Safety-critical Software & Hardware

Formal-Method
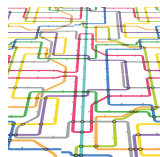
Assessment processes

CBTC equipment

Interlocking Systems

Signalling

Want to assess safety-critical elements?

![eurailtest logo]

eurailtest

A WORLD LEADER IN RAIL TESTING & CONSULTING

About us

Since the 80's, the RATP (Paris metro) has continuously built up the necessary technical and human resources to monitor the safety of software-based railway command-control systems.

Through EURAILTEST, a joint-venture set up by SNCF (French railway) and RATP, we propose accredited complete services to assess the safety-critical elements of your systems (CBTC, Interlocking, software,…).

EURAILTEST is an independant organisation offering the widely recognised and tested technical skills and experience of two major historic railway operators: rail testing, consulting and engineering services for rolling stock or infrastructure from lightrail to high speed projects.

About safety critical assessment

Workforce
Our laboratory has a 26-strong workforce of technicians and engineers.

Principal resources
To check or confirm functional reliability throughout the various phases of the software development used in safety-critical systems (SIL 3,4 - EN 50128), the laboratory uses the following, inter alia:
- Software proofing (PERF* method using different proof engines) or static analysis techniques and software testing systems.
- Formal-methods and tools for validation of configuration data (OVADO).

Key strengths
- COFRAC accreditations that have entitled the laboratory to contribute to major projects in France, (later versions of SACEM, METEOR, rollout of OURAGAN, Automation of Metro Line 1 in Paris, etc.) and abroad (Singapore, Mexico, Barcelona, Algiers metro systems, etc.).
- Safety-critical software qualification services (safe system operation).
- Independent System Assessment (ISA) – the assessments vital in producing the safety cases to be submitted to qualified experts or duly certified official bodies prior to system commissioning.

Accreditations
The laboratory has COFRAC accreditation (Accreditation No. 3-1221, as an inspection body in compliance with ISO/IEC 17020:2012 standard) as a part of the inspection body.

PERF: Proof Executed over a Retroengineered Formal Model.

Some references

Paris metro

Line	System	Development method	Proof Workshop	Brought into service in	Use case
4	SSI	Graphs based on Petri nets	Prover Certifier	2013	Safety Demonstration (1st opinion)
1	SSI	Graphs based on Petri nets	Prover Certifier	2013	Safety Demonstration (1st opinion)
5	PAE OCTYS (CBTC)	Scade 5	PERF*	2013	Safety Evaluation
9	PAE OCTYS (CBTC)	Scade 5	PERF*	2015	Safety Evaluation
13	OURAGAN (CBTC)	Scade 6	PERF*	2014	Safety Evaluation

Line	System	Format Proof toolkit	Date of operation	Usage
3	CBTC	OVADO®	2011	Safety Assessment
1	CBTC (manless)	OVADO®	2011	Safety Assessment
5	CBTC	OVADO®	2013	Safety Assessment
9	CBTC	OVADO®	2013	Safety Assessment
13	CBTC	OVADO®	2014	Safety Case

Other projects

Client	Line/Network	Use
SL	Stockholm	Evaluation of the process and proof tools used for safety demonstrations.
RÉSEAU FERRÉ DE FRANCE	High Speed Line	Expert opinion on critical software.

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for rail **testing** and **engineering**

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