



# CAPGEMINI AT THE FOREFRONT WITH TODAY'S AND TOMORROW'S SIGNALING SOLUTIONS

ENSURING SMOOTH AND SAFE OPERATIONS

## INTRODUCTION

Railway operators today are required to increase transport capacity, safety, and frequency - helping to relieve road congestion and meet carbon reduction targets.

At the same time, they must also renew the existing aging network and rolling stock fleet. Meeting these demands is a huge challenge for the railway industry in light of increased cost pressures, technical competition, and borderless operations.

We at Capgemini address on-board and trackside signaling and cover the end-to-end project and product lifecycle from the design, integration, validation & verification, test & commissioning of control & command systems.

## DIGITAL CHANGES IN THE RAIL INDUSTRY

The rail industry is under enormous pressure to change. Some key drivers accelerating the transformation include:

- A growing number of passengers, due to increased urbanization
- Higher expectations around comfort and safety
- Increasing competition
- A move towards 'anything as a service' (XaaS) business models
- Many drivers are pushing railway operators to replace or modernize their rolling stock, and to build efficient and modern signaling systems. Consequently, operators must ensure that they can:
  - Deliver cost savings through digitalization
  - Handle a growth in traffic – the increased use of existing infrastructure and higher safety requirements drive the need for improved signaling equipment

In light of this increased use, modernization is the key to improving network safety and capacity.

# OUR SIGNALING LIFECYCLE OFFERING

Signaling is a safety critical system, essential for the control of trains and for railway traffic. It has undergone several technological changes over the decades to the current modern digital technology, like the European Train Control System (ETCS).

Rail signaling projects are unique in its, kind, with our expertise and innovation culture, we guide our customers in ensuring safer and more secure for their customers with the following signaling services:

Capgemini Engineering is at the forefront of signaling - we support our clients in project engineering. We combine a high level of agility with our rich domain expertise and continuous innovation and digitalization drive. Based on this, we have supported our customers during the implementation of major greenfield and brownfield signaling projects globally.

In addition to our rail signaling specific expertise, we leverage our cross-sector IT & OT experience bringing relevant technologies to the railways. We offer a global execution capability strength to deliver projects from where and how it makes best sense for our customers providing flexibility, optimized cost & time to market advantages.



## PRELIMINARY DESIGN

- Technical Specifications
- Application Manuals
- Signaling Scheme Design
- Signaling Control Tables
- Scheme Design Log & Safe Braking Reports
- Site Survey Reports



## INSTALLATION SUPPORT

- Site Correlation Data Update
- Update of Designs
- Configuring Network Equipment
- Loading the Tested Data in Site Equipment



## POST COMMISSIONING & INTERFACE MANAGEMENT

- Preparation of As-built Drawings
- Interfacing Between Customers, Suppliers & Other Vendors
- Assets Management
- Technical Documentation
- Obsolescence Management
- Refurbishment



## BIDDING

- Evaluation of RFP
- Technical Bid Support
- System Architecture Design
- Bill of Materials
- Risk Evaluation



## DETAILED DESIGN

- Onboard System Design
- Trackside Data Design
- Signaling Equipment Room Layout Design
- Cable Schematics
- Signaling Equipment Room & Wayside Interconnection Designs
- Mechanical Installation & Assembly drawings