NAOS
Integrated Control Centre

CAF Signalling

CAF Signalling is a world reference in the design and implementation of rail control solutions for the railway industry.

NAOS is the flexible and modular CAF Signalling solution for Control Centres designed for satisfying the current management and integration requirements for traffic control systems from the industry and the operators.

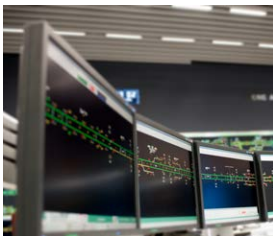
NAOS solution provides advanced functionalities for a complete and integrated management of the traffic from the Control Centres and at same time it allows the coordination and integration among all the involved systems in the operation of the railway lines.

NAOS solution is based in two main concepts which provide a very high flexibility, capacity of integration and adaptability to different operating environments.

• Integration and coordination platform for all the systems involved in the operation of the railway lines.

• Traffic Management Systems covering the complete cycle from the scheduling of services to the monitoring, command and regulation during the operation.

The modular architecture in combination with the high configurability of the platform and the systems implies that NAOS is the correct choice for an adequate traffic management for Control Centres with broad different requirements. NAOS solution allows an optimal management of High-Speed and Main-Lines, but also it is adequate to cover the specific needs and requirements of the mass transit lines.



TECHNICAL FEATURES

- **Integration Platform**

NAOS solution provides an integration layer for heterogeneous systems through a messaging bus (ESB) which facilitates a standardised and efficient communication among all the systems involved in the traffic management and command. The integrated systems include the own systems of the solution, third-party systems, adjacent Traffic Management Systems and external systems (passenger information systems, public address systems, telephony or control access).

The own platform provides to the manager a unified control of user permissions and access to the integrated systems through a centralised management of users and zones and single sign-on service.

- **Traffic Management System (TMS)**

NAOS solution provides a set of integrated systems which allows the complete traffic management from the Control Centres. The available functionalities cover the responsibilities of the managers during all the processes involved in the management and control of the traffic and the railway lines:

• Scheduling Process: The system allows a global management of the tactical and the strategic scheduling of services by means of supporting functions to the user for the creation of optimised Operating Plans according to the features of the infrastructure and the available rolling stock.

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• Railway Traffic Operation Process: The system allows monitoring and commanding the traffic and the installations integrated:

- Traffic Management and Optimisation through services re-scheduling, forecasting, traffic regulation, advanced conflict detection and resolution based on supporting decision functionalities.

- NAOS solution can be integrated with the CAF Signalling AURIGA ATO system for achieving a complete automatic and efficient traffic regulation.

- Automatic Control through train tracking according to several positioning systems and automatic routing based on the Operating Plan in use, the current situation and the forecasted evolution of the traffic.

- Monitoring and command on Centralised Traffic Control systems with capability of interface with interlockings from different providers and electronic interlockings through frontier PLC.

• Auxiliary Processes to the Traffic Operation: The system allows the integration of several Remote Control and auxiliary systems for supporting the complete railway traffic management:

- Installations Remote Control for commanding escalators, elevators, air conditioning, hydraulic systems, etc. of the stations and other facilities.

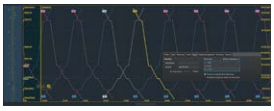
- Energy Remote Control, with information of the status of energisation of the catenary and neutral zones identification.

- Geographical view with information of the position, velocity and status of the services on a geographical map of the controlled area and the visualisation of the more relevant alarms on the line.

- Unified management of reports and alarms which includes the complete life cycle of the alarms (acknowledgement and deletion).

- Integration with external systems: CCTV, Rolling Stock Remote Control, Ticketing, etc.

• Simulation and Training Process: The system provides an environment isolated from the operation with integrated simulation of the field behaviour allowing training actions and scenario analysis to the operators.



ADVANTAGES / BENEFITS

CAF Signalling NAOS solution provides the following benefits to the managers:

• Applicable to several different railway regulations.

• Flexible and modular architecture, adaptable to the needs and requirements of very diverse frameworks, operators and managers.

• Integrated management of all the systems deployed on the Control Centre, including own systems and third-party systems.

• User-friendliness providing very detailed information and all the required actions in intuitive, clear and simple user interfaces and graphical views (train-graph, synoptic and geographical views).

• Advanced traffic and field simulation allowing the optimisation of the lines.

• Easy integration with interlocking, ETCS signalling equipment and CBTC systems.

• Integration with Automatic Train Operation (ATO) systems.

• High availability architecture.