

Surveillance data distribution domain

Provision of a modern SDDC surveillance data distribution system built of SDDN nodes in four PANSAs locations in Poland.



The surveillance data distribution domain in civil and military air traffic management systems concerns the area between the surveillance sources (radars, MODE-S, ADS-B, MLAT etc.) and superior operating systems designed to ensure safe air traffic.

Challenge

Provision of a modern SDDC surveillance data distribution system built of SDDN nodes in four PANSAs locations in Poland.



Solution

The SDDC is a modern surveillance data distribution system including main and backup SDDN nodes (Surveillance Data Distribution Node) implemented in four PANSAs locations (Warsaw, Gdańsk, Poznań and Kraków).

The main purpose of the SDDC system implemented in the PANSAs surveillance services is to ensure, in real time, uninterrupted and reliable distribution of information from sources to the superior PANSAs Air Traffic Control system (PEGASUS 21). Data sources connected to SDDN nodes are mainly radars (secondary and primary) but also ADS-B and MLAT sensors.

The SDDN node is a modern solution designed and developed by FILBICO in order to ensure the delivery of large data streams (mainly radars) and their distribution and exchange between surveillance systems / networks. The node is scalable, hardware re-

dundant, functionally complete, secure and fully configurable via a user-friendly GUI.

The main and spare nodes of the SDDC system are connected to two different wide area networks built on separate data lines of two independent telecommunications operators (provided by PANSAs), which connect PANSAs locations in Warsaw, Gdańsk, Poznań and Kraków.

The implemented system consists of five redundant (ten physical) and fully functional SDDN nodes, divided into two independent systems, called SDDC RED and SDDC GREEN. Radar data of a locally connected source at any node is immediately available in the so-called cloud for use by any other node of the system (separately within RED and GREEN). SDDC RED acts as the main system and SDDC GREEN as a backup.

The SDDC system, delivered for PANSA, ensures:

- Surveillance sensor/system data exchange
- Support for any current and/or future ASTERIX EUROCONTROL specification
- Centralized and distributed monitoring, configuration and control
- Interoperability with any ASTERIX EUROCONTROL compatible surveillance systems
- Data validation, filtering and conversion
- Transport protocols conversion (both LAN and serial)
- Processing scenarios management
- Recording, replaying and displaying radar data on a map

The above-mentioned functionalities of the system clearly show that the distribution of surveillance data cannot only be carried out COTS network infrastructure in the form of equipment such as switch, router and firewall. For this purpose, specialized and highly efficient software is also necessary.



Brief description of the system implementation

The implementation of the SDDC system (RED and GREEN) has been divided into 5 stages. In the first stage (about 4 months), the Contractors installed and launched the Warsaw site - WAW1 and WAW2 (RED) nodes as well as WAW1 and WAW2 (GREEN)

A monthly evaluation was carried out after the Site Acceptance Test (SAT). The remaining locations were completed in 3 consecutive (about 2-month) stages in the following order: Gdańsk (GDA RED and GREEN), Poznań (POZ RED and GREEN) and Kraków (KRK RED and GREEN). The last stage was the final integration of the SDDC system and the network infrastructure, together with the configuration and preparation of the system for supervised operation.

A configuration connecting all surveillance sources to the SDDN nodes of the SDDC system, without any limitations to the still operational PRANET system built of RMCDE nodes, was made in cooperation with PANSA specialists. A SDDC system, prepared in such way, worked in a supervised mode for about 2 months. The assessment of correct operation was carried out at the input points of the sources, inside the system, and at the outputs

to selected customers (including the backup PEGASUS 21 system, backup ARTAS tracker).

After positive results of the supervised work and based on the safety documentation prepared jointly by PANSA and FILBICO, the Civil Aviation Authority allowed the operational SDDC system to work as a successor of the PRANET system.

About the customer

PANSA is the main and key organization in Poland providing air navigation services to ensure safe and smooth air traffic. PANSA is a bridge connecting Europe and the East due to the geographic location of Poland. Air traffic controllers are supported by advanced technologies thanks to PANSA's investments in the development of used IT systems. One of the important systems in the PANSA surveillance services is the SDDC (Surveillance Data Distribution Cloud) system working for superior PEGASUS 21 ATM (Air Traffic Management) system.

The agency is supervised by the President of the Civil Aviation Authority and the Minister responsible for transport.

See more: www.pansa.pl

About the suppliers



FILBICO has been successfully delivering IT solutions for 30 years. The main recipients of the solutions are the Polish Armed Forces and uniformed services, and for several years also civil services. FILBICO specialize in surveillance, command and control systems as well as crisis response systems. FILBICO also provide certified solutions for secure data transmission between systems or ICT networks with different security classifications. Additionally, company provides solutions for validation, processing, distribution and display of radar data.

In the project for PANSA, FILBICO managed the project on the Contractor's side at the interface with PANSA, developed and delivered software for the SDDC system, installed, launched, configured, tested and integrated the SDDC system and provided training for PANSA specialists.

See more: www.filbico.pl



What contributed to successful project implementation in a short time of 13 months during the COVID-19 pandemic?

- **FILBICO's experience** with implementations of similar projects for the Ministry of National Defense and from previous implementations for PANSa (including radar analyzers and surveillance data filters)
- implementation by **FILBICO** in advance the internal **development work on software for the air situation data distribution** system node
- **the experience of producers, suppliers and integrators** of SDDC system equipment (**FUJITSU**) and network infrastructure equipment (**ATENDE**)
- the adopted business model based on the creation of a consortium of FILBICO and FUJITSU companies (with ATENDE as a subcontractor) with an **appropriate**
- **division of competences** (SDDC software implementation&integration: FILBICO; SDDC hardware platform: FUJITSU; Network integration based on CISCO hardware: ATENDE)
- **exemplary cooperation** between PANSa technical specialists and Contractors, characterized by mutual commitment
- **model project management** by PANSa and Contractors, focused on quick and effective problem solving, avoiding threats and taking advantage of opportunities



Fujitsu Technology Solutions is the largest European supplier of IT infrastructures, present in all major markets in Europe, the Middle East, Africa and India. His clients range from large enterprises to small and medium-sized enterprises as well as individual clients. Based on the concept of dynamic infrastructures, the company offers a full range of IT products, solutions and services, from client systems to solutions for data centers, managed infrastructure and providing infrastructure as a service.

In the project for PANSa, FUJITSU managed the project on the Contractor's side at the interface with FILBICO, acted as the Consortium leader and supplied SDDC system hardware and participated in the installation and launching of the system.

See more: www.fujitsu.com.pl



ATENDE S.A. is one of the leading IT companies in Poland, listed on the Warsaw Stock Exchange since 2012. ATENDE has been successfully implementing technologically advanced IT projects for 30 years. The company specializes in the integration of IT infrastructure (including networks, computing systems, data centres, security), as well as in services (including IT design and consulting, maintenance and servicing of systems, solutions based on about blockchain technology, IT outsourcing, Cloud Computing). ATENDE is also a capital group which includes seven subsidiaries.

In the project for PANSa, ATENDE managed the project on the Contractor's side at the interface with FILBICO and FUJITSU, acted as the Subcontractor and provided the installation, launching configuration, testing and integration of the network infrastructure as well as training for PANSa specialists.

See more: www.atende.pl

Contact us

FILBICO Sp. z o.o. Wyszynskiego 7 Street 05-220 Zielonka, POLAND
POC: +48 221010693 phone/fax +48 227819708 email: filbico@filbico.pl www.filbico.pl