

Space-Time Insight Railroad Solution



Space-Time Awareness Suite:
 Industry's leading suite of geospatial analytics composite applications.

Space-Time Insight Railroad Solution:

Features:

- **Infrastructure Management:** Geo-spatial visualization, analytics, and real-time monitoring for condition-based maintenance
- **Capacity Modeling:** Historical and simulated visualization and analysis of railroad capacity, supporting planning and capacity management
- **Incident Management:** True situational awareness with real-time monitoring of train movement and key components
- **Rich dashboards and route visualization** for evacuations, re-routing, & emergency response
- **Intermodal Logistics Management:** Spatial framework for visualization and analysis for last mile planning combined with predictive analytics

Benefits:

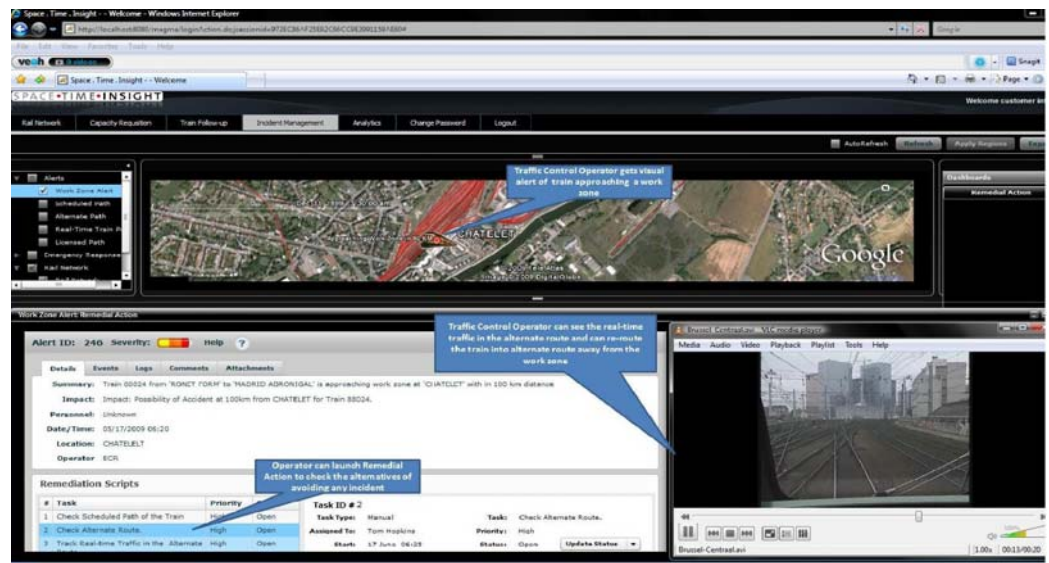
- Informed, confident decision making
- Improved operational efficiency with enhanced capacity planning
- Greater reliability through advanced situational awareness enhanced by real-time traffic visualization
- Higher workforce safety strengthened by real-time and automated alerts
- Reduced risk of operational incidents/accidents through high-context situational awareness
- Accurate and reliable passenger / shipper information systems with real-time monitoring
- Improved supply chain profitability

Customers Say:

- "Space-Time Insight improves our overall ability to respond to, and even avert, potential system emergencies."

The Railway Industry, one of the most capital intensive industries in the world, is also growing in complexity. Networks, infrastructure, technology, speed, and operations research are rapidly creating new advancements and hurdles. Increasing operational efficiency and reliability, meeting green standards, advancing workforce safety, improving risk management, upgrading aging technology, adopting new technology and changing accident risk are but a sampling of management challenges. No advancement is playing a more vital role in safe, effective and efficient operation than Spatial Intelligence.

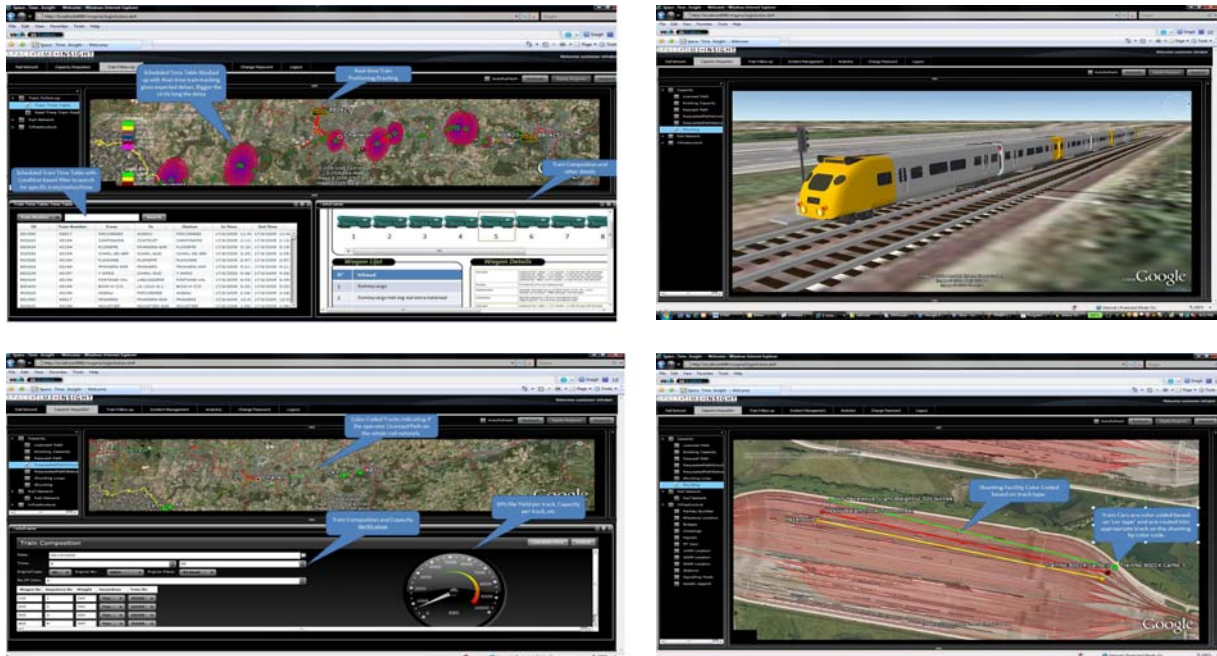
Spatial Intelligence captures real-time data on the operating status of physical components throughout the rail network and combines it with multi-source, external information like weather data, macro and micro economic data, demographic influences and shifts in supply chains to deliver geospatial visual analytics displayed on interactive satellite images for location context and informed action directly from a single screen.



The Space-Time Insight screenshot shows a traffic control operator getting a visual alert of a train approaching a work zone. The operator can see real-time traffic in an alternative route and route the train away from the work zone.



The diagram shows space-, time-, and context-aware processes enabled by Space-Time Insight.



Key Features

- **Infrastructure Management:** Geo-spatial visualization and real-time condition-based maintenance of rail infrastructure including the rail network, moving assets, bridges, tunnels, shunting facilities, stations, and other facilities. Powerful visual analytics support superior monitoring of electric power distribution networks, communications and signaling networks, as well as wheel, under-carriage and other sensors.
- **Capacity Modeling:** Visualization and analysis of railroad capacity as a balanced mix of attributes like number of trains, reliability and accuracy of the time table, average speed achieved, heterogeneity of the operation, track conditions and capacity consumption. Historical visualization of capacity combined with simulation of micro and macro economic factors, traffic forecasts, and demographic shifts offers alternative scenarios of capacity growth and trending. Capacity modeling in this way offers infrastructure managers, operators and rail authorities advanced solutions for planning and capacity management.
- **Incident Management:** True Situational awareness with real-time monitoring of train movements and key components like wheel, under-carriage sensors combined with external information such as environmental obstacles and weather data for traffic control and re-routing. Rich dashboards and route visualization supports evacuations, re-routing and emergency response situations.
- **Intermodal Logistics Management:** Spatial framework for visualization and analysis of Intermodal networks for transportation and supply chain / last mile planning combined with predictive analytics regarding network activity in terms of traffic volumes, travel costs to help mitigate congestion, reduction of energy consumption and air pollution.

Customer Benefits

- More informed, more confident decision making, enabled by intuitive and rich geographical user interface with context sensitive dashboards
- Improved operational efficiency with enhanced capacity planning
- Higher reliability through advanced situational awareness enhanced by real-time traffic visualization
- Greater workforce safety strengthened by real-time and automated alerts
- Reduced risk of operational incidents/accidents through high-context situational awareness
- Accurate and reliable passenger / shipper information systems with real-time monitoring
- Improved supply chain profitability via advanced capacity planning