TRI LOGICAL™ RAILWAYS

The Smartest Solutions for Freight

Control FREAK Freight

Optimize your Rail Freight operations

Control FREAK takes on **FREIGHT**

Why is the 21st Century world poised to double the capacity of Railway Freight?

A more viable ratio between Rail and Road freight will reduce the cost of freight transportation, the negative impact of road transport on the environment, and ensure a higher level of security for transported goods. But in order to reach the anticipated goals, Railway Freight companies will need to improve their quality of service by the ability to pre-predict freight transport needs, smarter usage of the wagon fleet as well as providing better and faster service to their customers. Integrating smart technological solutions will significantly reduce total costs for operations and maintenance and enable Railway Freight companies to become more competitive - resulting in greater profits.

Control FREAK for **Freight** will accomplish exactly that!

THE SOLUTION

Trilogical has launched the next generation in freight wagon management - **Control FREAK Freight** - designed to provide ultimate control of the freight operations incorporating prediction of freight needs, management of locomotive and wagon fleets and a web portal for end customers to track their shipments. This innovative system uses data integration, IoT devices and mesh technology to provide a highly cost-effective modular solution:

- **Optimization of wagon utilization**
- **Realtime fleet tracking**
- **Safety solutions for end-of-train detachment**
- **Smart security locks for valuable freight**
- **Shipment tracking**

Tools are provided to revolutionize wagon maintenance via history-based predictive maintenance, optimize wagon utilization, improve security of goods and offer a platform that monitors order status enabling realtime shipment tracking by the customer.


END TO END
FREIGHT WAGON
MANAGEMENT

BENEFITS & ADVANTAGES

Optimize your freight wagon fleet - maximize efficiency & wagon availability

Due to lack of control over wagon fleet location, inability to predict in advance where wagons will be needed, amount and type of freight to be transferred and availability of wagons, some railway operators are utilizing only around 15%-30% of their capacity - this translates to over 70% of downtime!

Control FREAK Freight utilizes advanced analytics accumulated from multiple data sources, and combines them into tools that enable smart planning of wagon usage and maximal train efficiency.

- Actual locomotive and wagon availability, locations, and status
- Current freight demands and orders
- Accumulated historic data of past shipments

All data sources are combined into the machine learning module to provide best practice for current wagon management and future allocation of the rolling stock. Optimal assignment of wagons translates into higher availability to meet future demands.

End-User Shipment Tracking and Information

The system includes a highly advanced freight shipment portal. This web-based application enables both planning department and end customer to monitor shipments in real time. The planning team can manage the planning process from order to wagon assignment, while end customers can monitor their goods in real time, resembling shipment tracking of consumer goods.

INCREASED ADDED VALUES

Optimal Train Safety – Utilizing Wagon to Wagon mesh technology with Realtime alert to the Driver and Control Center

Control FREAK Freight is the only system that incorporates unique Wagon to Wagon Mesh Technology (as opposed to the older Wagon to Ground). This technology ensures both major savings in communication and HW costs, as well as provides a higher level of safety. It incorporates small tags (featuring up to 10-year life cycle) that transfer information from one wagon to another – thus enabling the system to precisely identify the list of wagons in each train, their order, and if a disconnection has occurred at any point. An immediate alert is sent both to the Locomotive Driver and a Control Center. This means that the driver is made aware of and can deal with any problem in real time.

Max Ton/Km

On-Time Delivery

Reducing operational and maintenance costs

The system automatically tracks the distance each wagon has travelled and sends an alert as to when next maintenance is required - thus reducing unnecessary maintenance costs by shifting from scheduled to Condition Based Maintenance. Continuous monitoring of the entire fleet, including count of engine hours, calculation of distance travelled by wagons and technical condition of wagons, enables balancing optimal wagon usage, managing failures, faults or breakdowns in real time and predicts possible future failures. All of this results in vastly improved efficiency of across-fleet maintenance. Further savings are also achieved by analysing driver behaviour and optimizing train speed to reduce fuel costs.

Condition Based Maintenance

Max Wagons / Train

Enhanced Container Security

Optional module provides additional revenue to Railroad Operators by affixing special heavy-duty, high-impact resistant electronic locks on each freight container. These Smart Locks communicate with the Management System and are monitored by **Control FREAK Freight**. Any attempt at unauthorized opening or attempted theft are immediately detected and reported in real time both to the Driver and the Control Center.

Min. Energy Consumption

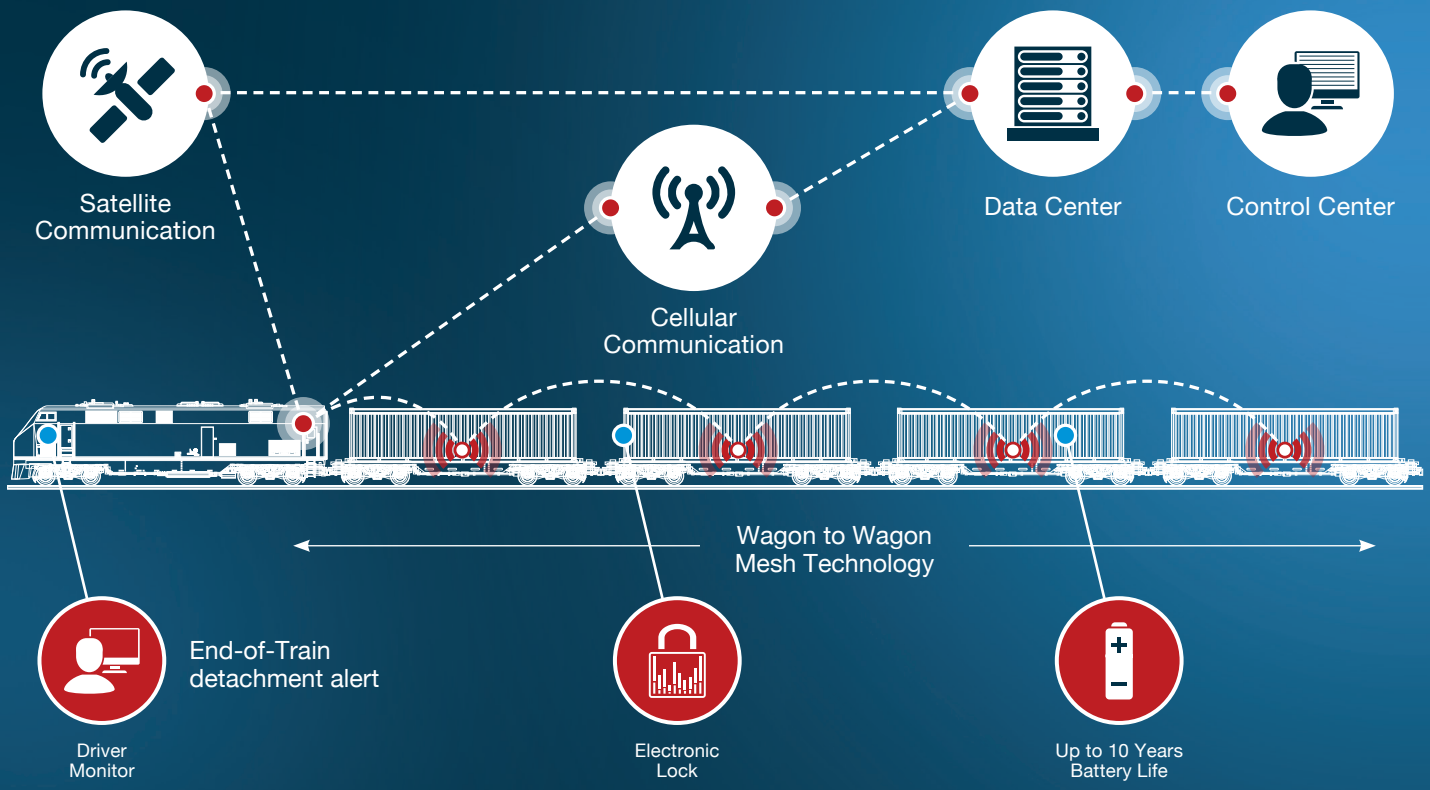
Continuous Global Connectivity

The system includes a telemetry controller that is installed on each locomotive and transmits all data to the Control Center over a cellular network. If necessary, the controller can incorporate satellite communication for continuous worldwide connectivity. The locomotive telemetry controller communicates with the wagons via propriety IoT mesh technology that does not require any SIM or data plan.

Monitor Wagon Status

Remote Locomotive Diagnostics

SYSTEM STRUCTURE



A unique small, ruggedized transmitting tag with patented mesh technology is affixed to each wagon. Due to unique technology the tags can transmit for up to 10 years. A smart Telemetry controller is installed on each locomotive and creates a communication chain between all wagons and the locomotive.

The system analyses the status of each train, including location, order, speed, integrity, driver behaviour, maintenance, and communication. All accumulated data is transmitted to the driver cabin and the Control Center where the Management System provides visual information, analytics and alerts for each train and wagon - together with recommendations for any required action.

To ensure enhanced coverage, the system is equipped with both cellular and satellite communication. The smart hybrid communication mechanism automatically switches between low-cost cellular and high-availability satellite to enable continuous monitoring and transmit alerts regarding critical events in real time, anywhere on earth.

ABOUT TRILOGICAL

For 25 years Trilogical, a leader in the field of Remote Diagnostic Monitoring Solutions is developing smart Assets Management Systems that deliver customized diagnostics and realtime alerts. Our proprietary products have been implemented for major clients including Railways, Airports, Critical Logistics, Defence forces & Security organizations. We are authorized for and comply with the most rigid international standards: ISO9001 and Railway standard IRIS/ISO22063:17.

We pride ourselves on constant innovation. Our unique technological expertise, vast experience in performance analysis and system definition, combined with a robust software infrastructure and a highly experienced team, provides greatly improved operation processes, maintenance efficiency, safety, customer support, enhancement of management & decision-making processes – all resulting in significant savings for our customers.

Every comprehensive package fully and easily integrates into onsite 3rd party sensors and systems. Both our satellite and cellular solutions (based on flexible hardware and software) are suitable for all environments – no matter how harsh and challenging they are. However, we also understand that having a great product is not enough. Providing attentive and dedicated service is a Key.

Trilogical is a subsidiary of the Ziv Av Group - one of the largest and most respected corporations in Israel specializing in Engineering and Product Development Outsourcing Services in a wide variety of multi-disciplinary technological, aero-space and engineering arenas.

TRI LOGICAL™ RAILWAYS

The Smartest Solutions for Freight

www.trilogical.com/**railways**

Tri-Logical Technologies Ltd

7 Tulipman St. PO BOX 15114, Rishon le Zion, 7505002 ISRAEL
Telephone: +972-3-9509888 | Fax: +972-3-9500245
Sales@Trilogical.com | Support@Trilogical.com