

EUROPEAN TRAIN CONTROL SYSTEM (ETCS)



We support rail stakeholders to deliver ETCS with confidence—minimising risk, enhancing safety, and ensuring new systems deliver on their intended promise.

THE SIGNATURE TEAM

SYSTRA is recognised globally for its leadership in ETCS strategy, deployment, and integration. We support Clients from early feasibility studies through design, testing and operations. Our team combines technical expertise with operational insight to help our clients manage complexity, ensure safety, and deliver interoperable systems. We are there where it matters most, helping our clients design, control and safely operate modern rail networks.

WHY WE'RE DIFFERENT

Our clients choose us for our ability to navigate complexity and overcome the unique challenges of ETCS implementation, delivering fully integrated, future-ready signalling solutions. We do this through:

- **Lifecycle-Driven Delivery** - We take a whole-of-lifecycle approach, integrating people, process, and technology to ensure ETCS solutions are safe, interoperable, and perform as intended from design through to operations.

- **We're a key stakeholder in setting the Australian standard** - Our experts are contributing to the development of the Australian Interoperability standards based on ETCS technology bringing deep technical authority and return of experience from participated projects.
- **Global delivery, local insight** - Our international production model offers our clients ETCS specialists from around the world. From high-speed corridors to complex suburban networks, we offer a tailored approach that integrates global experience with local conditions.
- **We are proven** - Having delivered ETCS projects around the world and on some of the most well-known lines, we understand the challenges our clients face. When a project is complex, high risk and requires deep technical skills, SYSTRA is the signature team.

OUR SERVICES

- ✓ Business Case preparation
- ✓ Concept Design
- ✓ System Integration
- ✓ System Engineering
- ✓ Safety Assurance
- ✓ Testing and commissioning
- ✓ Program and delivery support
- ✓ Human Factors
- ✓ ISA services
- ✓ Network modelling
- ✓ Operational Integration



CASE STUDIES

1 » NEW SOUTH WALES, AUSTRALIA

SYSTRA has supported Transport for NSW and Sydney Trains in the rollout of ETCS across the electrified suburban network, providing strategic and technical services for several initiatives.

- For the Automatic Train Protection Project (ETCS L1), our team provided strategic advice, engineering management, design reviews and system integration to deploy the new system across a complex brownfield network and passenger fleets while maintaining operations, a critical step towards broader ETCS implementation in NSW. We helped enhance safety, improve performance, and reduce risk for further ETCS developments.
- For the Digital Systems Project (ETCS L2), SYSTRA provided advisory services during the conceptual and feasibility phase, contributing to the TfNSW Business Cases that funded project deployment.
- SYSTRA has also acted as Interoperability Advisor for TfNSW, covering operations of third-party freights on ETCS L2 trackside, a conceptual ETCS trackside solution for regional operations, and NSW–QLD cross-border compatibility analysis.

2 » QUEENSLAND, AUSTRALIA

SYSTRA is playing a key role in the rollout of ETCS across Queensland. Our experience spans advisory, technical, and integration services, supporting safer, more efficient, and future-ready rail operations. Examples include: Client-side Technical Advisory for North Coast Line ETCS Level 1, including business case development, concept design, tender support, and Independent Safety Assessment services for systems integration.

- Technical Services for Cross River Rail ETCS Level 2 (trackside, onboard, and system). Working with multiple stakeholders, SYSTRA has helped ensure integration within a live, mixed-traffic network by updating Queensland Rail's Safety Management System and training material.

- ETCS Level 2 and Digital Radio on Sector 1 North (Elimbah to Caloundra, including Stage 1 of the Direct Sunshine Coast Line). SYSTRA supports concept design, supplier engagement, and systems integration planning to deliver ETCS Baseline 4 over FRMCS within a modern signalling architecture, enabling a future-ready solution ahead of the 2032 Olympic Games.
- Technical Services for Aurizon's TrainGuard ETCS Level 2 project across the Blackwater and Goonyella coal networks. Our scope covers Verification & Validation, safety case development, RAM documentation, centralised control, wayside, and onboard technology. Phases 1 and 2 are now operational with further rollout underway.

3 » EUROTUNNEL, FRANCE AND UK

Connecting France and the United Kingdom, the Eurotunnel is one of the world's busiest rail links, operating 24/7 for passenger and freight trains. To maintain its high safety standards and prepare for future traffic needs, Eurotunnel is modernising its signalling and control systems. SYSTRA's France and UK teams are leading the migration to the ERTMS standard using a "Big Bang" approach. This involves switching from the existing TVM-430 to the new system (ERTMS L2 with GoA2 ATO) in one coordinated step, while ensuring no disruption to cross-Channel operations. This modernisation will enhance interoperability, safety, and long-term performance for cross-border services.

4 » ERTMS LEVEL 2 ACROSS DENMARK

As part of Denmark's national re-signalling program, SYSTRA is supporting Banedanmark in deploying ERTMS Level 2 across 1,710 km of conventional and high-speed lines. As General Consultant in joint venture with Rambøll, Emch+Berger, and Parsons, we're delivering system integration, transition zone design, migration and test and commissioning. SYSTRA is also leading Test & Commissioning activities for Hitachi GTS on the western network. The program will enable a modern, interoperable network, with onboard deployment completing in 2026 and full rollout by 2033.