

Swiss Federal Railways:

On the move with FREQUENTIS during Olten dispatching centre relocation



The simplest way of moving an operational communication system (OCS) is to deactivate it at location A and activate it again at location B. Unfortunately, this results in a service outage during this time. Keeping in line with its focus on safe and reliable service for passengers; Swiss Federal Railways (SBB) mandated that during the OCS's move it had to continue to operate faultlessly and as redundantly as possible. Frequentis was tasked with the move of Olten's ground switching centre OCS to the new dispatching centre for central Switzerland (BZ Mitte). This centre is one of four strategic nodes for the daily supervision of some 8,150 passenger and 1,850 freight trains on Swiss rails. The redundant system from Frequentis and careful planning combined with great flexibility and close collaboration enabled trouble-free migration during live operation.

An open-heart operation

In 2006, SBB dispatching was spread over 100 locations. During that year, the SBB board of directors decided to group the supervision of Swiss railway traffic into four dispatching centres by 2016: Lausanne (BZ West), Olten (BZ Mitte), Zurich Airport (BZ East) und Pollegio (BZ South). BZ Mitte supervises railway operations in the areas around Basel, Berne, Luzern and Olten and on the approach lines to the new NEAT Gotthard and Lötschberg trans-alpine routes.

Client profile

In 2014, SBB moved 1.18 million passengers and 200,000 tonnes of freight per day. The railway's on-time performance is the best in Europe. From 2016 on, SBB will supervise all of its trains from four dispatching centres (BZs) in Lausanne, Olten, Zurich and Pollegio.

Business situation

The BZ Mitte in Olten is 800 metres from the current operations centre (OBZ) and will enter full operation at the start of 2016. The migration from the OBZ involved connecting over 100 new workplaces in BZ Mitte's control room with VoIP, installing new DICORA terminals and moving existing DICORA terminals. The prerequisite: the entire migration could not affect train traffic for even a minute.

Solution

Starting in 2008, Frequentis worked intensively with SBB on a highly detailed, five-phase migration concept with various scenarios. After extensive redundancy tests, a test move in Vienna and the preparation of a system shell, the first components were migrated in the night of 2 July, 2014. At any time, the Frequentis systems in Lausanne and Zurich could have taken over the functions of each removed component if required.

Impact

SBB and Frequentis successfully completed the complex moving phase on 10 September, 2014, five weeks earlier than planned. In line with SBB quality standards, not one single minute of train delay was attributable to the migration. SBB can now operate all dispatching centres redundantly.

"The essential point in this open-heart operation was that we invested most of our resources in preparation."

Jürg Lauber, lead project manager

It is also the backup centre for BZ South. Unlike the newly equipped BZ West and BZ East, a partial modernisation of workplaces was foreseen in BZ Mitte in parallel to moving the ground switching centre (GSC) to a new location. All workplaces in the control room were to be equipped with VoIP.

In order to keep dispatchers working normally after the move, pre-installation of a number of new DICORA terminals in BZ Mitte was planned. This meant that the VoIP gateways and the existing terminals of the OBZ's communication system, which was installed starting in 2006, had to change locations during live operations – without disturbing train traffic. Jürg Lauber, SBB's lead project manager for telecommunications at BZ Mitte, who was also responsible for the Frequentis OCS move in Olten, calls the move an "open-heart operation" and emphasises that "it was only possible with a specific solution for a specific environment that was also not routine work for Frequentis."

In 2008, SBB and Frequentis began work on the migration concept considering several scenarios, with plans and risk assessments of each. "The move of the GSC could only occur between 10 p.m. and 4 a.m. We had to use this short timeframe as intensively as possible, and this required exact planning. At 4:01 a.m., all locations had to have maximal redundancy again," stated Patrick Koblischek, Frequentis project manager.

Prepared, flexible and completed ahead of schedule

Starting in 2012, the detailed work began: redundancy was verified and components were removed from the running system and installed again. The Frequentis team rehearsed the move in Vienna and prepared all materials – including 11 km of cable – as requested by the client for installation in SBB's own cabinets.



After completing the installation, they tested it once again on-site in Olten. In a first step, 50% of the location's functionality had to be migrated. On 2 July 2014, the move began: with BZ West in Lausanne and BZ East in Zurich standing by, the first of some 150 interfaces were dismantled, carefully driven to the new dispatching centre and installed again. Gateways and terminals were moved during the day.

In peak periods, eight Frequentis employees were onsite in Olten and Vienna in parallel and constantly linked by teleconference. "The pressure was enormous", says Jürg Lauber, "but even in the most critical phases, I never experienced tension within the team. What also impressed me was people's readiness to help in the background in Vienna: every small issue was analysed and solved very quickly." Putting most of the project's resources into preparation and foreseeing a Plan B for every eventuality proved to be justified: this phase of the move was completed five weeks before the planned deadline – without causing a single minute of train delay.

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