

Efficient visualization of video and SCADA

Louis Hippolyte Lafontaine Bridge-Tunnel, Montreal, Quebec, Canada

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When the Trans-Canada Highway, connecting the Canadian mainland from East to West, is reaching the mighty St. Lawrence River, it is taking a 24 meter deep dive along the famous Louis Hippolyte Lafontaine Bridge-Tunnel. The 1.8 km long tunnel connects the Island of Montreal with the south shore of the river at Longueuil, Quebec.

The Louis Hippolyte Lafontaine Bridge-Tunnel absorbs some 130,000 vehicles a day along 6 busy traffic lanes. With efficient and safe traffic management of goods and people as its primary objective, the Quebec Ministry of Transportation has attributed due attention and technological means to the tunnel's traffic management. A central control room, manned by 2 operators on a 24/7 basis, is monitoring each movement.

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Meeting today's safety requirements

As traffic load is increasing every year, so are the associated safety measures and regulations. In an effort to increase tunnel safety and, more in particular, in the objective to implement the north-American NFPA502 (National Fire Protection Association) regulations, it became clear that the current control room and associated camera infrastructure needed an upgrade.

Mrs. Mervat Azer Tannous, project manager at the Quebec Ministry of Transportation, took the technical and administrative lead in managing the new control room implementation for the Louis Hippolyte Lafontaine Bridge-Tunnel: "The beauty about this project was that this control room actually needed to monitor two separate things, namely the traffic surveillance camera information, as well as the SCADA information from the tunnel's ventilation systems, generators, gas analysis, fire protection systems, etc. So, all these different types of sources needed to be visualized efficiently."

Technical challenges

The technical challenges were not little, explains Ms Tannous: "In our previous control room, we managed around twenty sources. Now, as we were planning to increase the number of traffic cameras, we had to monitor about 46 sources." An additional challenge was the different types of sources that needed to be visualized to the control room operators: "In the two parallel traffic tunnels, one in each direction, we use digital cameras. In the service tunnel, which is also used as emergency and fire exit, we have analog cameras. We wanted to avoid a heavy investment in cameras for the service tunnel, so it became clear that we needed a hybrid application that could deal with both digital and analog sources."



A universal decoding solution

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This high degree of interoperability was considered very important, not in the least considering possible future camera investments: "Barco provided a video wall consisting of 4 67" projection modules, including video wall controllers with integrated streaming video cards. These universal decoders are capable of decoding digital video streams from multiple manufacturers and across multiple standards."

Mrs Tannous explains: "Choosing for Barco's streaming video solutions was a matter of cost-efficiency, because it reduced our investment for specific decoder hardware, taking into account that the price of a decoder ranges from 1,000 to 4,000 dollar each. Additionally, a universal decoding solution allows us to efficiently co-operate with other control rooms throughout our large jurisdiction, no matter which type of video compression algorithm is used."

Better view, better decisions

Since its operational start in the end of 2005, control room operators at the Louis Hippolyte Lafontaine Bridge-Tunnel have been delighted about Barco's video wall system, according to Ms Tannous. "We have heavily improved on the ergonomics of the control room and we have significantly improved the image quality. All of this results in less fatigue for operators, considering they have to fulfill heavy 12-hour shifts."

"We are also pleased with the video wall system's dual lamp system. The system notifies us whenever a lamp has reached end of life and we can swap it without disturbing the operators in any way."

Coming back to the Ministry's main goal, namely managing traffic safety and efficiency, the control room upgrade has been a success: "The new control room with the Barco video wall allows us to have a better overview of the traffic situation inside the tunnel and to make better and faster decisions whenever an incident should occur. We do not loose time assessing the situation and as a result we can better manage and allocate the appropriate human resources when needed."

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