



PROJECT OBJECTIVES

The EMUSER product is an innovative solution providing a satellite Broad Band link certified to be used in the Railway domain.

EMUSER is designed and developed relying on Intecs extensive expertise in the railway domain, deep knowledge of safety regulations/standards and solid technological background.

EMUSER has been integrated in a solution for the the detection of unexpected obstacles at level crossings and for the transmission of the related alarms and diagnostics to central control stations. The obstacle detection product used for the integration is the SIRIO-LX, a STARS Consortium's product.

Whereas the SIRIO-LX product relies on conventional communication channels, EMUSER also provides him a broadband satellite datalink that replaces (in locations where the terrestrial communication is not available) or complements (redundancy) the legacy

communication link traditionally used in the railway infrastructure. The introduction of satellite Broad Band link aims to increase the system's availability.

CHALLENGES

Safety is a crucial aspect for rail transportation systems, involving different heterogeneous areas such as policy requirements, technological development and economic aspects. Finding the best trade-off among these solution drivers is a critical matter.

In Europe there has been a major investment in the infrastructure sector, especially in technological improvement and in "automation" of railway signaling systems.

The usage of satellite datalink introduces a change of perspective for addressing safety issues in the railway domain providing a fast and cost effective solution.

THE SOLUTION

Technically, the main advantages of using a satellite Broad Band link with respect to more traditional approaches based on conventional communication channels are:

- ✓ Increased resilience and availability of the whole system in situations where conventional communication systems are unavailable due to natural disasters (e.g. floods or earthquakes) or unforeseen damages to the rail infrastructure (e.g. derailment or copper theft);
- ✓ Possibility to install and operate the system also in areas that are uncovered or poorly covered by conventional communication networks: in such areas (for instance in the Middle East or in remote regions of Australia) wired connection with the central station may be unavailable and wireless connection may offer insufficient bandwidth for the transmission of real-time video sequences.

The integration of satellite and terrestrial technologies represents an efficient step forward to improve reliability, resilience and service availability in critical environment like that in proximity of the railway line.



The antenna (n.b. 50 cm diam.)



THE PRODUCT FEATURES

The EMUSER product is composed of:

- ✓ An outdoor cabinet for the management, in redundant mode, of heterogeneous transmission vectors;
- ✓ An extremely small satellite antenna in the KA band.

The Emuser product provide Broadband connectivity using different mechanisms (depending on the system location and operational conditions):

- ✓  Wired link (Optical Fiber);
- ✓  Terrestrial communication (LTE);
- ✓  Satellite link (KA Band).



The cabinet