DAN Communications, SIA
Reg. Nr. 50003294251
97, Brivibas str., Riga, LV-1001, Latvia
Phone, +371 67 791 235, Fax +371 67 791 336

Invisibly supporting railway operations

Radionect™ integrated voice and data recording and radio dispatching system for Motorola Solutions MOTOTRBO™ radio fleet.

AS Operail, an international group of railway logistics companies based in Estonia and Finland, whose main areas of business are freight transport, rolling stock rental, and construction and maintenance, has deployed Radionect™ integrated voice and data recording and radio dispatching system for supporting its operations throughout Estonia. Operail employs over 600 people, handles over 10 million tons of freight transport volume a years and leases over 2000 railways wagons, further information about Operail is available at www.operail.com.

PROJECT PROFILE
Customer: AS Operail
Industry: Transportation (railways and railroad operations)
Implemented by: DAN Communications (Radio Channel Partner and Authorized Application Provider of Motorola Solutions)
Key benefits: • Reliable logging of radio voice and data with centralized access to archived data • Situational awareness with GPS • Common space of radio communications across all sites and locomotives • Optimized radio setup: 25% less radios required in the field with only 1/3rd of previously used frequency channels
Products deployed: • Over 60 Radionect RUN100A edge gateways • Radionect Archiving Server • Over 90 DP4601e MOTOTRBO™ portable radios • Over 10 DM4400e MOTOTRBO™ desktop radios • IMPRES batteries • MOTOTRBO™ Radio Management • MOTOTRBO™ IMPRES™ Battery Fleet Management

The challenge

Railway operations must be performed in a precise and efficient way. No compromises on safety or routine procedures are allowed. Any disruption in prescribed ways of operation may result not only in material damages during incidents but also in health damages to personnel. Therefore, all such operations need to be controlled and logged with technical tools.

Operail needed a handy logging system for their multiple sites of operations and conventional analog and digital radio channels spread throughout Estonia. Operail also wanted a solution for monitoring and controlling operations at remote sites from a central location in real time.

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The solution

Motorola Solutions radio channel partner and its authorized application provider DAN Communications performed an audit of Operail's radio communications and offered a turnkey solution for refreshing and optimizing its radio fleet and deploying voice logging and radio dispatching system. They recommended MOTOTRBO™ DP4601e portable radios and their in-house developed Radionect™ software and hardware for logging and dispatch as most suitable for the customer's needs.

There are several key features in the deployed Radionect solution.

1. A concept of distributed logging ensures reliable recording of radio voice and data at radio sites and locomotives by RUN100A edge gateway devices with the automatic and secure upload to a centralized archiving vault thus eliminating possible losses of information records due to disturbances or failures in network connections.
2. Centralized archiving vault allows authorized supervisors to retrieve their information of interest from the archive using standard internet browsers. The archived information can be filtered by the number of criteria: period of time, source and destination of calls, type of calls, location where records have been performed. Filtered voice calls can be further downloaded as audio files or replayed via the web browser. With digital radio channels, radio IDs (aliases) of talkers are clearly distinguished, if available, last known GPS positions of talkers are displayed at the digital map while replaying.
3. Using Radionect Dispatch Consoles at their Windows computers, supervisors can now monitor radio calls all over the country. If needed, a supervisor can now control operations at remote sites. This feature appeared extremely useful during the Covid-19 pandemic times when physical access to many operational sites was closed and the customer had to seek for suitable tools for continuing operations remotely.
4. In Estonia, train drivers can use MOTOTRBO™ DM4000 series radios in locomotives exclusively for communications with train dispatchers or for performing operations at railway stations. With RUN100A edge gateways, train drivers and supervisors in Operail offices can now communicate in push-to-talk manner over broadband cellular networks via the existing legacy locomotive radios using secondary PTT buttons at the radios' microphones and speakers, without transmission over VHF radio waves and thus without interfering with primary radio connections.

The benefits

Optimization of radios configurations and migration to a digital format where possible resulted in keeping just one third of Operail's radio frequency authorizations and in the number of deployed radios decreased by 25%.

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The promising feature set and its exceptional suitability to the customer's needs was the main driver for the selection of Radionect despite not yet completed development. In its vision, Radionect by far outperformed any of radio dispatch and logging solution available at the market for conventional radio systems. Existing out-of-the-box solutions also could not fully meet the customer's requirements and wishes.

With Radionect, instead of disparate radio islands, Operail has obtained a common space of radio communications between all their sites of operations and entire fleet of locomotives where all radio voice and data are reliably recorded and immediately available for review. Radionect is being actively developed and the customer is supposed to enjoy further technological and operational benefits from coming software releases.