

# OPEN ARCHITECTURE FOR ADVANCED RAIL VIDEO SURVEILLANCE



***HELPING MASS TRANSIT BECOME MORE SECURE***

*by Valentin Scinteie, Transportation Business Development Manager, Kontron*

To keep passengers, employees, equipment and infrastructure safe, it is incumbent on transit agencies to implement the highest protection methods possible. Video surveillance is viewed as a key part of an effective security system. Beyond its security use, video surveillance can also help improve operator efficiency, cut costs and enhance the overall passenger experience by reducing delays or disruptions to service from unforeseen mechanical breakdowns, track obstructions or just traffic congestion. There is almost uniform agreement that video surveillance is considered essential to monitor and capture clear incident images that can protect passengers and assets while keeping operations running smoothly.

Solutions that ensure video surveillance technologies keep pace with the need for more interoperable and advanced capabilities are today's open architecture platforms. Using COTS-based computers that are verified with video management software (VMS) and support the ONVIF global standards for the interface of IP-based security meet ongoing requirements. In addition, analytics from adaptive and smart video surveillance is anticipated to be very high amongst public transport organizations in the coming years. The integration of new video analytics and remote monitoring technologies multiplies the interfaces that operators must manage. However, this increased interface complexity may make the efficient management of emergencies more difficult if video surveillance systems are not based on standards-based technologies.

Taking a COTS-based building block approach for video surveillance utilizes network video recorders (NVRs). NVRs are devices that digitally record video data, audio data and its associated metadata. Therefore, they are essential design elements giving developers the ability to easily incorporate technologies that help manage the full range of video equipment, multiple cameras and vehicle activity through a single software solution. Streamlining processes and imaging access through a central infrastructure device is also a powerful way to strengthen security. [View the video.](#)



Figure 1: The **Kontron TRACe™ V40x-TR** is an EN50155 Fanless Railway Performance Class Network Video Recorder, based on a high performance Intel® Core™i7-6600U (dual-core @ 2.6 GHz) processor and is designed for rolling stock application where video processing and real time analysis, video streaming, video storage are requested to match your system requirements,

Offering all the advantages of standards-based COTS computing solution for transportation video surveillance is the Kontron TRACe™ V40x-TR, a new fanless computer specifically designed for IP-based video surveillance on passenger trains. The TRACe NVR can store, process and analyze imagery in real time, or stream video recorded by surveillance cameras. In standard configurations, the robust TRACe V40x-TR is compliant with the EN50155 standard for electronic equipment on rolling stock and provides outstanding performance, reliability, and storage capacity for demanding railway environments.

### **Health Monitoring**

TRACe V40x-TR offers a unique health management unit, performing system vital monitoring, thanks to multiple sensors. An integrated microcontroller, independent from the

main processor, monitors several temperature sensors, controls supply voltages & current, and with Vital Product Data traceability of major TRACe components. This Health Management Unit is fully integrated in the CMON-Line Monitoring solution by Kontron offering a turnkey, extensible and data centric solution for local or remote computer health monitoring. CMON-line module covers all the vital resources of TRACe to report, log, and transmit any health management information or event. All data are accessible either locally, from Ethernet/ Intranet or from Internet/Cloud, and offer an ideal support to data analytics, especially to support asset management, preventive maintenance and fleet management.

In addition, TRACe V40x-TR is ready to support the new Kontron Security Solution "Approtect", a combined hardware and software technology ensuring IP and copy protection while avoiding reverse engineering and tampering. Kontron Approtect is a holistic hardware based security solution that provides customers the ability to address security needs at the application layer. Learn more on Kontron website.

A health management unit ensures smooth operation, continuously monitoring the most important functions with multiple sensors. An integrated microcontroller which is independent from the main processor monitors several temperature sensors, controls supply voltages and current, and traces the status of major components with Vital Product Data. Kontron Health Management Software Package covers all vital TRACe resources required to report, log, and transmit any information and event during operation. Health Management data are accessible locally, via Ethernet/Intranet, or via Internet/Cloud. They enable data analytics to support asset management, preventive maintenance, and fleet management that can be provided by CMON-line monitoring solution by Kontron.

### **Video Surveillance Solution**

A real-world example of an entirely IP-based on-board video surveillance system is the [collaboration between Kontron and Adetel Solution](#). Supporting a wide variety of cameras and utilizing the latest generations of network video encoding and streaming protocols, it incorporates Adetel Solution's VMS and multiple high-resolution cameras including a Full HD Vandal-Resistant Network Mobile Flat Camera. The whole system is powered by a Kontron TRACe V304-TR NVR to provide a full onboard train central management solution. It enables captured video images from different cameras and audio signals to be digitized, compressed and streamed over the Ethernet network, and supports multiple simultaneous audio and video streams to be transmitted simultaneously

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▶  [sales@kontron.com](mailto:sales@kontron.com)

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