EFARAIL®
BY EFACEC

Command and Control

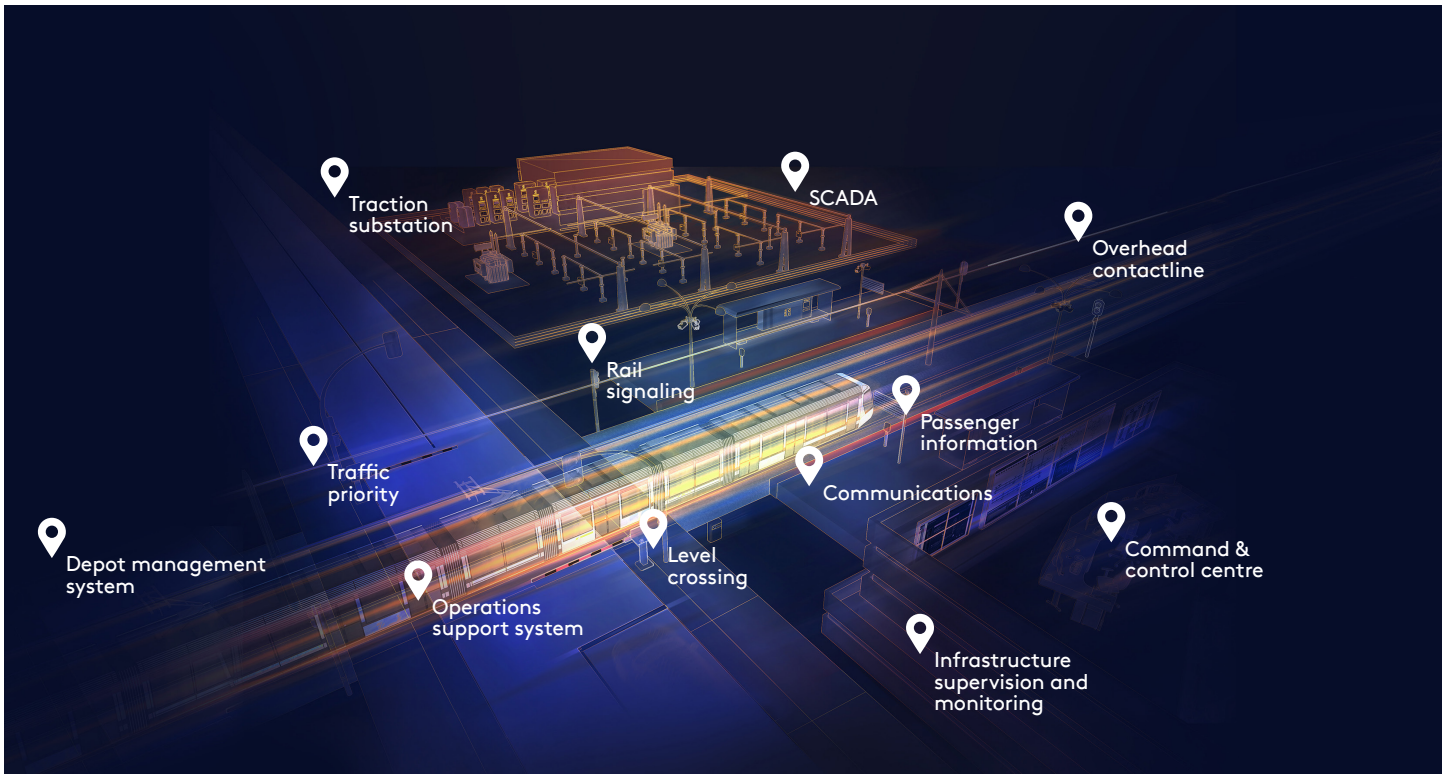
Overview

EFARAIL by EFACEC® is an advanced operation and management platform for public transport, seamlessly integrating different sub-systems in one web-based interface application, according to the specific needs of each client.

With a modular architecture, based on standards, it's possible to support, in a unified workstation, different systems such as Operations Support System, Security, Passenger information, Rail safety, Data & voice communication, Power SCADA, Technical supervision, as well as the integration of third-party systems.

Key features

- Seamless integration of different subsystem in a single workstation
- Third-party applications integration
- Unified user management with single sign-on
- Real-time transportation service status follow-up using network synoptic and geographical view
- Integrated communications (radio, telephony, help points, ...)
- Inter system reporting and incidents management
- Integrated events and alarms management
- Replay and simulation capabilities
- Unified historical archive
- Centralized management of the videowall
- Cybersecurity management
- Multilanguage application
- Modular and scalable platform



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Integration

Integration of Efacec's solutions:

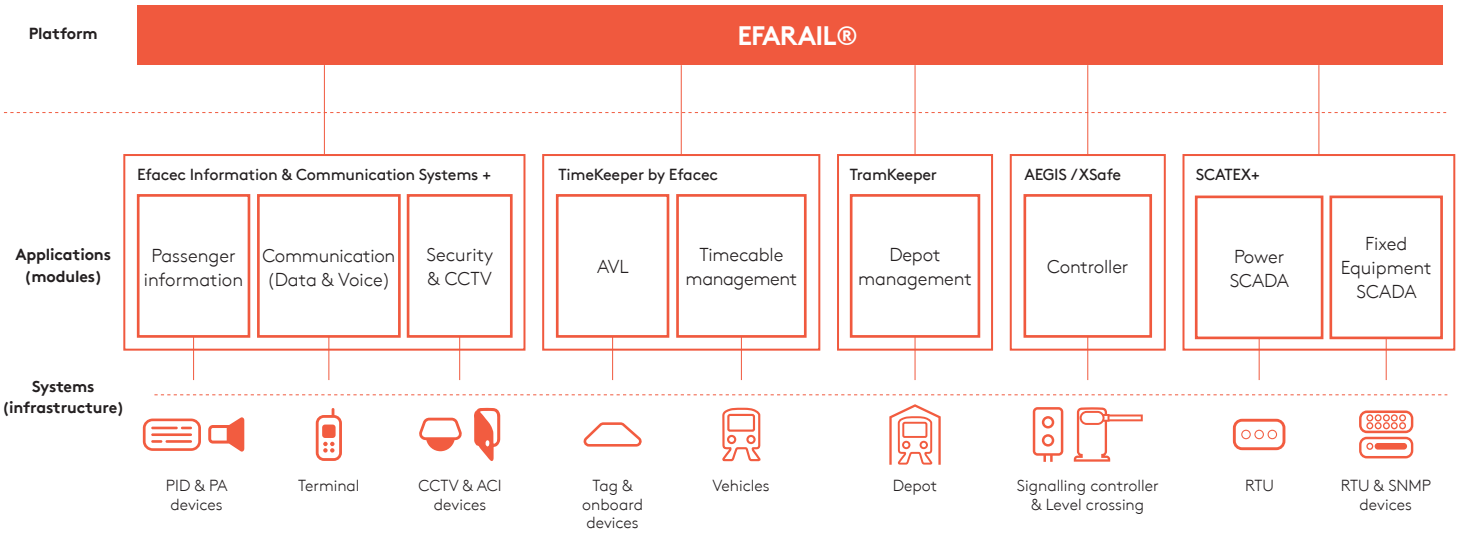
- Passenger information
- Security and videosurveillance
- Data & voice communication
- Vehicle location and Fleet management (TimeKeeper by EFACEC®)
- Depot management (TramKeeper)
- Railway signalling (Aegis by EFACEC®)
- Level crossings (XSafe by Efacec®)
- SCADA (SCATEX+)

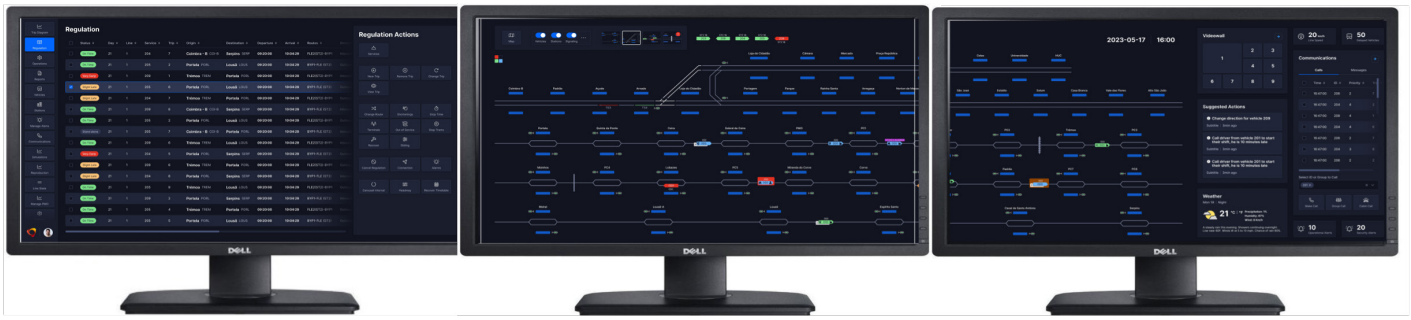
Benefits

Global Solution for public transport Command and Control, providing:

- Global vision
- Improved situational awareness
- Better user experience
- Higher operational efficiency
- Improved transportation service quality
- Resources optimization

Architecture





EFARAIL platform

Traction and Energy
SCADA

Rail safety
Railway Signalling SIL4
Level crossing controller

Operations Management
Operation support system
Depot Management system
Passenger Information
Security and Surveillance
Comuications (data & voice)

Command & Control Centre
Operational Command & Control Centre platform for Public Transport

Efarail integrates Efacec solutions such as Timekeeper, Tramkeeper and Aegis. Supported by the corresponding application modules, Efarail provides a set of functionalities, described below.

Passenger information

The Passenger information module provides specific and general information to the passengers. This module includes visual and sound components, ensuring full synchronism between the information that is displayed in the visual equipment and the information that is broadcasted in the sound system.

Key features

- Display and broadcast of waiting time forecast, according to real-time vehicle positioning
- Display and broadcast of real-time or scheduled messages
- Possibility to record messages and reuse them
- Possibility to address equipment individually or in groups
- Text-to-speech (TTS) support
- Multilanguage messages support
- Possibility to react to other subsystems operation through events

Security and CCTV

The Security module allows to display camera images, both in the workstation and/or in the OCC videowall. Recorded footage can also be searched, reviewed, and exported. This module also integrates other systems, like intrusion detection, access control and emergency telephony.

Key features

- Operation and centralized control of video equipment at remote sites
- Recording management
- Video footage selective search, replay and extraction to file
- Onboard video support
- Video analysis functionalities
- Possibility to react to other subsystems operation through events

Communications (data & voice)

This module manages the command centre operator's communications with the various interlocutors spread across the network. Communications can be performed by voice or data. Using this module, the operator can make or receive calls, to individual terminals or in groups, using fixed or mobile networks. Help points, both in stations and vehicles, can also be handled.

Key features

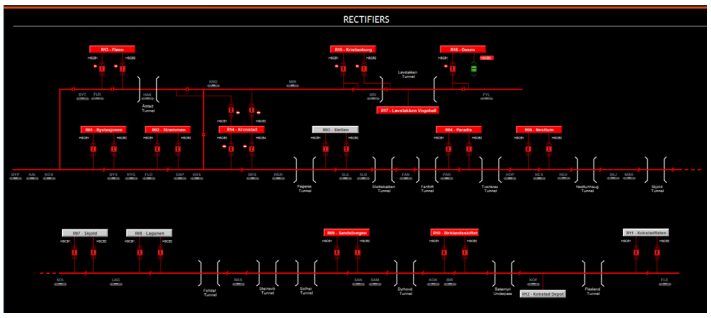
- Manage calls and messages
- Address terminals individually or in groups
- Voice calls recording

SCADA

ScateX⁺ is an open, modular and distributed application for the control and management of a power supply and fixed equipment system.

It provides advanced Scada functions including diagrams, trending, tagging, colouring, tracing and advanced analytical functions which constantly monitor the network.

ScateX⁺ is used for Power Scada as well as for fixed equipement scada (infrastructure supervision).



Automatic vehicle location

As part of the TimeKeeper by EFACEC® application, the follow-up of the vehicles circulation, including its precise location, is assured in Efarail's main window. Vehicles are represented both over a synoptic view and a geographic map (GIS), allowing the operator to have full awareness of the current status of the network.

To help even further, the graphical properties of the vehicle icon are used to indicate the vehicle punctuality (on-time, late, etc), status (open doors, onboard alarms, etc.) and other configurable contextual information.

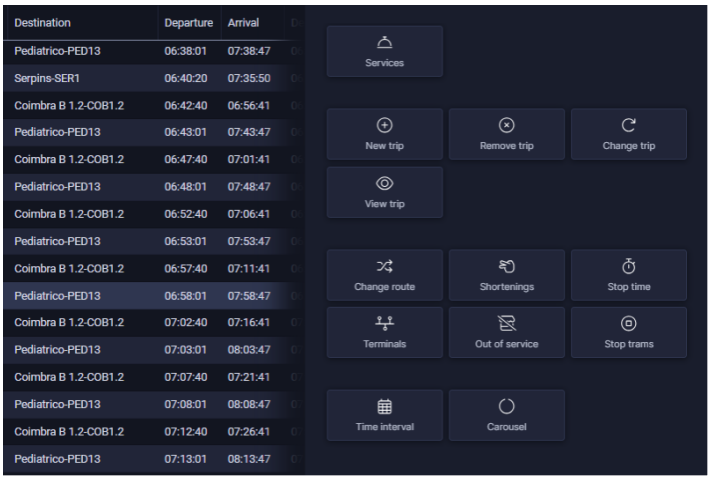
With this information being represented in the same maps used for all other Efarail's components, all context is available to the user when real time decisions have to be made.

Key features

- Vehicle location representation in both synoptic and geographic views
- Real-time status information of each vehicle
- Direct actions over vehicle representation

Timetable management

In the real world there are always unforeseen constraints (traffic congestion, accidents, failures, etc) that disturb the theoretically planned timetable. To minimise the impact of these disturbances, the operator can implement strategies to maintain the service regularity (schedules and frequencies), optimizing the resources (vehicles, drivers and fuel/energy).



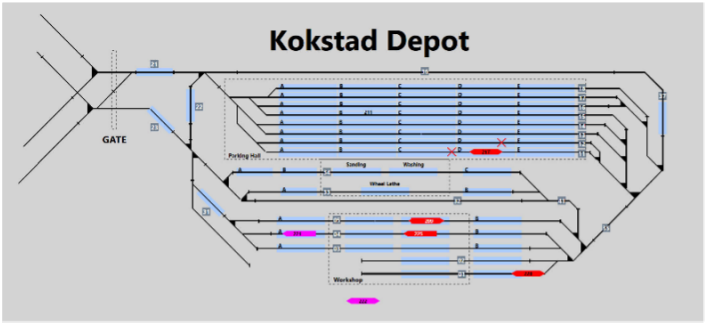
Key features

- Add or remove trips
- Change the origin or destination of a trip
- Change the routing of a trip
- Shorten a trip
- Change the stopping time in a platform

Depot management

The depot is a crucial part of the operation of a transportation network, working in the background to have everything ready for the passenger operation.

The purpose of a depot management system is to automate all those operations. Tedious tasks like the assignment of vehicles to services or the optimisation of vehicle movements between specific areas in the depot are performed automatically, yet still under the operator's supervision. The result is a more efficient working of the depot, releasing the operator to more sophisticated tasks. At the same time, the system warns the operator to any abnormal situation that cannot be solved automatically.



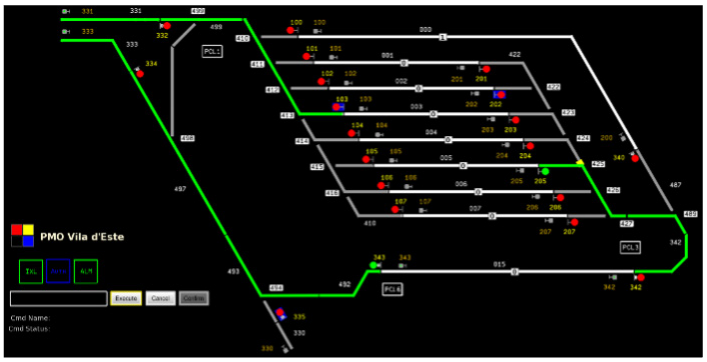
Key features

- Automatic vehicle allocation and dispatching
- Driver supervision and control
- Optimization of shunting movements
- Optimization of parking positions
- Vehicle maintenance and technical preparation management

Signalling and level crossings

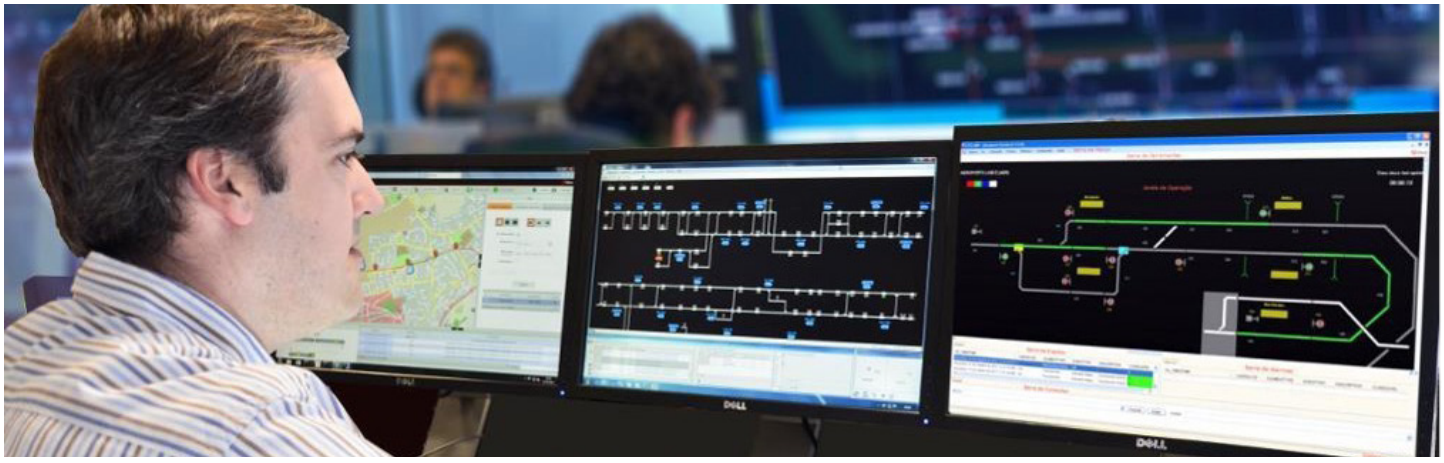
The command and control of the signalling governing the safe movement of the trains can be operated from the same integrated environment as the other subsystems.

The relevant signalling assets are visible on the synoptic maps and used to represent the corresponding statuses. The applicable commands can also be sent to the relevant controllers (interlocking or level crossing) using the same interface.



Key features

- Status indication of all signalling assets
- Command activation to all applicable functions
- Possibility to send override commands
- Authority management



References

TII - Dublin Light Rail (LUAS) – Ireland

B1, C1, A1 and LUAS Cross City – 43 km and 69 stations

- AVLS & Fleet management system
- Remote power control (SCADA)
- Rail and road signalling systems
- Communications (data & voice)
- Passenger Information
- Video surveillance
- Fire detection and access control
- Emergency telephony system;
- Traction substations
- Catenary installation
- Lighting, electrical installations and power supply
- Command & control centre (based on Efarail® platform)

Odense Letbane - Odense Light Rail - Denmark

A network with 14km, 26 surface stations, 14 vehicles and 51 crossings

- AVLS & Fleet management system
- Rail and road signalling systems
- Communications (data & voice)
- Passenger information
- Video surveillance
- Fire detection and access control
- Emergency telephony system;
- Traction substations
- Catenary installation
- Remote power control (SCADA)
- Command & control centre (based on Efarail® platform)

Bybanen - Bergen Light Rail – Norway

Telecom and Support Systems for Stage 3 -28,4km and 35 stations

- AVLS & Fleet management system
- Video surveillance
- Passenger information
- Intrusion detection
- Communications (data & voice)
- Wi-Fi network
- Depot management system
- Traction substations
- Catenary
- SCADA
- Command & control centre (based on Efarail® platform)

Metro Tenerife - Tenerife Light Rail – Spain

Light Rail System for 25 stops, along 16 km, with 2 lines in service

- AVLS & Fleet management system
- Rail and road signalling systems
- Communications (data & voice)
- Wi-Fi network
- Video surveillance (fixed and on-board)
- Passenger information
- Telephony system
- Traction substations
- Catenary
- SCADA
- Command & control centre (based on Efarail® platform)

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Efacec Engenharia e Sistemas, S.A.
Transportation Area

mktransportes@efacec.com
www.efacec.com

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