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CASE HISTORY

Hitachi Rail STS S.p.A. Italian railways

Advanced video technology for railway security

Aitek's Aivu video security platform has been chosen especially for the acquisition, broadcasting and video recording of footage from video cameras at major Italian railway junctions.

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Among the tools that help enhance the efficiency of rail transportation, the use of video technology for the security of the most important assets of a railway network is an absolute priority.

The partnership

Since railway stations may be sensitive targets for terrorism, micro-crime and vandalism, effective video monitoring of tracks, stations, depots and tunnels is crucial to control room personnel and emergency support teams.

Italy leads the way when it comes to integrating video security into railway traffic control systems. Thanks to evolution, Italian railways are among the safest in Europe.

Aitek are pleased to say that an established partnership with Hitachi Rail STS - leaders in advanced railway technologies with over a decade of top turn-key security projects - has paved the way to such an important accomplishment.

The AiVu video security system

In 2006, Aitek's Aivu video security platform was especially selected for the acquisition, broadcasting and video recording of footage from video cameras at major Italian railway junctions.

Our initial project task focused on the development of a video security system at the Palermo junction, where such areas as platforms, underpasses, waiting areas, ticketing booths, parking lots, utility rooms and electrical sub-stations required 24/7 surveillance.

On-site video recorders acquire footage from existing analog video cameras and forward it to the Control Centre, while a smart, recording device-mounted band-limiting system prevents interferences between transfers of footage and operational data.

After due customisation, this solution has been replicated at other Italian junctions for secure, reliable and state-of-the-art video solutions.

Aitek has designed video-server-based systems able to convert analog signals into IP-signals and any new-generation IP-based, S-profile ONVIF-compliant solutions currently functioning at the Pisa, Naples and Veneto junctions and along the Tirrenica, Estearn Ligurian, Turin-Padua, Monza-Chiasso and Bologna-Brenner lines.

Indeed, as the latter line was fully revamped, the pre-existing CCTV system was replaced with cutting-edge technology that is compatible with other sub-systems within the plant.

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Integration into the supervisory system

Aitek's video security solutions integrate with Hitachi Rail STS' railway traffic control system for a state-of-the-art supervisory platform for railway environments that is able to manage train circulation, diagnostics, maintenance and passenger information.

CCTV and alarm signals within the system are operated through the AiVu platform and integrated via an SDK library, which gives access to footage directly on the interface of the supervisory system.

What is more, a *demultiplexer* video proxy gathers simultaneous incoming requests for the viewing of specific video stream from a video camera, thereby establishing a single centre-periphery connection and preventing excessive band-width consumption.
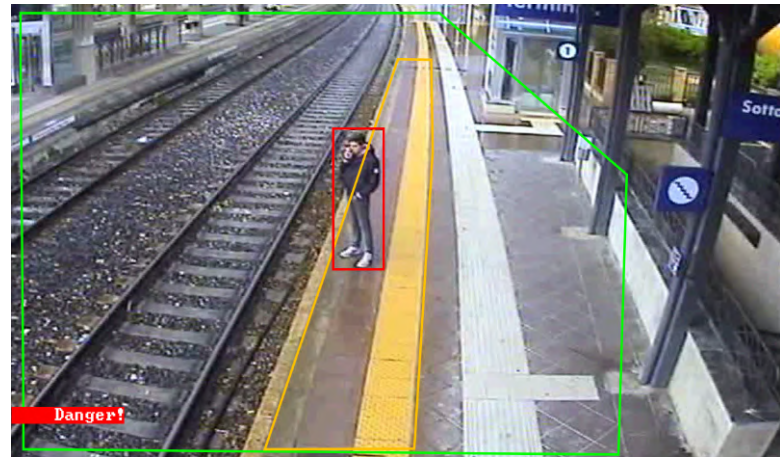
Aitek's video analytics

Our CCTV solution integrates a video analytics application both at the Palermo junction and along the Bologna-Brenner line.

AiVu-Smart Rail video analytics platform is used to draw "virtual" sensors onto images for real-time detection of dangers and threats at stations and track-sides, such as yellow line trespassing, loitering, vandalism, track crossing intrusion into tunnels and abandoned luggage. These highly-sophisticated software modules automatically generate alarm signals that are promptly forwarded to the supervisory system for immediate action (e.g. the issuing of customer warnings and announcements).

One specific module detects dangerous overcrowding: if necessary, the Control Centre direct passengers to uncrowded areas or closes specific access gates quickly and efficiently.

Aitek's software allows for motion detection analysis at in- and out-door sites, at night and inside tunnels along extended railway networks.

Main functionalities

- *Interfacing with rail traffic management systems*

- *Compatibility with existing technology*

- *HD video stream despite reduced bandwidth*

- *Full communication with the supervisory system through pre-existing CCTV system protocols*

- *Video analytics for event detection: yellow line trespassing, overcrowding, track crossing, obstacles/persons on the tracks, abandoned objects, tunnel intrusion, tampering, intrusion into off-limits areas.*

+2,300 km.s of railway network
+3,600 managed cameras

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Aitek S.p.A.
Via della Crocetta, 15
16122 Genova - Italy
Tel. +39 010 846731
info@aitek.it
www.aitek.it