ANavS Fleet Management & Post-Processing System: Precision, Efficiency and Control in One Platform

### REVOLUTIONIZING NAVIGATION AND FLEET OPERATIONS

At ANavS, we provide cutting-edge navigation solutions that go beyond real-time positioning. Our Fleet Management & Post-Processing System is a powerful backend platform that enables seamless monitoring, data analysis, and optimization of vehicle operations across various industries.

Key Features & Benefits

- Real-Time Fleet Monitoring: Track the precise position, velocity, and attitude of every vehicle in your fleet.
- Cloud-Hosted Web Application: No installation required – access fleet data securely from any device.
- Automated Post-Processing: Utilize advanced forward-backward processing to enhance positioning accuracy.
- RTK & PPP Correction Management: Seamlessly switch between RTK and PPP modes based on correction data availability.
- Comprehensive Sensor Fusion: Incorporates GNSS, IMU and odometry data for high-precision localization.
- Secure Data Logging & Analysis: Store and evaluate historical data to improve fleet performance.

Application Areas

- Autonomous Vehicle Testing: Ensure accurate ground-truth reference data for ADAS validation.
- Rail & Maritime Operations: High-precision tracking for safe and efficient transportation.
- Surveying & Mapping: Improve georeferencing accuracy with our post-processing engine.
- Logistics & Industrial Fleets: Optimize routes and resource utilization.
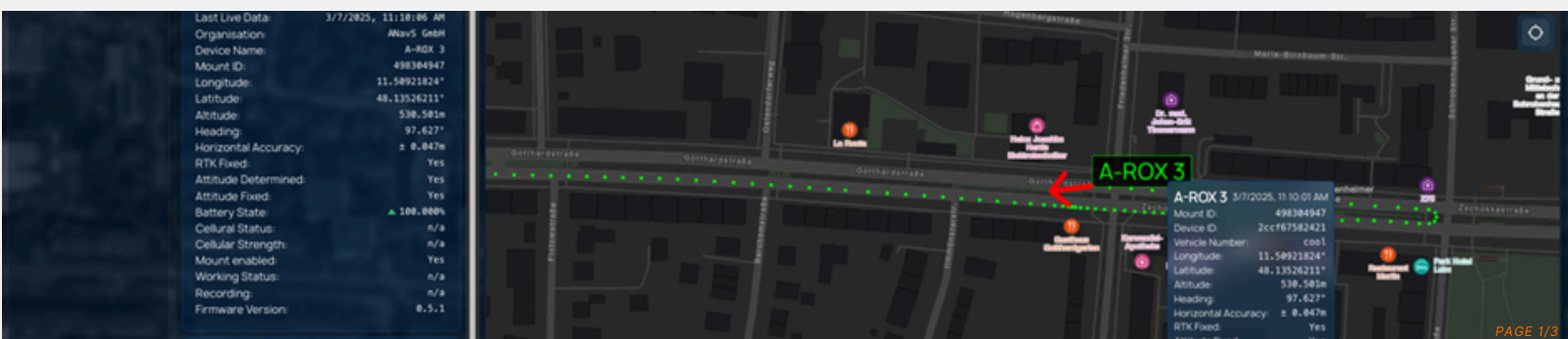
mPOM: Precision Navigation for Railway Vehicles – A Real-World Success Story

ENHANCING RAIL OPERATIONS WITH HIGH-PRECISION POSITIONING

One of the most exciting applications of the ANavS Fleet Management System is its role in the mPOM Project. The project aims to revolutionize railway vehicle localization for predictive maintenance, bringing centimeter-level accuracy to track-based navigation.

Project Overview

The mPOM (Mobile Precise Odometry and Mapping) project focuses on integrating multi-sensor fusion technology to improve railway navigation and automation. Leveraging GNSS, IMU and odometry data, mPOM provides highly reliable position and attitude information even in challenging environments.

How ANavS Technology Powers mPOM

- Seamless Fleet Integration: The ANavS backend enables real-time monitoring and post-processing for railway test vehicles.
- Accurate Localization in GNSS-Denied Environments: The system intelligently fuses odometry and IMU data when satellite signals are weak.
- Advanced Post-Processing for Historical Analysis: Ensuring the highest possible accuracy for route verification and anomaly detection.
- Cloud-Based Accessibility: Engineers and operators can analyze navigation data remotely, improving efficiency in railway infrastructure assessment.

### Impact & Future Applications

- Automated Train Positioning: Enhancing safety and efficiency in rail operations.
- Predictive Maintenance: Using high-precision data to detect track anomalies before failures occur.
- Autonomous Rail Transport: Laying the foundation for future self-driving railway systems.

With mPOM and ANavS Fleet Management, the railway industry moves towards a more precise, efficient, and automated future.

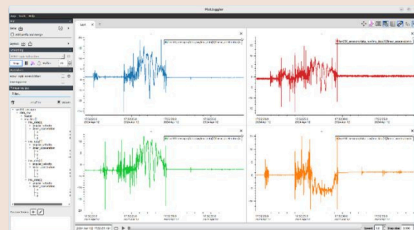Want to learn more? Contact us at info@anavs.de or visit www.anavs.com.
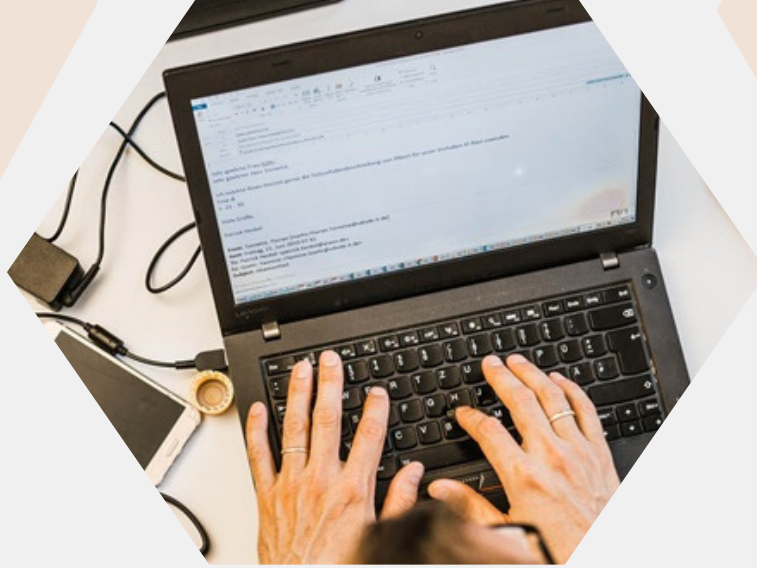
Customized Engineering Services at ANavS

As a leading company in developing precise positioning systems using sensor fusion and AI methods, we offer specialized engineering services tailored to the individual requirements of our clients. One outstanding example of this client-oriented strategy is our project with Swiss company Sensopro AG.

Sensopro, an innovative manufacturer of training equipment like the LUNA device, that improves coordination and physical skills, required a solution to capture movement data and to process and analyze it effectively. ANavS has developed a customized sensor system that outputs the captured motion data from various IMUs in ROS2 and analyzes it in real time. This allows for immediate feedback to the user, significantly enhancing the training experience.

M-Board enclosure including processor unit (left) and IMU data as ROS2-Topics (right) t

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