SIEMENS

INTELLIGENT OPERATIONS CONTROL SYSTEM

CONTROLGUIDE Rail 9000

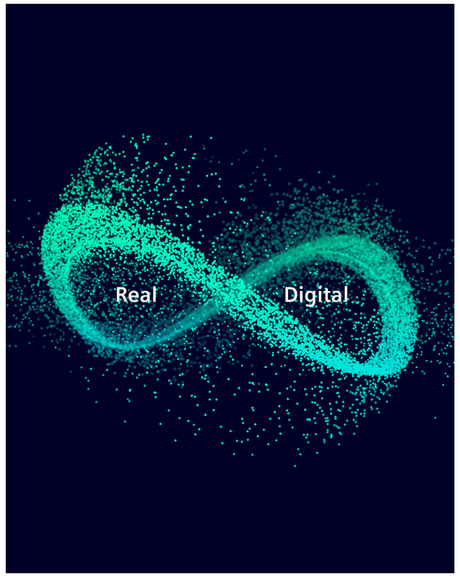
Controlguide Rail 9000 is our integrated solution for traffic management, automatic train control and operation in the digital age. Take planning, control, dispatching and supervision of rail traffic control to another level with our state-of-the-art operation control systems. From local operation to the automation of countrywide networks: we provide customized solutions for every need.

Controlguide
Rail 9000

Controlguide Rail 9000 sets the benchmark for digital railway operations worldwide. Due to its modularity and scalability, our state-of-the-art platform offers highest levels of flexibility and reliability in application.

In addition to the control of day-to-day operations, Controlguide Rail 9000 features high-performance automation and intelligent dispatching functions to optimize operating sequences for efficient and cost-effective rail services.

Controlguide Rail 9000 provides functions for all levels of rail traffic control and operations management. As an open and user-friendly system, it allows you to expand your existing infrastructure by integrating existing rail-specific systems and new applications.



A highly flexible system architecture with open interfaces ensures seamless interoperability with third-party systems and futureproof investments that grow with your requirements.

Taking into consideration the growing complexity of today's signaling technologies and challenges, Controlguide Rail 9000 leverages new possibilities for testing, prototyping, maintenance, integration and IT-security requirements, making the most of your rail network.

Features

Automatic Train Operation
Integration of operations planning and ATO systems enables the real-time rescheduling of trains in the traffic management system to manage short-term disruptions on the fly and avoid conflicts throughout the network, resulting in optimized traffic flow, enhanced punctuality, passenger comfort and reduced energy consumption.

Train Control System - ETCS
Controlguide Rail 9000 can be easily integrated with Trainguard 200 RBC and Trackguard Westrace interlocking systems to monitor and safeguard train movements and railway operations in accordance to Eulynx standardization requirements.

Fully Automated Train Operation
Fully automated train operation is state-of-the-art in mass transit systems. Controlguide Rail 9000 supervises and manages all the train operations enabling remote control for operators and maintain supervision and control also under difficult circumstances.

Depots
Depots are also increasingly benefiting from higher levels of automation. Controlguide Rail 9000 provides complete control and planning of depot operations including vehicle maintenance and washing plants.

*Hypervisor: Software for virtualizing computer resources

**Thin client: computer that accesses resources from a central server

Integration Concept
Digitalization accelerates the automation of our technologies and produces a vast amount of data. Controlguide Rail 9000 provides a framework for data capturing and processing from various sources in the rail system. Combined with smart tools and artificial intelligence they boost overall performance and help create value-added applications.

Architecture
The Controlguide Rail 9000 system architecture runs over a hyperconverged infrastructure (HCI) that virtualizes all the hardware equipment and elements of a conventional architecture. HCI includes a virtualized computing storage and virtualized networking, running on commercial off-the-shelf (COTS) servers.

The hyper-converged infrastructure means that companies will no longer need to rely on different compute and storage systems, simplifying management and increasing resource-utilization rates. HCI can be deployed both as on-premise and off-premise solutions.

Requirements
All functional elements of Controlguide Rail 9000 run on commercial off-the-shelf servers equipped with direct-attached storage and with the convergence of elements enabled by a hypervisor*. For applications requiring a specific hardware for User Interface, thin clients** are used at the Human Machine Interface edge.

Our Global Footprint

Controlguide Rail 9000 is present in 28 countries and more than 80 installations around the globe.

It is used in various applications, from complex traffic management systems to local interlockings or RBC consoles.

Functionalities are adapted for different segments and business models, from commuter lines to remotely controlled operation, from depot and freight to operation in highspeed networks.

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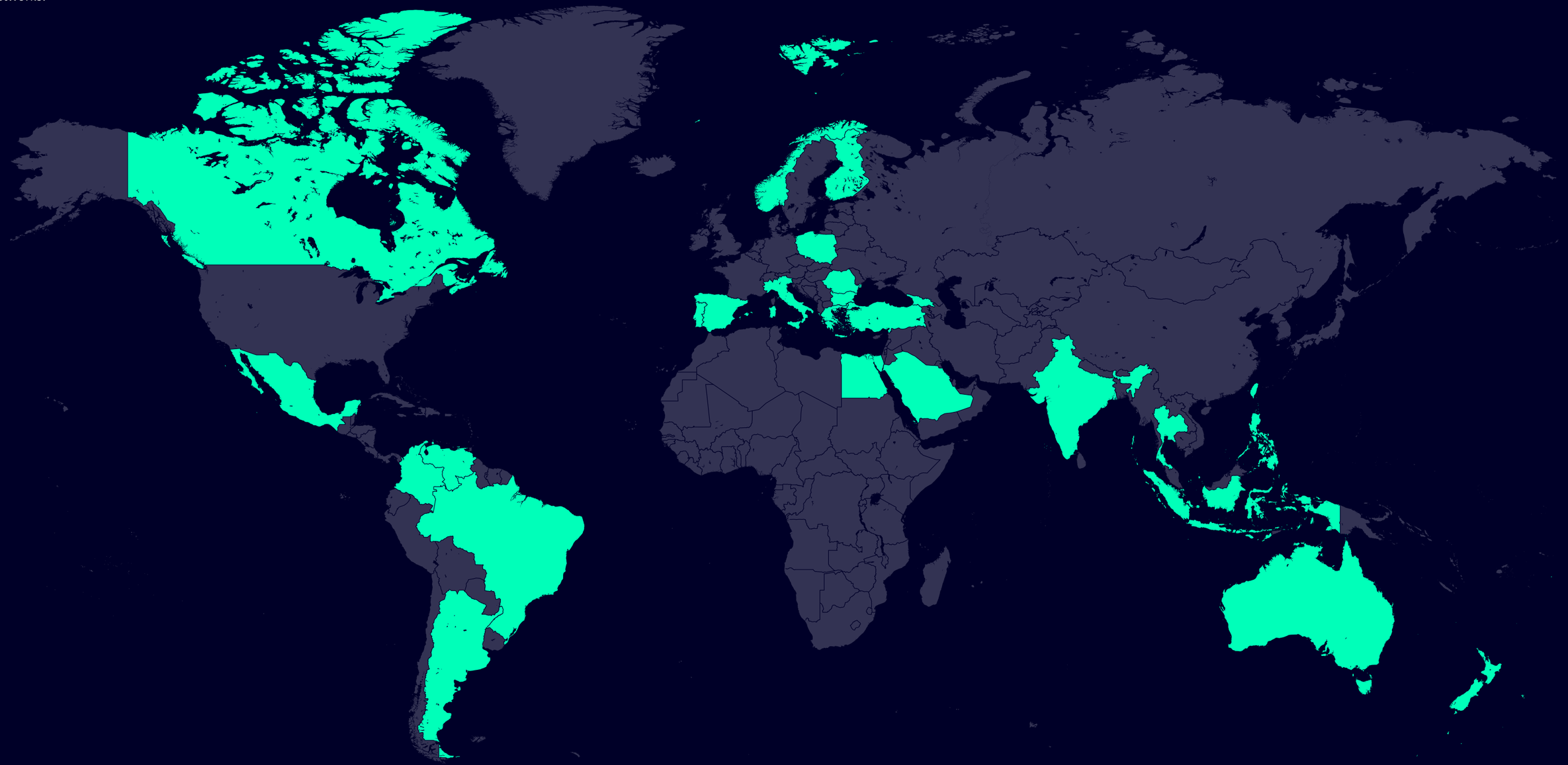

Highlights

Lifecycle Cost Optimization. Costs for acquisition, operation and maintenance are reduced by more efficient use of resources and improved product life cycle costs of components.

Modularity. Controlguide OCS provides you with all the necessary resources and information you need for efficient, cost-effective operations management. They can be individually adjusted to your needs.

RAMS. SIL2 processes (SIL4 for specific procedures involving other train protection systems (RBC, interlockings, CBTC) according to CENELEC standards are the basis during the entire life cycle of the system. **R**eliability, **a**vailability, **m**aintainability and **s**afety are significantly increased when streamlining of architecture and technology.

IT Security. Security level 3 (SL3) according to IEC-62443 ensures protection and reliability of activities within and out of the system.

Scalability. Systems can be extended throughout their life cycle without jeopardizing their performance and functionality. Scalability is achieved both in terms of functionality and costs.

Integration. Existing rail-specific systems and applications can be integrated into Controlguide Rail 9000, both cost-effectively and with a low level of risk. In this way, you can structure and optimize your operating sequences holistically.

Testing. Testing environments can be enhanced by using digital twins. By testing and deploying different subsystems in the cloud, external dependencies can be disregarded, and tests become more cost-effective and independent from the final installation and commissioning.

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