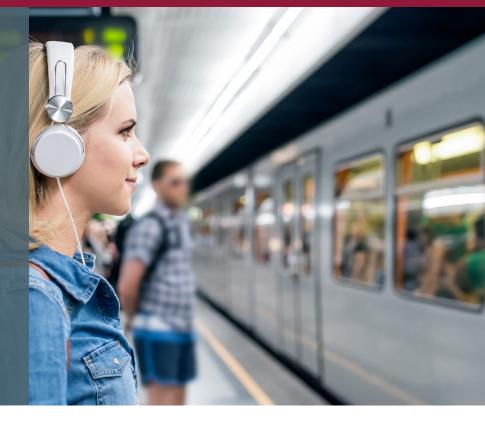# Digital Twin for Rail Precision Maintenance

Quantify the life extension and cost impact of rail maintenance and secure your maintenance budget.

The financial benefits of rail preventive maintenance like grinding are difficult to quantify and therefore difficult to show to non-engineering stakeholders. It's not easy to answer questions such as – How much life extension is expected from specific maintenance activities? How much are these going to cost? How much money will the agency save doing preventive maintenance instead of rehabilitating and replacing rail assets? Trapeze's Precision Maintenance module solves that.

Digital Twin for Rail Precision Maintenance provides track maintenance and advanced analytics tools to quantify the life extension and cost savings impact of rail maintenance strategies to help optimize and secure rail maintenance budgets. It simulates the life extension benefits of rail maintenance based on science and physics-based modeling of your railroad track, providing upfront visibility of the impact of your maintenance strategies to justify increased funding or protection of your maintenance budget.

Overview

Compare Different Maintenance Scenarios and Costs

- Creates what-if scenarios that adjust factors such as grinding, traffic levels, or wheel profiles to get the best maintenance outcome for your railroad track
- Compares rail life extension costs of different maintenance strategies; uses "snapshots" of various inspection data for simulation – track geometry, track data visualization, grinding, wheel profile detection
- Calculates various failure modes costing your railroad the most expense; quantifies expected savings from changing your maintenance program
- Quantifies future cost avoidance, to justify the project return on investment

Get Insight into Track Performance Over Time

- Physics-based model simulates rail track wear based on detailed asset condition data, including rail material, rail shape, wheel data, traffic data, grinding strategies, and friction management strategies
- Identifies high-visibility rail breaks, derailments, and defects that compromise safety
- Integrates directly into asset management software, State of Good Repair (SGR) and capital projects, making it easy to budget, approve and streamline capital planning
- Seamlessly interfaces with Trapeze EAM workflows such as the Asset Portal and Work Management Portal, to update asset data and create work orders, service requests, capital projects and view asset performance assessment

Agency Benefits

Protect or Increase Your Maintenance Budget

Understand the benefit of investing in preventive maintenance and calculate its financial impact over the cost of replacement and rehabilitation. Quantify how much is spent on rail replacement and maintenance activities. Determine the amount of expected savings due to new maintenance strategies. Crucially, make all these visible to decision-makers to justify increasing your preventive maintenance budget or protecting your existing budget from proposed cuts.

Justify Precision Maintenance

Digital Twin for Rail Precision Maintenance simulations allow you to adjust rail condition variables such as friction and traffic levels, lubrication, and wheel profiles and quantify the life extension (e.g., shows exactly how rail head wears over time as it comes into contact with the wheels) and the financial impact of these changes. Making small changes to the shape of the rail through grinding, for example, can significantly extend rail life. Being able to see the impact of detailed strategies such as re-profiling and friction management enables you to defend preventive maintenance budgets.

Budget Support and Better Capital Planning

State of Good Repair requirements from federal agencies (FTA/FRA) have led to an increasingly large "backlog" of infrastructure that are beyond their useful life and require capital funding to rehabilitate or replace. Post-COVID, transit authorities are being challenged to maintain these assets with fewer resources, and maximize the benefits of this work. EAM Precision Maintenance helps you determine maintenance scenarios that significantly extend rail life, enabling you better prioritize capital projects.

Supplier Evaluation

Without evidence of the impact of preventive maintenance, it's difficult to accurately differentiate the quality and work of maintenance contractors and the day-to-day financial impact of their work. Our solution helps you quantify the life of new products and compares life extension and financial impact to current networks, substantially reducing evaluation periods.

Passenger Benefits

Safer Infrastructure

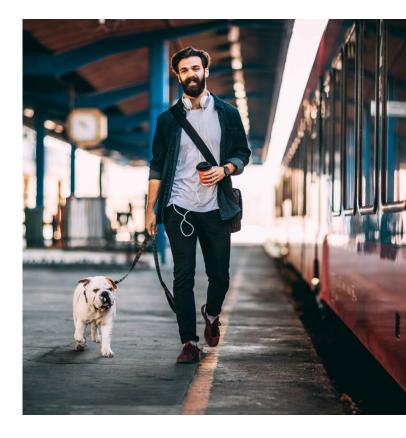- Maximizes public safety by keeping transit infrastructure in safe, working order

Fewer Breakdowns and Disruptions

- Reduces transit system failures that cause passenger frustration

Increased Customer Satisfaction

- Optimally-maintained track helps ensure a smooth journey on rail for passengers
- Helps direct cost savings from efficient allocation of capital resources to projects that further improve customer service and satisfaction

Connect with our Experts

Trapeze™