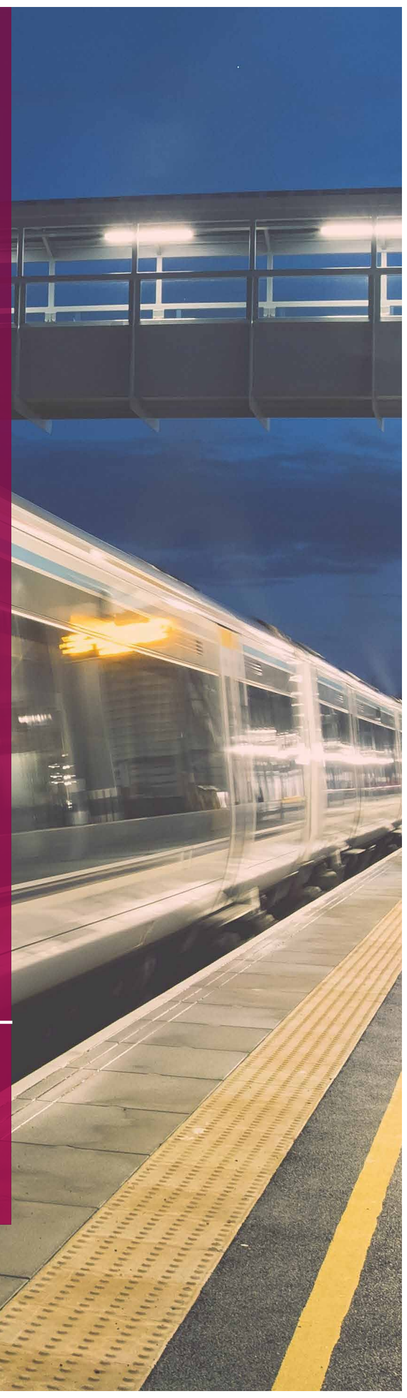
ceit

MEMBER OF
BASQUE RESEARCH
& TECHNOLOGY ALLIANCE



Knowledge driven Railway Industry

Innovative solutions for the railway industry

Ceit has more than 20 years of experience collaborating with companies in the railway sector, is a leader in the development of cutting-edge technology products and services as well as in activities that include system design, modelling, experimental characterization, development and validation up to TRL9.

OUR RESEARCH LINES

- Energy optimization
- Smart maintenance
- Big data analysis
- Railway dynamics
- Signalling and embedded systems
- Positioning and navigation
- Materials and processes

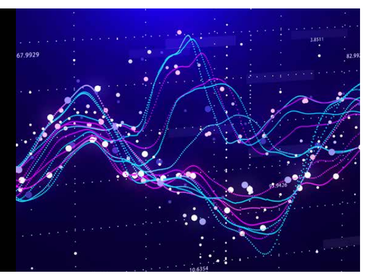
Energy optimization

Power electronics design, driving assistance systems to minimize energy consumption, electrical infrastructure, modelling, SW tools that support decisions on energy optimization for the overall railway system.

Smart maintenance

Condition-based maintenance of vehicle and infrastructure, life-cycle cost assessment, predictive and prescriptive analyses based on physical degradation modelling.

Big data analysis

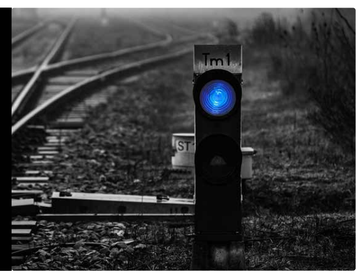


Data cleaning, reconciliation, analysis and visualization, feature extraction based on business-relevant KPIs, what-if scenario generation to support decision-making.

Railway dynamics

Component design and characterization, physical degradation modelling, wheelto- rail and pantograph-tocatenary contact analysis, comparison of static and track test measurements with multibody model simulation results for system validation.

Signalling & embedded systems



Safety-critical embedded systems, SIL4 design methodology, pre-certification testing capabilities, virtual (i.e. zero on-site) testing, hardware in the loop, EMC analysis for characterization and system development.

Positioning & navigation

Development of ad-hoc solutions for positioning the complete vehicle or asset, autonomous or integrated positioning systems including seamless navigation techniques.

Materials & processes

Improvement of steel grades, processing and heat treatment of wheels and axles to meet high mechanical requirements, analysis of steel cleanliness (inclusions), forging conditions, microstructure after heat treatment (microstructural homogeneity), final mechanical properties (strength and toughness).

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