

# **Connected Rail Market By Service (Passenger Information System, Train Tracking and Monitoring, Automated Fare Collection System, Passenger Mobility, Predictive Maintenance), By Rolling Stock (Freight Wagons, Passenger Wagons, Diesel Locomotive, Electric Locomotive, Light Rail and Trams), By Safety and Signaling System (Positive Train Control, Communication Based Train Control, Automated Train Control): Global Opportunity Analysis and Industry Forecast, 2022-2033**

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## **Abstracts**

Connected rail refers to the integration of advanced technologies in railway systems to enhance communication, automation, and overall efficiency. This concept involves utilizing IoT devices, sensors, and data analytics to create a network where trains, infrastructure, and control centers are interconnected. Key components include communication-based train control (CBTC) systems, predictive maintenance tools, and real-time passenger information systems. The goal is to improve safety, reduce delays, and optimize energy use by providing real-time data and automation capabilities. Connected rail systems are critical in modernizing urban transit, meeting increasing passenger demands, and ensuring seamless, efficient, and safe railway operations.

In addition, factors such as surge in integration of the Internet of Things (IoT) in the railway industry, along with increase in demand for safety & compliance in rail transit, passenger, and freight capacity are expected to drive the connected rail market growth. However, lack of technological infrastructure and infrastructure changes in existing

systems are expected to hamper market growth. Furthermore, technological advancements in autonomous rail & green transportation and an increase in reliance on computing systems are anticipated to offer remunerative opportunities for the market expansion during the forecast period.

Use of IoT in railways has increased as it improves infrastructure reliability and safety in trains. IoT sensors generate data that supports analysis and understanding of conditions that were not possible in past. A large quantity of data is utilized to enhance train schedules and for maintenance of equipment, with the help of IoT. In addition, IoT has the potential to improve work productivity of railway operations. It fills gaps in communication and control systems by connecting networks to cloud-based applications. Furthermore, railways of many countries have adopted IoT to improve their productivity and enhancement services. For instance, in 2021, the UK network rail started the use of IoT, AI, and deep learning to improve its railway system.

Moreover, railway operators have collaborated with connected rail companies to enhance network connectivity. For instance, in March 2022, Alstom, signed a contract with Santiago, Chile to provide its Urbalis CBTC signaling system for 20 years of maintenance and 37 Metropolis trains. Therefore, increase in use of IoT in railways drives the connected rail industry growth for diversity in digital railway solutions and telecommunication technology. Surge in demand for safety and compliance in rail transit, such as theft protection and hygienic stations has increased significantly in recent years. This has led to rise in demand for safety and compliance in rail transit, which provides better infrastructure for railway. For instance, in June 2022, the Federal Railroad Administration (FRA) announced over \$368 million in Consolidated Rail Infrastructure and Safety Improvements (CRISI) grant program funds to 46 projects in 32 states and the District of Columbia. These investments are expected to play a crucial role in modernizing rail infrastructure and supply chains in the region, helping to reduce crowding and getting people and goods where they need to go quickly and more at a reasonable cost.

In addition, to improve infrastructure of railway, governments of various countries have collaborated with connected rail companies to increase connectivity and expansion of railway transit including overhaul, deployment of cloudbased applications, automatic vending machines, and monitoring of trains. For instance, in November 2021, Alstom signed an agreement with Metrolinx to overhaul 94 BiLevel commuter rail cars for GO Transit, a regional public transit service for Greater Toronto and Hamilton Area (GTHA) in Ontario, Canada. Through this agreement, Metrolinx expanded its rail service and reduced crowding on its stations. Therefore, rise in demand for safety and compliance

in rail transit is expected to boost growth of the connected rail market.

The connected rail market is segmented based on service, rolling stock, safety & signaling system, and region. By service, the market is divided into passenger information system, train tracking & monitoring, automated fare collection system, passenger mobility, and predictive maintenance. By rolling stock, it is classified into freight wagons, passenger wagons, diesel locomotive, electric locomotive, and light rail & trams. By safety & signaling system, it is categorized into positive train control, communication-based train control, and automated train control. Region wise, the connected rail industry is analyzed across North America, Europe, Asia-Pacific, and LAMEA.

The prominent players profiled in connected rail market include Alstom, Cisco Systems Inc., Hitachi Ltd., Huawei Technologies Co., Ltd., IBM (International Business Machines) Corporation, Nokia, ROBERT BOSCH GmbH, Siemens AG, Wabtec Corporation, and Trimble, Inc.

### **Key Benefits For Stakeholders**

This report provides a quantitative analysis of the market segments, current trends, estimations, and dynamics of the connected rail market analysis from 2021 to 2033 to identify the prevailing connected rail market opportunities.

The market research is offered along with information related to key drivers, restraints, and opportunities.

Porter's five forces analysis highlights the potency of buyers and suppliers to enable stakeholders make profit-oriented business decisions and strengthen their supplier-buyer network.

In-depth analysis of the connected rail market segmentation assists to determine the prevailing market opportunities.

Major countries in each region are mapped according to their revenue contribution to the global market.

Market player positioning facilitates benchmarking and provides a clear understanding of the present position of the market players.

The report includes the analysis of the regional as well as global connected rail market trends, key players, market segments, application areas, and market growth strategies.

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Brands Share Analysis

## SWOT Analysis

### **Key Market Segments**

#### By Service

Passenger Information System

Train Tracking and Monitoring

Automated Fare Collection System

Passenger Mobility

Predictive Maintenance

#### By Rolling Stock

Passenger Wagons

Diesel Locomotive

Electric Locomotive

Light Rail and Trams

Freight Wagons

#### By Safety and Signaling System

Positive Train Control

Communication Based Train Control

Automated Train Control

## By Region

### North America

U.S.

Canada

Mexico

### Europe

UK

Germany

France

Russia

Rest of Europe

### Asia-Pacific

China

Japan

India

South Korea

Rest of Asia-Pacific

### LAMEA

Latin America

Middle East

Africa

### Key Market Players

Siemens

Nokia

Cisco Systems Inc.

ALSTOM SA

Trimble Inc.

Wabtec Corporation

IBM Corporation

Hitachi, Ltd.

Robert Bosch GmbH

Huawei Technologies Co., Ltd.

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