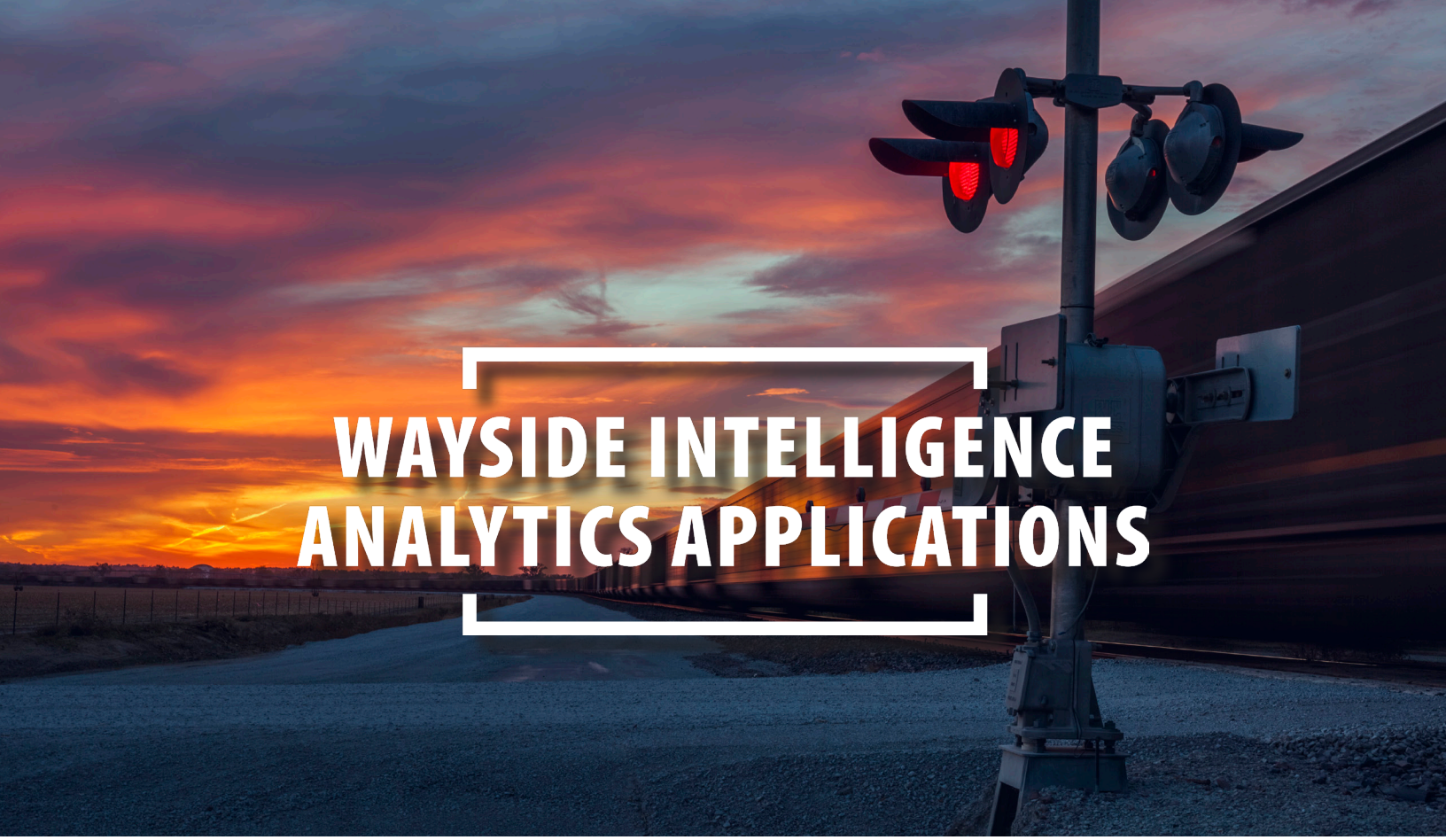


Wayside Intelligence - Analytics Applications

KB Signaling's Wayside Intelligence is an advanced IoT, Data, and Analytics platform purpose-built for the rail wayside. It provides modern solutions for data acquisition and edge processing, enabling railroads to digitalize operations and adopt a cost-effective, data-driven approach to condition monitoring. By transforming distributed asset data into actionable insights, Wayside Intelligence supports safer and smarter rail mobility.

KB SIGNALING™

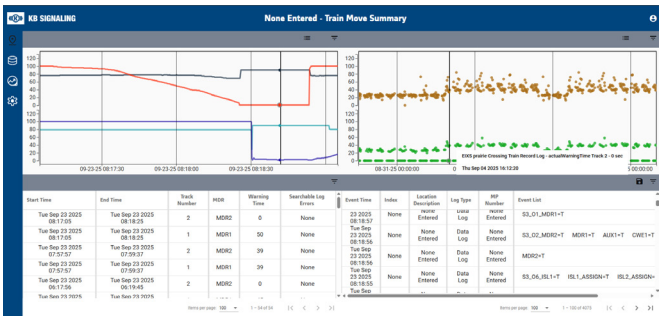
Wayside Intelligence Analytics Applications

Key Benefits

- Modern data-driven analytics solution
- Wayside device log processing and data analytics at the edge
- Supports remote configuration and software provisioning
- Secure, containerized, and scalable architecture, based on open data standards and protocols
- Secure, containerized, and scalable architecture, based on open data standards and protocols
- Compatible with KB Signaling and third-party field equipment
- Ability to develop and deploy custom applications

General Description

The Wayside Intelligence Analytics Applications enable the digitalization and health assessment of wayside assets by leveraging the acquisition, processing, conversion, and routing of wayside data and logged events from KB Signaling's and third-party recorders and controllers. With the support of a back-office or data management system, the generated data, insights, and alerts can be easily consumed and analyzed by a centrally-located and embedded web-based user interface.



WSDMM Interface

Customer Benefits

Enabling Technology For Analytics

This modern and data-driven suite of Apps leverages data acquisition, visualization, and analysis at the edge. The software ecosystem provides a Data API enabling customers to develop tailored Analytics and Business Intelligence applications at the office.

Innovative Software Architecture

The architecture implements a standards-based, data-centric, and wayside-focused framework for advanced asset management and condition monitoring.

The software architecture uses microservices, containerization, and an open-source tech stack. The operating system is Ubuntu Server Linux (Red Hat Enterprise Linux and Debian Linux are also supported, but not distributed nor licensed). Core services such as database, security, and messaging are all provided using open-source software.

Example Use-Cases

Track circuit health: monitoring and reporting of DC coded track circuits using transmitted and received track currents for shunt quality and occupancy margin.

Wayside device log harvesting: acquiring, aggregating, archiving, and monitoring of connected equipment logs and active alerting on selective off-nominal conditions.

Crossing health: detecting degrading conditions of crossing track circuits and peripherals to reduce service disruptions and improve overall system operation.

Point machine data capture and routing: enabling advanced predictive maintenance by assessing point machine voltages and currents and extracting asset features.

Wayside Intelligence Analytics Applications

Basic App Package

Panorama

An intuitive, web-based user interface for configuring WSDMM applications and exploring way side data from connected equipment. The User Interface provides several tools for inspecting and visualizing data for a proactive and efficient assessment of the wayside.

- Combo Viewer
  Interactive visualization of wayside data
- Logic Analyzer
  Graphical rendering of discrete data points
- Log Viewer
  Interactive visualization of wayside data
- Raw Viewer
  Display and download raw device logs

LogCap

A data harvesting app for the acquisition, parsing, and persistence of log, configuration, status, and device data from connected equipment at the wayside. The LogCap application provides a REST interface for the configuration of its services and OpenAPI endpoints for the consumption of data and raw logs by a central data management or back-office system.

LogMon

A rules-engine application for monitoring operational values and status changes in wayside device log and configuration data using keyword search, change detection, and threshold monitoring on acquired data. LogMon provides a REST interface for its configuration. The application generates alerts when user defined patterns are identified in the data.

TrackMon

A track monitoring application for evaluating shunting conditions and track operational levels from received and transmitted DC coded track circuit currents. TrackMon decodes, processes, and monitors track circuit data from ElectroLogIXS controllers and publishes alerts when train moves and excursions are detected. Track data is collected, aggregated into features, and made available to analytic services for the reporting of track circuit operations.

DNA Data Route

A data enhancement and routing application for switch machine operation monitoring and trending. The DNA Data Route WSDMM app captures events and streaming data from KB Signaling's Data Acquisition Unit (DAU) connected to a switch machine and assembles standardized switch move data structures. Data payloads are stored locally and routed for consumption by back-office systems for Switch Machine Health Analytics.

RecMon

A monitoring application that generates configurable alerts based on events collected by a highway-rail grade crossing recorder, such as KB Signaling's Data Acquisition Unit (DAU) and Siemens Event Analyzer Recorder (SEAR). RecMon provides a REST interface for configuration and status. With this application, crossing data can be easily routed to maintenance crews and consumed by a centralized operations system for inspection and analytics.

WSDMM Core

A select collection of open-source software that provides core services and base features for IoT and connected devices.

- InfluxDB
  Time Series Database
- Grafana
  Data Visualization
- NginX
  Web Server / Reverse Proxy
- Chronograf
  Data Dashboard, Interface
- Docker
  Container Engine, Runtime
- Kapacitor
  Data Processing and ETL
- Telegraf
  System Metrics/Reporting
- Mosquitto
  MQTT Message Broker
- NiFi
  Data Flow and Distribution

Contact your KB Signaling Business Development Manager
Call 1-800-825-7090, or email us at aso.techsupport-kb@alstomgroup.com for more information today.

KB Signaling
2712 S. Dillingham Rd.
Grain Valley, MO 64029
Phone: +1 800-825-7090
www.kb-signaling.com

KNORR-BREMSE
NEW YORK AIR BRAKE
IFE
MERAK
MICROELETTRICA
SELECTRON
EVAC
KB SIGNALING
ZELISKO
RAILSERVICES