Kontron Transportation MCx solution - the future of GSM-R train radio functionalities for Secondary Lines

Based on the future FRMCS standardization (3GPP, ETSI), the Kontron Transportation MCx solution extends obsolete analog radio communication means with modern "state of the art" train radio functionalities, without the need to develop an own infrastructure.

Vienna, Austria, March 12, 2021 - Kontron Transportation has developed the MCx OTT (Over The Top) solution for Secondary Lines that cannot build their own infrastructure due to high investments in infrastructure. Here, the networks of the public providers are used as transport medium for the own MCx application with GSM-R features such as single call, group call and train emergency call.

Kontron offers the solution as a "hosted solution" in a data center or as a server solution in the railroad's own IT departments. IP-68 industrial-grade smartphones with an MCx client, IP-enabled dispatchers with several modern user interfaces, and cab radios that follow the FRMCS standard serve as end devices.

Since public networks do not always offer full network coverage, the MCx OTT solution has been further developed in terms of transmission security, in cooperation with the Sauschwänzlebahn and the Ministry of Transport Baden Württemberg, and enhanced with the following features:

Heart-Beat Function
In addition to the use of two SIM cards from different providers in the end devices, a unique so-called heart-beat function was developed, which allows the client software to be in constant contact with the application.
This has the advantage that, for example, the user in the railcar or on the locomotive can see at a glance whether he is connected to the MCx application on the server or whether he is in a "dead zone". Optionally or on request, it is thus possible to switch automatically between the network providers. If no data connection is available in both networks, an emergency call via GSM is possible in case of emergency.
This functionality goes beyond the current FRMCS standard and offers further security in train-to-land communication.

Messenger service
Another feature is the own messenger service, which extends the MCx solution with preset or freely selectable messages.
With this service, important messages can be transmitted between the dispatcher and the user on the train or in the locomotive/traction unit even with minimal available bandwidth.
As standardization continues, video application, file transfer and functional train number entry will also be possible.

Dispatcher

The IP-enabled dispatcher is another important component in the Kontron MCx solution. In addition to the existing functionalities such as individual call, group call or train emergency call, the dispatcher also provides further intelligent innovations. For example, a geographical map is provided, which makes it possible to detect the individual trains based on their GPS coordinates and display them on the map.

This helps the dispatcher to detect possible radio gaps on the track at an early stage and to initiate appropriate measures. Additional call lists, mails and predefined messages help to send recurring news quickly and effectively. The dispatcher's key display is freely programmable and assignable, ensuring an individual configuration adapted to operational requirements.

Voice Recorder

As required for a train-to-land communications solution, Kontron Transportation also provides voice recording in the MCx solution.

Kontron works here with the same manufacturer as in many GSM-R projects with major railroad companies. This enables the greatest possible security to comply with all GSM-R specifications and features.

MCx projects

In October 2020, Kontron Transportation demonstrated the functions of MCx OTT in a two-week test at the Sauschwänzlebahn in Baden Württemberg, locally and on the moving train. The "hosted" solution was used, as this did not require any technical effort in terms of infrastructure on the part of the Sauschwänzlebahn. The MCx application was provided in a Kontron data center.

At the time, this was the first solution of its kind to be tested in an operational railroad environment. Kontron, together with the Sauschwänzlerbahn and the Ministry of Transportation of Baden Württemberg, successfully executed a test catalog in which all functionalities could be flawlessly demonstrated.

In December 2020, Kontron Transportation received the first order for an MCx solution from Westfälische Landes-Eisenbahn. With this first important step on the way to a FRMCS-based future, the MCx solution replaces the old analog radio system without any additional investment in infrastructure. The Westfälische Landes-Eisenbahn also opted for a hosted solution in order to benefit from the reliability of a data center and to keep the costs of its own hardware and services as low as possible. The solution with MCx application, dispatcher and voice recorder is currently in the implementation phase.

About Kontron Transportation

Kontron Transportation is a leading global supplier of end-to-end communications solutions for mission-critical and carrier networks. The portfolio includes GSM-Railways, FRMCS, TETRA, DMR, LTE solutions for mission critical networks as well as mobility solutions for the public transport sector and is enabled through a comprehensive service value chain. Kontron Transportation invests in research and development and is an associated member of the European research initiative Shift2Rail.

Kontron Transportation is part of the S&T group and headquartered in Vienna (Kontron Transportation Austria AG) with main subsidiaries in Belgium, France, Germany, Portugal, Spain, the Czech Republic and United Kingdom.

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