Railway Crossing Accident Prevention

**Summary description**

The customer is a railway operator that is planning the installation of an automatic warning system to notify locomotive engineers, or train drivers, and their control centers of any exceptional event at railway crossings (e.g., stalled vehicles) in real time.

The system transmits video streaming from the relevant railway crossing to both the approaching trains and the control center. An approaching train will receive video communications in real time up to five kilometers from a crossing.

**Main benefits**

- High uplink/downlink throughput that enables two-way broadband services, e.g. high-definition (HD) video traffic between the base station and the train
- Complete system redundancy guarantees continuous connection and operation
- Supports unlicensed sub-6GHz frequencies
- High bandwidth – 30 MB aggregated bandwidth that can be defined as symmetrical or asymmetrical
- Turnkey solution (including crossing barriers and traffic lights)

**Detailed description**

- A wireless communication system is installed alongside the railroad track in close proximity to each crossroad to provide RF coverage
- A single Airmux-5000 SU enables constant connection to the nearest base station and seamless handover when moving between base stations
- Each SU is connected to two aerodynamic antennas (shark style) using space diversity technology

**Products Deployed**

- RAD Airmux-5000 point-to-multipoint Ethernet radio
- IP cameras
- Panasonic Toughbook CF-31 with GPS tactical computer
- Bynet solution manager hardware and video analytics management system
- RAD ETX-26 managed Ethernet switches

**Solution Note**

Target Market: Intercity trains
- The system enables moving trains (traveling at a speed of up to 300 kph) to view and send real time video streaming signals as well as TCP data to and from the command and control center.
- The system enables bi-directional communications to both the vehicle and fixed elements (i.e., the video surveillance cameras).
- At least two cameras are installed at each crossing and are connected to the wireless system base station using an ETX-26 CPE and constantly transmit live video streaming to the command and control center.
- As the train enters the base station coverage area, the video stream from the cameras is displayed in the locomotive cockpit using a dedicated, rugged laptop device.
- The wireless system allows a seamless handover as the train passes between base station coverage areas.
- A central management system views and controls all railroad crossing camera feeds, and allows optional capabilities such as GIS, video analytics, CRM system connectivity, and integration with any third-party system.
- All video streams can be re-played both at the command and control center and locally on the train.