
DSRailTech
Delivering solutions for safer railways

OUR SOLUTIONS - RAILWAYS

- Rail Occupancy Monitoring
- Rolling Stock Monitoring
- Axle Derailment Monitoring
- Rail Defect Monitoring
- Track Obstruction Monitoring
- Flat Wheel Detection
- Intrusion Detection Application
- Switch Condition Monitoring Application (Dynamic Effects)
- Portable Warning System
- Rail Buckling Monitoring
- Hot Box Detection
- Hot Wheel Detection

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Rail Occupancy Monitoring

- Rolling stock location in terms of monitored segments, i.e., the system knows in what monitored segment the rolling stock is currently at
- Rolling stock information while crossing a sensor point (direction of travel, speed, number of axles)
- Exact location of rolling stock and reduced number of segments covering larger distances

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Rolling Stock Monitoring

- Location of the rolling stock with respect to the installation point (arriving, on top of the sensors, departing)
- Predicted arrival time (e.g. constant warning times at level crossings)
- Rolling stock statistics (number of rolling stock passes observed, direction of travel)
- Support for atypical rolling stock movements, e.g. the same rolling stock moving in opposite directions on the same track
- Rolling stock advanced statistics (number of axles, wagons, type of rolling stock, speed)
- Rolling stock identification or tagging

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Axle Derailment Monitoring

- Axle derailment alarm
- Rolling stock statistics (number of rolling stock passes observed, direction of travel)
- Axle derailment severity
- Rolling stock advanced statistics (number of axles, wagons, type of rolling stock, speed)

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Rail Defect Monitoring

Complete rail separation

- Complete rail separation alarm
- Estimated location of fault
- Complete rail separation alarm in case of the snap of the rail caused by rail stress (no rolling stock pass needed for detection)

Rail crack development

- Developing crack alarm
- Estimated location of the crack -Severity of the crack
- Estimated time until full separation

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Track Obstruction Monitoring

- Track obstruction alarm including severity
- Distance estimation of the event relative to the position of the sensors
- Cause of the obstruction (landslide, avalanche, trees, rocks etc)

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Flat Wheel Detection

- Flat wheel detection
- Severity
- Location of the flat wheel in terms of the specific axle/wagon of the rolling stock

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Intrusion Detection Application

- Detects suspicious activity in the vicinity of the sensors
- Alerts of animal activity or human activity in the vicinity of the sensors
- Detects sabotaging incidents such as drilling, cutting, etc, of the rails and cable theft

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Switch Condition Monitoring (Dynamic Effects)

- Monitors the moveable parts of the switch ensuring the meant positions are reached
- Monitors the structural health of the switch regardless of the rolling stock wheel conditions
- Monitors the sleepers and switch foundation, identifying irregular movement that could affect the condition of the switch
- Monitors the specific elements of the switch where traditional track circuits cannot, such as tongue rail cracks, using an active approach

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Portable Warning System

- Installation and deployment takes only few seconds - one DXMD is attached to every rail using magnets only
- Powered by batteries and operational for at least 12 hours
- The system can be connected with amateur and professional walkie talkies using the handsfree port. It supports VOX or push-to-talk functionality

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Rail Buckling Monitoring

- Monitoring of rail temperature and longitudinal stress; alarming when the temperature and longitudinal stress reach critical values
- Detection of rail snap due to excessive compressive/tensile forces
- Detection of rail lateral displacement/deformation

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Hot Box Detection

- Bearing box temperatures for each axle

Hot Wheel Detection

- Wheel temperatures for each axle

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New applications launching in 2025

Our R&D department is constantly working on the improvement and innovation of our solutions.

- **Rolling Stock Weighing**
  Rolling Stock Weighing Application measures the load on every wheel of any rolling stock, regardless of speed, informing the operators of any deviations from their set default values

- **Flood Detection**
  - Detects the presence of water and generates alarms whenever the water reaches dangerous levels
  - Informs when the water retracts. (sensors are not submerged anymore)
  - Detects if the water is flowing or still
  - Detects solid materials in the water

OUR SOLUTIONS - ADVANTAGES

- Significant reduction of procurement, installation and maintenance costs
- One system can cover up to 4 tracks using a single DSRT Rack
- Up to 6 applications can run on one system depending on the combination of the applications and the number of covered tracks
- Installation time is within hours, based on the number of covered tracks, and does not require service interruption on the rail track

- The systems are self-learning which ensures high autonomy and extended categorization of events
- The systems are modular with self-diagnostics capabilities which decrease the time needed for maintenance and service works to a minimum
- The system is not limited by the speed of the rolling stock (suitable for high speed rails) and can be powered by solar panels
- Web-based portal where our clients have a real-time overview about their installations

OUR INSTALLATIONS – CABINET IN EXISTING TRACKSIDE HUT

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OUR INSTALLATIONS – CABINET IN OUTSIDE ENVIRONMENT

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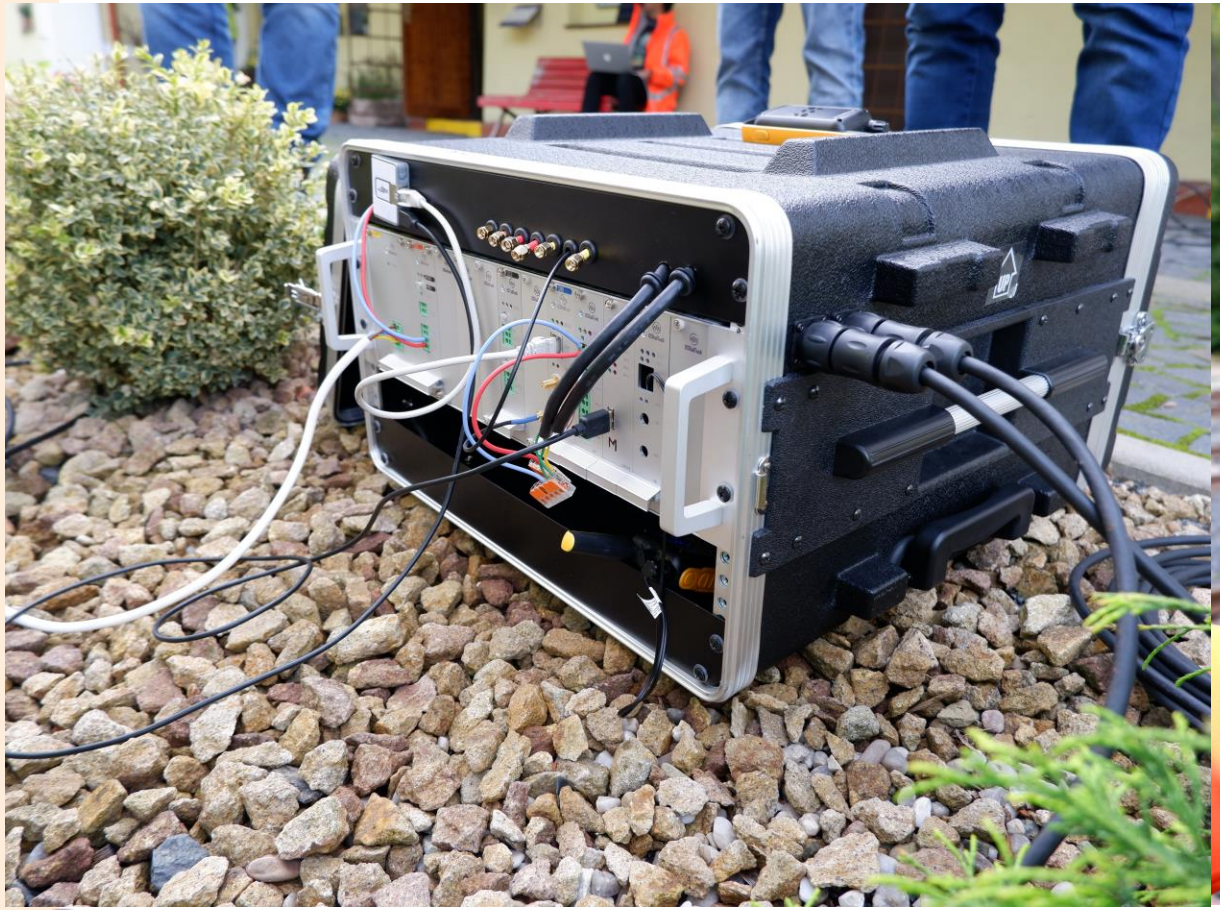
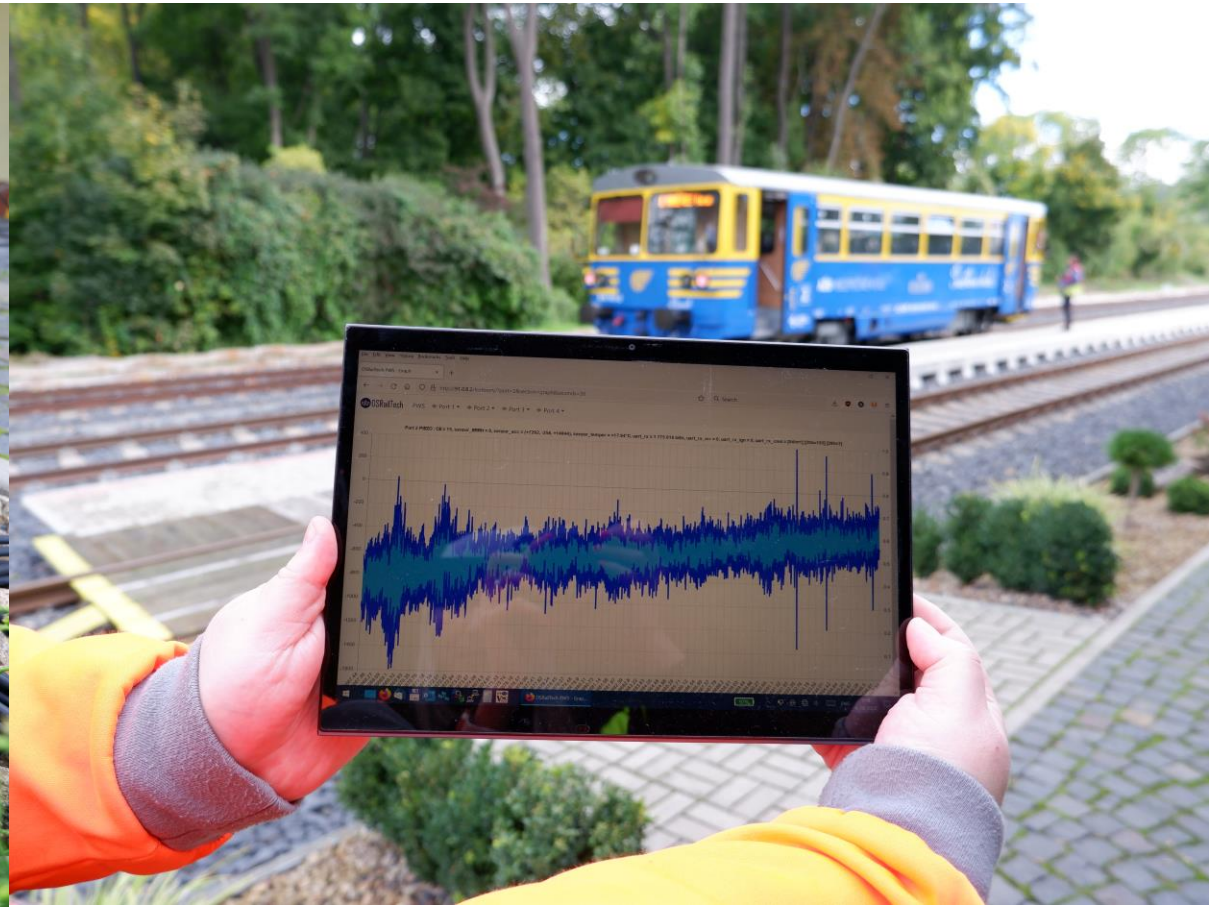
PORTABLE DMP





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UNIQUE AND INNOVATIVE APPROACH TO ACOUSTIC SENSING

- The term "acoustics" is usually associated with sound as perceived by a human; however, "acoustics" extends to the study of mechanical waves, not necessarily perceived by humans
- **DSRailTech solutions are based on this extended expertise in acoustics and other dynamic measurements (such as temperature, displacement and acceleration)**
- The sensors (DXMD) are finely tuned, and **precisely** positioned on the rail to acquire even the smallest vibrations traveling through the rails, as well as huge vibrations induced by a passing train
- By implementing these principles, we achieve that our sensors are **the most sensitive**, cover the spectral density which is the richest in relevant information and thus significantly increasing the reliability and reducing false positive alarms
- At the same time, by building the evaluation algorithms on deep and machine learning, we provide extended categorization of events

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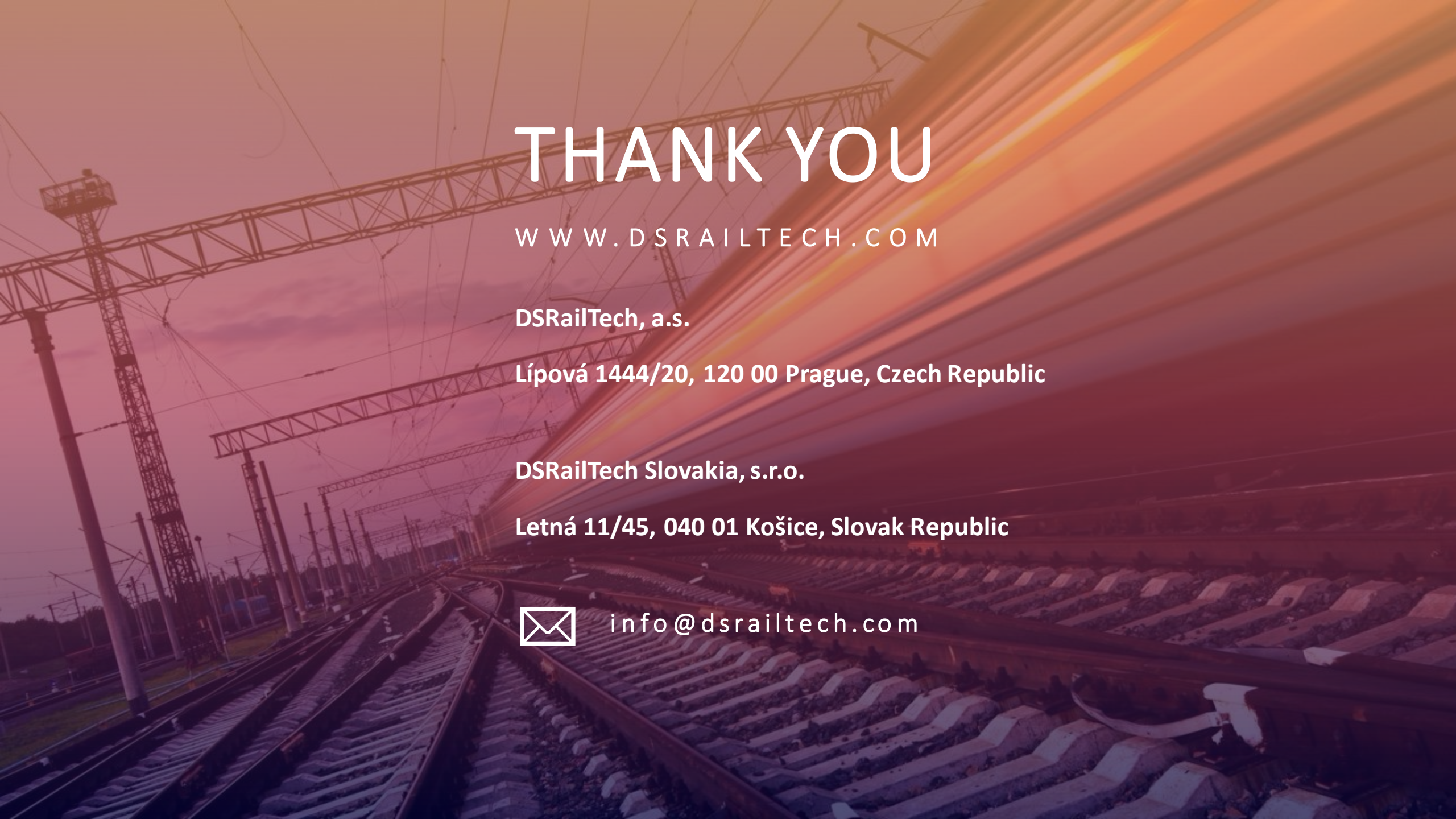

THANK YOU

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