



1. Title: SAMIRA2.0 - Shunting Assistant & Monitoring Interface for Autonomous Rail Application



2. Project Description:

The SAMIRA2.0 project continues the research and development from the previous project. SAMIRA is an assistance system for shunting operations of rail vehicles in the last mile, where modern sensors in a portable sensor module (SAMIRAmobil) are attached to the last wagon of a shunting unit, enabling pushed movements without a shunting companion.

A real-time video stream from the last wagon is displayed on a screen in the locomotive cab (SAMIRAhmi), with important features such as people near the tracks, distances, and speeds highlighted using augmented reality.

If obstacles are detected on the track ahead, a braking recommendation is displayed to the locomotive driver if necessary. Other important information, such as the position of a switch ahead or the predicted braking distance, can also be overlaid on the video stream. This gives the locomotive driver a comprehensive overview of the situation at the other end of the shunting unit. The live data is securely transmitted from the sensor module to the display on the locomotive using the 5G mobile communication key technology.

3. Project Goals:

SAMIRA2.0 aims to reduce the required resources in the last mile and significantly increase safety in shunting operations. This will also greatly improve the flexibility, cost-effectiveness, and competitiveness of rail transport, paving the way for modern, rail-based logistics. The demonstrator from the previous project, which has already successfully proven the concept, will be further developed into a robust system with a Technology Readiness Level (TRL) of 7, demonstrating its use in harsh industrial environments. The long-term goal is to be able to enable shunting operations fully autonomously.



4. Project Participants:

IKADO GmbH, Aachen	
Technische Universität Chemnitz	 <p>TECHNISCHE UNIVERSITÄT IN DER KULTURHAUPTSTADT EUROPAS CHEMNITZ</p>
Thyssenkrupp Steel Europe AG, Duisburg (Assoziierter Partner)	 <p>thyssenkrupp</p>

5. Project Duration: 01.01.2024 – 30.09.2026

6. Weblink to Project Presentation: <https://samira-rangier-assistent.de/>

7. Consortium Leadership and Project Management:

IKADO GmbH, Auf der Hülst 198, 52068 Aachen, Web: www.ikado.de

Ansprechpartner: Sam Münchow, Mail: smuenchow@ikado.de Tel.: +49 241 18294-16