Audit of the integration of the Gotthard Base Tunnel Information Technology into Swiss Federal Railways
Federal Office of Transport

Key facts

The Swiss Federal Audit Office (SFAO) examined the effectiveness of the procedure for guaranteeing an appropriate level of IT security in tunnel automation – excluding rail control technology. The SFAO also looked at the methodological approach for performing risk analysis of the Gotthard Base Tunnel (GBT) and the Ceneri Base Tunnel (CBT) and the consistent development of a set of measures and its implementation. The costs of supplying the tunnel control technology amount to approximately CHF 50 million.

Risks were identified and minimised effectively, but too late

On 1 June 2016, the constructor AlpTransit Gotthard (ATG) handed over the GTB to the operator Swiss Federal Railways (SBB). From an IT security perspective, not all of the necessary measures had been implemented by then. These have still to be completed in accordance with the SBB's ICT security requirements. The SBB's carefully executed analyses show that no risks classified as "RED" (i.e. unacceptable in the short or medium term) were to be recorded at the time of the launch of operations based on the weaknesses still present. In terms of ICT security, the risks are also limited to the area of tunnel availability. No relevant threats with regard to operational security, such as risks of accidents with personal injury, were found in the analysis of ICT security risks.

The SBB found during the construction phase that there was no overarching security concept for ICT security. As a result, it drew up the missing security concept "Subconcept (SC) for overarching ICT security GBT/CBT" on its own initiative. Based on that, and with the ATG's support, the SBB examined whether the security requirements would be met with the implementation of the infrastructure development provided for contractually at that time. The SBB then assigned a weighting to the weaknesses detected in the process based on their risks. No "RED" risks were recorded. The ATG and the SBB drew up a plan with 42 improvement measures to eliminate these weaknesses. This resulted in the project amendment request "ICT security GBT" of 20 May 2014, which covered the implementation of the measures. Prior to the opening of the GBT, the SBB verified the status of implementation of the measures and stated that only 12 had been implemented and four of the remaining 30 had been postponed. According to the ATG, further measures were implemented as part of the infrastructure handover on 1 June 2016. At the time of reporting, the effectiveness of these measures had not yet been checked.

Federal Office of Transport to be strengthened as supervisory authority

The SFAO found that the ICT security risks had not been handled systematically until late in the project. It recognises that risk analysis is performed and documented methodically and properly, but has observed that the ATG assesses the progress of the improvement measures differently to the SBB and that a different assessment basis is applied by the SBB and the ATG. From the SFAO's viewpoint, this results in a risk of additional costs and is also a cause of delays. The SFAO therefore recommends that the Federal Office of Transport (FOT) have the implementation of the still outstanding recommendations monitored. It also recommends that the FOT request a role with the constructor both for the CBT and for other major rail construction projects that have a different constructor and operator.

This role has cross-divisional responsibility for ICT security for all phases of the project and serves as an interface with a similar role with the operator. This type of role should also be requested in a project organisation for projects where the constructor and operator are the same company. It should then correspondingly form the interface between the project and the operational organisation.

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