

# RAIL TRACK ERROR LEARNING

## Supporting Railroad Maintenance with Cognitive Methods for Rail Track Error Learning



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### MOTIVATION & GOALS

The aim of this project is to support operators and managers of railroad maintenance machines by suggesting maintenance options during or after use.

- by **sensor data processing** and **feature extraction**,
- **machine learning powered data analysis**,
- **visualization techniques** supporting recommended actions and
- establish **knowledge** pool based on crowd sourced information from simultaneously working **multiple operators across the globe**

#### Project FactBox

**Project Name** RTEL  
**Project ID** MFP II 1.2  
**Duration** 36 Months

**Area 1**  
 Perception and Aware Systems

**Project Lead**  
 DI Michael Haslgrübler

### APPROACH

- Collect Sensor Data from Multiple Operating Stages of the Track
- Use Semi-Supervised ML (e.g. Deep VAE) for Distribution Analysis (within/outside norm)
- Prepare Data Visualisation and suggest recommended actions for Users
- Lets users use suggestion, correct actions or provide other form of feedback
- Provide Interaction information to ML for Retraining

### CONTRIBUTION

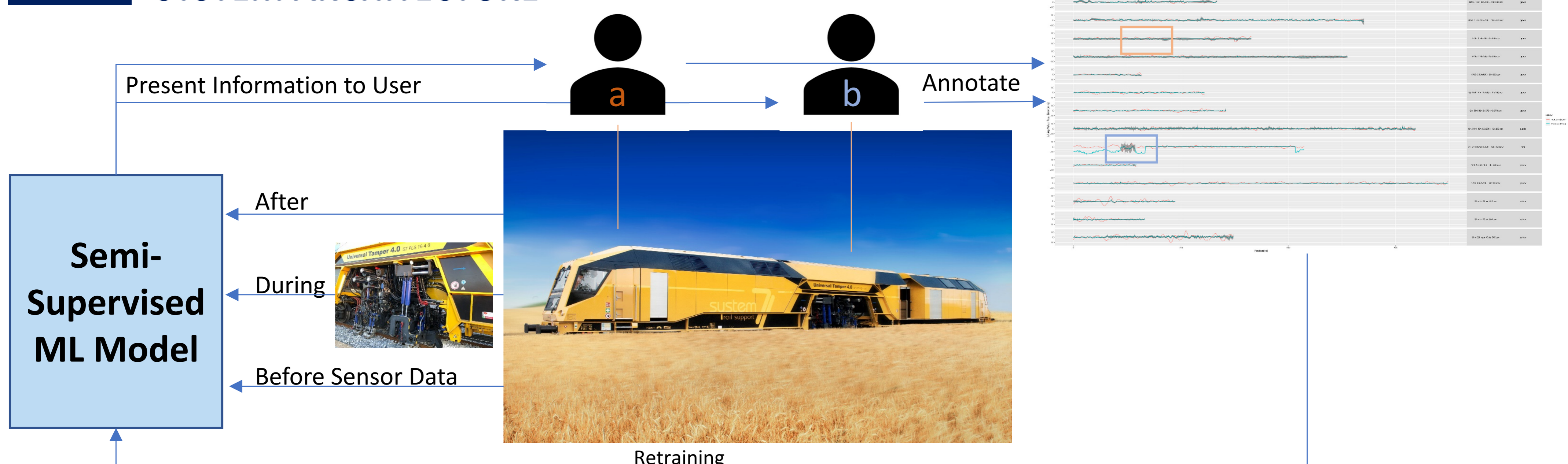
#### Scientific contribution

- Unsupervised ML for Error Spotting
- Multi-Stage Filtering and Sensor Fusion
- Multi-User Active/RL Learning

#### Economic contribution

- Railroad Maintenance Cost Reduction
- Customer Binding and Support
- Data Driven New Business Model

### SYSTEM ARCHITECTURE



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