

SAMIRA 2.0 IN A NUTSHELL

The head of the train digitally occupied

Traditionally, manning the front of the train during push operations has been expensive and labour-intensive, especially on the last mile.

SAMIRA 2.0 solves this problem. A portable AI sensor module mounted on the last carriage secures the front of the train, allowing the train operator to remain in the cab.

The multi-sensor technology and AI, which have been developed specifically for shunting operations, reliably detect people and obstacles, transmitting all data in real time via hybrid 5G. This enables safe unaccompanied pushing, currently as an assistance system, with the potential to evolve into fully autonomous shunting.

SAMIRA is a fully European development by IKADO, tested in real-world operations and modularly tailored to your needs.

The system can be expanded in three stages, progressing from a mobile module on a trolley, to fixed train equipment, and finally to a fully equipped, unattended system.



Let's talk about taking
that first step together.

CONTACT

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PROJECT PARTNERS

IKADO GmbH – Project leadership · **TU Chemnitz** – 5G
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GREATER SAFETY & EFFICIENCY IN SHUNTING OPERATIONS

SAMIRA 2.0

The AI-powered assistance system for safe,
unaccompanied shunting, with the mobile
sensor module mounted on the last car.

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THE CHALLENGE

The last mile makes all the difference, but comes at a cost

Shunting operations are particularly labour-intensive when transporting goods the last mile to terminals and transfer points, and it is precisely here that the shortage of skilled workers is most acutely felt. In the past, the front of the train had to be manned in person for pushed operations, or laboriously shunted into position.

This results in unproductive travel, working in all weather conditions and a less attractive workplace. This makes the final mile costly, inflexible and dependent on scarce personnel, a growing disadvantage when competing with trucks.

RANGIEREN HEUTE



MIT SAMIRA 2.0



Rather than a manned lead unit or shuttle, the sensor module secures the lead of the train, allowing the train operator to remain in the cab.

THE SOLUTION: SAMIRAMOBIL

An AI sensor module takes the lead

At the heart of SAMIRA 2.0 lies **SAMIRAmobil**, a portable, battery-powered sensor module that can be swiftly affixed to the final carriage without the need for any alterations. A stereo camera, LiDAR, RADAR and satellite-based positioning systems capture the area in front of the train. An AI system, which has been specifically developed for shunting operations, can reliably detect people, vehicles and obstacles, even in fog, snow and rain.

Via hybrid 5G, an augmented real-time video stream highlighting the route, distances, and calculated braking distance is transmitted directly to the cab. The locomotive engineer can remain in the cab and still have a clear view of the front of the train at all times.

An intelligent sensor system takes the lead, digital rather than human.



With SAMIRAmobil, you can see an augmented view in the cab, including the route, obstacles, and braking distance, all displayed directly in the live feed.

YOUR BENEFITS

Safer, more efficient, future-proof

SAMIRA enhances operational safety throughout the entire shunting process, even at night and in inclement weather, and actively prevents collisions. The system also makes scheduling more efficient and paves the way for Logistics 4.0 with real-time monitoring, automation, and the integration of AI and IoT.

Scalable from a mobile module to fixed train equipment to unmanned shunting in both directions, the system adapts to your needs. As a European development, all rights to which are held by IKADO, SAMIRA has already been tested in real-world operations and validated through testing and measurement runs.

The system is now mature, making it the ideal time for a development partnership tailored precisely to your requirements.

TRL 7 – TESTED AND VALIDATED IN THE FIELD

Prototype B 09/2026 in the “Digital Test Field for Rail” at Chemnitz University of Technology · Field testing through 2027 · Market-ready starting in 2029.

