DemoOrt - Project
Structure of the Consortium

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DemoOrt – Project Timeplan

- System Specification
- Interfaces
- Components
- Integration
- Safety Analysis
- Migration Study and Economic Analysis
- Demonstration
- Phase 1
- Phase 2
- 2 Months
- 4 Months
- 8 Months
- 9 Months
- 18 Months
- 36 Months
- 18 Months
**DemoOrt – Motivation**

- Current localization principles used by railways are basing on infrastructure-side sensors (e.g. axle counters). These lead to:
  - Significant maintenance effort
  - Difficult to adopt to modified operational requirements
- For up-to-date railway operational concepts as ERTMS/ETCS Level 3 a vehicle-autonomous localization with high accuracy, dependability and integrity is required
- Examples of advantages of autonomous localization:
  - Concentration on the vehicle
  - Reduction of trackside maintenance effort
  - Reduction of system complexity

**DemoOrt – Approach**

**Idea and Components**

Integration of three different Systems to one highly available and vehicle autonomous localization platform

1. **Global Navigation Satellite System**
   - No terrestrial signal required
   - By using Galileo Integrity of the Signal is guaranteed
2. **Eddy Current Sensing System**
   - Precise measurement of metallic in-homogeneities of the track
   - Absolutely independent from weather
   - Robust
3. **Map Matching**
   - All captured data can be used for fusion
   - Visualization
DemoOrt – Approach
System Overview

- Data Fusion of Different Sensors
- Localization accuracy better as with a single sensor
- Tolerant against single sensor failures
- Continuous localization
- Higher Robustness

Eddy current sensing system

Global Principle

Typical Sensor Signal (free Track)
DemoOrt – Results and Perspective

- Demonstrations:
  - TeZ Poprad (SK)
  - AVG Karlsruhe (D)
- Development of a reference measurement system
- Approach for a Safety Case according to CENELEC
- Analysis of Migration strategies

Thank you for your attention!