



SAFETY RAILWAY SYSTEMS & PRODUCTS

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PLATFORM SCREEN **DOORS CONTROL**

Device to open and close platform screen doors, safety critical SIL3 or SIL4 systems. Based on a train track communication: DOF In operation in PARIS



Just track side system: **COPPILOT**. In operation in SAO PAULO and STOCKHOLM





Safety remote controller and Mixed SIL0, SIL2, SIL4 I/O network: SATURN







DETECTION OF A PERSON IN A GAP

Between platform doors and train: DIL - SIL3

Track safety monitoring

Overspeed and zone

In operation in Paris, Valenciennes, Lyon, Nice,

AUTOMATIC TRAIN STOP

crossing: KFS

Baku, Corsica

RATP



SIL4 Axle counter and wheel sensor

TRAIN DETECTION

technology: DNH barrier

AND LOCATION

Hyper frequency

Steel wheel: DRF

Pneumatic train,

streetcar, people mover and monorail: DRF MP

















PLATFORM DETECTION

Opening and closing gap filer authorization: GAPS







SAFETY DISPLAY

FTCS Boseline 3: **K-VISION** Programmable platform in option









DATE LOGGER / MONITORING

High-performance railway operation SCADA. Data Logger Master Monitoring system

SIL4 VITAL RELAYS

Interface, embedded and interlocking applications: **RS4 technology**

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FIRE SAFETY SYSTEM SUPERVISION

SIL2. Deployed in PARIS



VITAL COMPUTER

CLEARSY SAFETY PLATFORM

To design your own SIL4 system based on this already certified computer



SIMULATION TOOLS AND TEST BENCHES

Various simulators and test bench environment to validate components, on board and trackside; for ETCS baseline 2 to and 3

FORMAL APPROACH FOR CRITICAL SYSTEMS

Up to **« unattended train** operation (UTO) »: Atelier B tool and B method

- System analysis, property proof
- Automatic production of safety critical code



Formal activities

throught the V cycle

Formal Proof at equipment leve

Activity reduction

TRACK PLAN EDITOR

VALIDATION/

DATA

VERIFICATION OF

SAFETY CRITICAL

CLEARSY Data Solver

to help users implement their track plan, from initial design to commissioning



Based on on the shelf PLCs and vital interface relays

SAFE TRAIN LOCATION

Based on a track magnetic loop and a SIL4 vital on board computer











CLEARSY Safety Solutions Designer

CLEARSY develops its expertise in designing safety systems and software. We offer scalable independent or integrated solutions that meet the highest standards. We control for this purpose B formal method tools and safety intrinsic hardware know-how. Our range of safety systems for the rail industry combines both reliability and availability.

These systems can achieve levels of safety SIL2, SIL3 or SIL4 according to your needs and they are, in all cases, turnkey.

We design custom systems based on your specific needs.

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