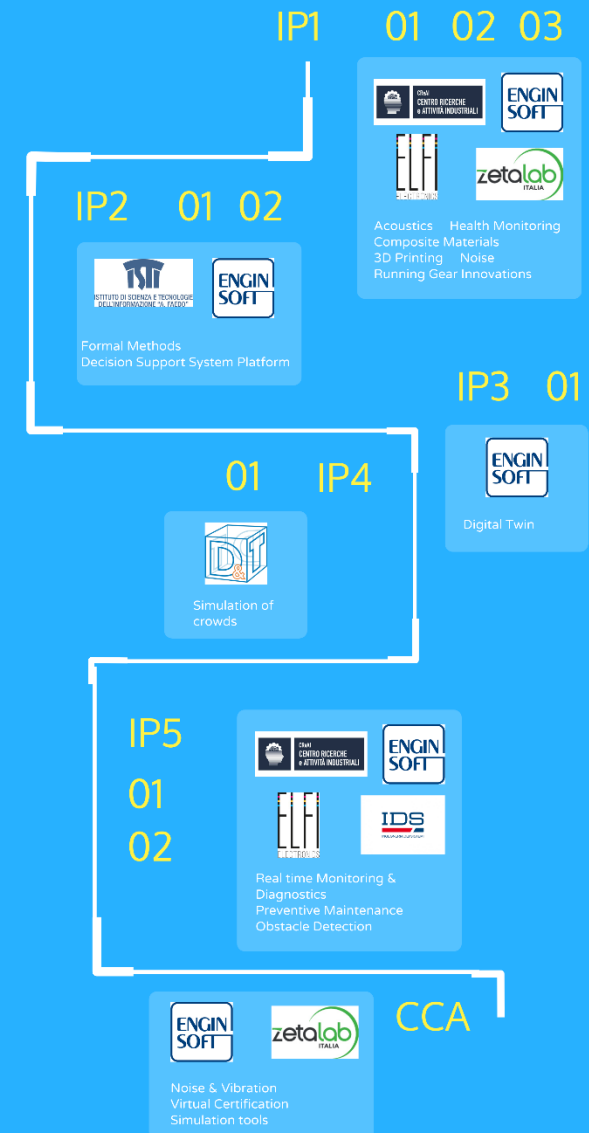
### IP5-02

to prototype an **improved performances SIL-4 radar** (e.g. to minimize false positives) to be exploited both as track-side installation to enable “**behind the curve**” **obstacles detection** for the overcoming freight trains and as a “**track intrusion detection system**”, to overcome un-authorized and / or dangerous items and people trespassing over sensitive areas. + to prototype an **on-board radar obstacle detection system**, by performing an experimental program to assess the effects of the railways environment on radar technology.

### IP4-01

to apply and **extend D&T crowd simulation algorithms** in order to:

- 1) Predict behaviour and travel time spent in travel bottlenecks (paths of short length and long duration), including pedestrian legs connecting interchange nodes, and
- 2) Provide, in real time, situation-aware and crowd-compatible alternative paths to the travel services/apps.



# LEADERSHIP VS. PARTNERSHIP

## LEADERSHIP → IP5-02

- ✓ *Capability to lead a consortium with a **Large Company** specialised on the topic. Relevant operators/infra managers/companies/universities can contact us.*

## PARTNERSHIP → Other cited IPs

*We can offer:*

- ✓ **SMEs** with very focused competences tailored for the Topics.
- ✓ A leading **Cluster** very effective in Dissemination and Communication in general and more specifically in Cybersecurity.

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