



Otopeni Airport Railway Terminal



Location:
Bucharest, Romania

Systems:
American Dynamics

- Victor
- VideoEdge

Illustra
AC2000
Zettler
DSC Neo

Challenge

The Romanian Government made a commitment in front of UEFA and the EU Commission to build the railway connection from Bucharest Nord main railway station to Otopeni Henri Coanda Airport before the start of European Football Championship 2020.

"Representatives of the national rail operator CFR presented detailed plans for the Northern Railway Station – Otopeni Airport railway link in a press conference on Monday. The upgrade of the train line will cost RON 584 million, and the 2.95 km link from the existing railway to the Arrivals Terminal of the airport will be built on 42 pillars. The new link should be ready by the time the European Football Championship EURO 2020 begins to facilitate the transport to central Bucharest for fans arriving at the Henri Coanda Airport. The plan has the works being completed in 14 months after the planning phase, which is scheduled for April of this year." Business-Review 19/02/2019

The project's tender for design and execution was launched in March 2019, and awarded in June 2019 to "Arcada Company SA, ISPCF and DB Engineering & Consulting" consortium. Design phase started right after the contract was signed, considering that the deadline was before June 2020 when the championship was supposed to start. Aracada Company started the construction of the viaduct in force although the Autumn was knocking at the door. Bad weather did not slow the construction team who were working at full capacity to respect the project plan.

Besides the civil works for the challenging viaduct, the construction of the new railway terminal design phase had to be completed in a very short period. ISPCF (Studies and Design for Railway Infrastructure Institute) was in charge of the design of the architecture, civil works, rail signalling system and telecommunications. As the new railway terminal was required to be fully compliant with all related EU regulation and directives, plus, that the emplacement of the new station was within the airport's premises, the design of the new railway terminal's security & safety solutions as well as the passenger information one had to be in line with all applicable requirements for airports and rail transport.

Alfred Net was selected by ISPCF to support the design of the safety & security as well as for the new passenger information solutions to equip the railway terminal and respond to all required regulations and operational ones. It was a great challenge and responsibility for Alfred Net team to design these solutions for this new railway terminal. The solutions were supposed to meet the expectations of the passengers that travel to and from Henri Coanda Airport, to touch a high level of technology and respond to the demands of resilience for such an industrial environment.

Solutions

Security & Safety – the new railway terminal security solution was design based on a rigorous Risk Assessment Report elaborated in line with the security requirements of the airport and considering the worst case scenario that could threaten people's integrity, as well as railway and airport assets and operations.

Tyco Security solutions were selected by Alfred Net design team to respond to the security & safety requirements of the new terminal. By using JCI Tyco, an integrated system was designed, that combines intrusion detection, physical access control, fire detection and video surveillance & analytics into one unitary solution, under Victor Unified Video Management Application, capable to monitor and manage the security & safety operations for the new terminal.

Passenger information system – was designed based on a mix of solutions from INFOPIX (IT.DOT), ASL Control UK and MobaTime CH that combined together resulted an integrated PIS/PAS1 solution capable of managing and delivering correct and comprehensive visual and audio information to passengers and staff.

To achieve the most accurate sound and compliance with Commission Regulation (EU) 1300/2014, Alfred Net contracted ASL Control UK and Acoustics Plus to elaborate the acoustic study for the new terminal. Only based on this study, it was possible to determine the correct number of speakers, their tapping power and their exact position in order to deliver the expected sound and meet the STI PA level required by the TSI (4.2.1.11 Spoken Information, page 17 from EU 1300/2014 regulation document).

After the design phase, the main contractor, Arcada Company, selected Alfred Net for the implementation and commissioning of these solutions. "It wasn't an easy decision to make, significant resources to involve for a short deadline, but still, the challenge has been accepted. It was an opportunity to be part of this project that ended with such a great achievement." – Alex Vladutoiu – Managing Director & Solutions Architect at Alfred Net said.

Implemented & Integrated Systems

- Video surveillance & video analytics: Victor Unified Management, VideoEdge & Illustra cameras
- Physical access control: CEM Systems & AC2000 with eDCM350 OSDP IP door controllers
- Intrusion detection: DSC PowerSeries Neo
- Fire detection: Zettler – Profile Flexible addressable panels, flame detectors and smoke sensors
- Train & security detection: Optex RLS2020S outdoor laser sensor
- Passenger Information: IT.DOT – INFOPIX: software solution, displays & monitors, infokiosks
- Public Address & Voice Alarm: ASL Control UK: PAVA equipment & speakers
- Clocking information: Moser-Baer AG – MobaTime, Master Clock / NTP and NTP based IP slave clocks
- Text-to-Speech: Paragon Semvox – Cerence TTS solution: English & Romanian voices
- Data infrastructure: KBC Networks, Cisco, DELL Technologies and Western Digital
- Power Infrastructure: Vertif and Riello UPS solutions

All combined together into one unitary solution were designed to meet the demanding operations of the new Henri Coanda Airport Railway Terminal.

¹ PIS/PAS – Passenger Information System / Public Address System

The security & safety solution is designed and implemented to respond to the multiple security threats scenarios, having implemented into Victor platform events and alarms procedures based on the logical interconnections between subsystems as well as response procedures based on well defined severity levels of alarms. The operators are capable of monitoring 99.9% of the railway terminal surface in order to proactively respond to any situation that may occur within the security operations.

The passenger information solution, based on IT.DOT's iPIS software is capable to manage automatically the train traffic schedule, process and deliver to passengers the right visual and audio information at the right time. Based on the software interface with railway traffic application - IRIS, iPIS collects and processes the trains arriving and departing from the terminal. Based on a direct interface with Airport's PIS application, INFOPIX's iPIS also collects, processes and displays the flights traffic and delivers the information automatically without the need of operators' intervention. The iPIS GUI provides an easy-to-use and very intuitive tool to manage different scenarios when traffic information is not automatically delivered or available from railway traffic management software application. Using IT.DOT's Element Manager software application, it is possible to monitor in real time the diagnosis data of all equipment of the systems in a very granularized way.

Based on Optex RLS2020S outdoor laser sensors, both video surveillance and PIS applications are receiving detection data for PTZ movement as well as for train detection that correlated with IRIS information supports iPIS to deliver the correct arriving and departing times in and out the terminal and the stop.

MobaTime Master Clock with NTP server, GPS based, synchronizes the clock of all subsystems within the terminal and the stop. Using NTP for time synchronization is vital when operating an integrated system. Official hour is displayed to passengers. Information, both visual and audio is delivered at accurate time. Video surveillance uses precise time and interconnection with the other security and safety subsystems runs at the same second.

"It is the first time when technologies like: video analytics, flame detection based on video technology, laser detection, RGB LED displays and RGB LED wall, digital signage, IP based PAVA, IP based clocking with NTP master clock/server, Text-to-Speech technologies were implemented for the Romanian railway system. It is also the first integration performed at such level of complexity for a railway terminal." Alex Vladutoiu explained. Both Fire Detection and Public Address and Voice alarm systems are EN54 compliant and they work together in case of an emergency situation such as fire alarm, when PAVA2 automatically plays the evacuation announcements, PACS3 unlocks the doors, stops the travellers and elevators and Victor platform delivers with priority to operators the video footage from alarmed zones, and procedures to react to the alarm in a well defined scenario. 99.9% of time, all subsystems function automatically.

The solution manages the railway terminal, the railway information displays inside the airport terminal, and the stop point that was built near Telekom Skating Arena located at 900m far from the terminal. In this way, the Bucharest Nord - Henri Coanda Airport trains serve the passengers that travel to and from the airport such as tourists as well as the people that work in the airport and adjacent areas plus the ones that come to work daily on the west part of DN1 (National Road 1), opposite the airport. Starting 1st of June 2021, the Telekom Arena railway stop (named PO Patinoar) became operational.

Both safety & security and passenger information solutions rely on the power and data infrastructure also designed by the Alfrednet's team. "I could say that what we have designed and implemented at this terminal, although it serves different operations, it is a complex, integrated and unitary solution where all subsystems work together based on the processes and procedures implemented into the managing platforms, Victor and iPIS" - declared Alex Vladutoiu - Managing Director & Solutions Architect at Alfred Net.

Results

Starting 13th of December 2020, the railway terminal became fully operational, receiving and sending a total of 72 trains per day, 36 pairs, arriving and departing at every 20 minutes from the terminal to Bucharest Nord station and return. After the pandemic restrictions were relaxed, on 1st of June 2021 the terminal counted more than 1000 passengers per day and it becomes more popular for passengers everyday as being an easy and fast way to reach the airport in time.

Now, as the European Football Championship 2020 is resumed (as it was postponed for 12 months due to the pandemic outbreak), this new railway connection, railway terminal and stop will demonstrate their utility for commuting the football fans, the employees, the tourists and staff within 20 minutes from Bucharest Nord (main railway station) to Henri Coanda Airport and back. "Great opportunity, big challenge, best team, really nice project, designed and implemented in less than one year!" - admitted Alex Vladutoiu.



About Alfrednet

System Integrator for security, telecommunication and ITS4 solutions, having a strong experience in delivering complex, site and multisite integrated systems for transportation, financial, industrial and more. Solution Architecture Design, Consultancy and Project Management experience of Alfrednet's staff help organizations to define, select and implement the correct solutions that meet their operational requirements for mid and long term.

Technology Partners

- TYCO SECURITY PRODUCTS from JOHNSON CONTROLS
- CEM SYSTEMS from JOHNSON CONTROLS
- DSC from JOHNSON CONTROLS
- ZETTLER from JOHNSON CONTROLS
- INFOPIX from IT.DOT
- VIPEDIA RANGE & LOUDSPEAKERS from ASL CONTROL UK
- MOBATIME from MOSER-BAER AG
- CERENCE from PARAGON SEMVOX
- KBC NETWORKS
- RLS2020S from OPTEx

² PAVA – Public Address & Voice Alarm

³ PACS – Physical Access Control System

⁴ ITS – Intelligent Transportation Systems

About Johnson Controls

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