DATWYLER

CASE STUDY

HES-SO VALAIS-WALLIS SCHOOL OF ENGINEERING, SION:

MAXIMUM SECURITY AND FLEXIBILITY

The University of Applied Sciences and Arts in Western Switzerland has successfully evaluated a private 5G network from Datwyler and Nokia on its campus in Sion.

The Haute école spécialisée de Suisse occidentale (HES-SO) is a centrally managed university of applied sciences with 28 sites in the cantons of Fribourg, Geneva, Jura, Neuchâtel, Vaud and Valais. With over 19,000 students, it is the second largest university in Switzerland. It is known for its practice-based research and expertise in diverse areas of technology.

As part of a technology evaluation, the HES-SO School of Engineering wanted to test a private 5G mobile network on its campus in Sion. They were looking for a communication solution for the demanding sector of public security and defence, one that would combine uncompromising security with maximum flexibility and mobility.

5G solution for mobile applications

Through its close partnership with Nokia, Datwyler IT Infra was able to offer the School of Engineering a 5G-based system solution that was tailored to meet its specific requirements. The emphasis was on the university's requirement to transmit data wirelessly and autonomously within a private network – essential for sensitive applications in the public safety and defence sector.

For the School of Engineering it was particularly important to ensure that not only the highest security standards were observed but also that a robust performance level was achieved, even in a demanding environment.

Datwyler convinced the university's experts with an innovative solution based on a Nokia Perimeter Network. This combined hardware and software solution is a variant of the Nokia Digital Automation Cloud (NDAC), which was developed for the public safety and defence sector. It can be operated completely autonomously and does not require a connection to the cloud, even for device management. Instead, the software packages needed for this are installed locally on the edge core.

One crucial advantage of the Datwyler solution was that the Nokia system was integrated in a compact mobile rack. This mobile installation gave the School of Engineering the flexibility to test it at different locations in real conditions.

Comprehensive services

Datwyler supported the School of Engineering through all phases of the project: from detail engineering and imple-

mentation planning, through pre-staging and configuration of the system, to on-site training. Datwyler thus made sure that the solution could be implemented smoothly and optimally used by the university. Datwyler and Nokia worked closely in this with their new partner MCS who provided valuable support in the system configuration.

The system tests themselves took place between August 2023 and December 2024. Throughout the whole evaluation phase, Datwyler was available with a comprehensive support package to ensure that all test scenarios were reliably covered.

All challenges met

Evaluation of the solution proved to be intensive and demanding. The university experts asked in-depth technical questions and tested the system to its limits. During this phase, the School of Engineering was able to acquire solid system knowledge in the area of 5G technology.

There were also requirements that went beyond the usual user application, to integrate some of their own devices and SIM cards into the network, determine frequencies and bandwidths themselves, carry out updates themselves and test 5G modems from different manufacturers and commercially available mobile phones. All of these tests were documented.

"I think we can now say that we are a research group that knows a lot about 5G and how it works technically, and that we can therefore work around any problem that might occur. We can solve problems", explains Professor Medard Rieder, Embedded Communicating Systems, School of Engineering.

Outdoor test on the airfield

One particular highlight was an outdoor test on the former Valais military airfield in Ulrichen. There too the solution was able to prove its efficiency and fully convince Medard Rieder's team. "We had our own 5G network on the airfield. That was cool", he says. "Depending on the conditions of the surrounding area, we were able to create a connection with our private 5G station from up to one kilometre away."

The successful evaluation by the School of Engineering underlines the ability of Datwyler IT Infra and Nokia to implement tailor-made, high-performance private 5G solutions for demanding end users.

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