# READY FOR THE FUTURE AFTER THE PANDEMIC

Advanced ATM solutions with innovative remote access infrastructure enabled flawless and safe operations for ANSPs during the lockdown

Walter N. Pizzo, Edson F. Gomes, Agenir C. Dias, Laercio Dalmolin Filho, Marcos R. Resende, Atech

The air traffic management sector has been substantially affected by the Covid-19 pandemic. During lockdown, Brazilian ATM-system provider Atech also faced the challenge of continuing to provide its solutions, when the company also had to keep to the schedules, not only of its internal design and development activities, but also of onsite software installations, acceptance tests and maintenance tasks. Atech achieved this using the latest remote access technologies with local and overseas air navigation service providers.

The main basis for this was the commitment from some of Atech's customers, especially the Brazilian air navigation service provider (ANSP) DECEA, that demanded innovative ways from Atech to face this challenge and keep the entire lifecycle of activities running, from design to acceptance and in-house training to onsite maintenance support.

## Covid-19's operational impact

Analysis from international ATM organizations about the impact of Covid-19 predict the so-called new normal operating environment for the tourism, aviation and ATM sectors.

ICAO's impact analysis published in June 2020, indicates an estimated annual decline of up to 62% in world passenger traffic. In a mid-year discussion with ATCA and FAA executives, it was also reported that given the nature of this crisis, "governments will need to protect ANSPs, since their revenues are directly dependent on the volume of controlled air traffic". In April 2020, another article published by CANSO advised that "unlike the airlines, ANSPs could not suspend operations or lay off their staff, but needed to keep operating safely, managing flights even in a reduced scenario where cargo flights keep delivering vital supplies" and concluded that ANSPs had to be kept solvent as well as the airlines.


**Figure 1 :** SAGITARIO team during a MST module recalibration activity with DECEA for an ATC system installed at Brasília Approach Control

**Figure 2 :** Atech's Skyflow system operational at the new Airports Authority of India's ATFM Center in Delhi

Facing this scenario, Atech has performed several project activities remotely using a pre-existing online remote maintenance infrastructure called the SMAR system, which was developed by Atech and already used by DECEA since 2018. The company used its cloud-based deployment architecture, an internal feature of the Atech's ATM family of products (Makron) which meant some ANSPs were already connected to the test bench at Atech facilities. The connection was previously used to provide continuous status monitoring and fast diagnosis of technical or operational alarm situations and to conduct maintenance tasks or scheduled updates of software. With these pre-existing capabilities, engineering and test personnel, operating from Atech or even from their homes, executed factory and onsite activities with end-users at many customer sites (Figure 1) to provide training sessions, software updates, configuration, dry runs, factory and even site acceptance tests, exceeding the expectations of the customer.

## Skyflow system deployed in India

Since December 2019, after Atech's SKYFLOW team has concluded the works at the new ATFM Center (Figure-2) of Airports Authority of India (AAI), in New Delhi, the system is in full operation, now running the entire strategical and tactical planning of the Indian airspace. AAI relies now on an essential tool for air traffic flow optimisation, one which is capable of providing the best balance between demand for flights and operational capacity. Skyflow is increasing the safety of operations, regularity and punctuality of flights, bringing improvements in India's civil aviation flights network, while generating aircraft fuel


3

**Figure 3 :** Brazil´s DECEA air traffic flow management solution at the Air Navigation Management Center in Rio de Janeiro.
**Figure 4 :** Skyflow WebPortal in operation for the Airports Authority of India

savings over this important region, where roughly 187 million passengers fly each year.

India has become one of seven regions in the world to implement advanced flow management, using technology from Atech. Before this new achievement of AAI in India, only the USA, Europe, Australia, South Africa, Japan and Brazil (Figure-3) counted on similar dedicated ATFM systems.

The next step for AAI is to have its IFPS (Initial Flight Plan System) by the end of 2020. Branded as LEO system by Atech, this IFPS will concentrate, process and distribute all flight plans for the entire Indian airspace. The LEO system adopts modern IFPS concepts that are also about to be used in Brazil. After FAT and SAT activities were recently completed, the Brazilian system will be ready for centralisation of all flight plan processing over the 22 million square kilometers of the airspace controlled by DECEA.

In addition, Atech released a new mobile app for pilots and airlines, the electronic flight bag (EFB), which gives pilots access to digital aeronautical charts and other up to date relevant information via iOS or Android tablets. The EFB module is an extension of JANUS, an app from Atech launched in 2018 for filling and submitting flight plans, which now has more than 15,000 downloads. JANUS connects to the IFPS (LEO) allowing the user to receive all the approvals, requests for changes, and updates related to the submitted flight plan. The user may also submit delay or change messages, or even cancel a flight plan. By using JANUS to fill up the flight plan, the user can access route library, AIP, up to date meteorological information, NOTAM, and all relevant information for planning a flight.

The new web portal of the AAI ATFM Center was then activated in June 2020, providing easy public access to various information in India, such as airport situation, flight delays, weather information and ongoing ATFM measures. The portal presents information in four views, tactical, pre-tactical, strategic and post-operational (Figure-4). This new service is integrated with Atech's Skyflow ATFM solution.


4

## Cloud-based ATFM – an affordable choice

Due to be launched in March 2020, at the World ATM Congress, the latest version of Atech's ATFM system, Skyflow Cloud was developed for the global market to give more countries the capability to run their own air traffic flow management systems, with lower investments and maintenance costs. When hosting the system in a cloud platform, Atech opens a new opportunity to many ANSPs, according to their needs and specificities of each country, since they can start an ATFM system operation without the typical implementation investments. This alternative also shortens the deployment time, optimising the start of operations with an "as a service" solution, drastically reducing the amount of initial infrastructure, maintenance and operational costs.

The cloud solution for a new ATFM system can also be an attractive entry strategy even for an ANSP with larger flow management needs. Thus, depending on its expansion or operational policies, a cloud based ATFM can be used as a first step to a subsequent migration, if the ANSP intends, after an initial phase of cloud-based operations, to have its own complete local IT infrastructure for the already running ATFM system.


SOURCE: AEROMAGAZINE

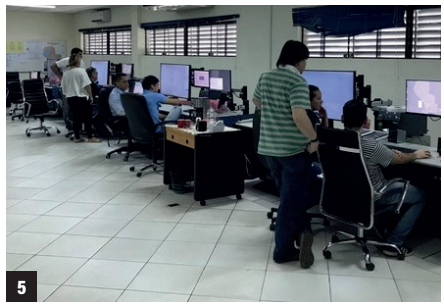
6

## Deployment of SAGITARIO air traffic control in Paraguay

In addition to these Skyflow ATFM developments in India, Atech is also deploying its SAGITARIO ATC solution in other countries, such as Paraguay, where it is now about to start operations by the ANSP DINAC.

This modern ATC solution was already installed at the Asuncion Center in 2019 and the training sessions for controllers (ATCO) had finished in the beginning of 2020 (Figure-5). By the end of 2020 Sagitario is expected to control the Asuncion flight information region and be responsible for the entire Paraguayan airspace, with a modern set of operational tools to support decision making, including features for air defense integration and tower specific coordination, information evolution during ground procedures, push back and start of taxiing phases, waiting takeoff authorization and takeoff information. The system uses the same technology and meets the international safety requirements already adopted by the regulatory agency in Brazil.

With this achievement at DINAC, SAGITARIO marks the evolution of the air traffic control in one more South American country. SAGITARIO is helping to promote advances in communication, navigation and surveillance in the region, according to the best practices and standards of international ATM industry, as recommended by the regulatory civil aviation agencies, including ICAO (International Civil Aviation Organization) and EUROCONTROL (the European Organization for the Safety of



5

Air Navigation). According to information provided by DECEA, in 2018 the Guarulhos International Airport, in São Paulo, registered an average of 800 takeoffs and landings per day among commercial and military aircraft of different sizes. In that same year, more than 42 million passengers travelled through the airport. The entire Brazilian airspace is controlled and monitored by traffic control and air defense systems developed by Atech.

SAGITARIO not only enables the handling of high air traffic demand, but also reduces flight time and increase punctuality, benefiting airlines with lower operating costs. The system's advanced features also reduce keyboard commands and ATCO fatigue, allowing controllers to improve their attention span. The capacity to overlay meteorological images within the control display sharpens situational awareness. Flight plans can also be edited graphically on the map, allowing more efficient and intuitive operations. The system also features CPDLC (Controller Pilot Data Link Communications), for communications

**Figure 6 :** SAGITARIO system in Brazil, at the Brasilia ACC
**Figure 5 :** Controllers training session on a recently installed SAGITARIO system for DINAC, at the Asuncion ACC, in Paraguay.

between ground control and aircraft through text messages exchanged via data link. On-board equipment transmits information about the aircraft position, flight level and weather to the center, improving agility in control and minimizing erroneous interpretations caused by linguistic barriers between controllers and pilots.

Installed in all Brazilian area control centers (ACCs), SAGITARIO is operated by DECEA at its four Integrated Centers for Air Defense and Air Traffic Control (CINDACTAs), covering the regions of Brasília (Figure-6), Curitiba, Manaus and Recife, which also controls a large part of the Atlantic Ocean under Brazilian jurisdiction. The system is also installed at other 18 approach control centers throughout the country, related to the main airports in Brazil.

In this unprecedented COVID-19 outbreak scenario during 2020, Atech was able to demonstrate innovation and readiness regarding ATM solutions, support and deploy capacity. International support services include local or remote options for training, deployment, test, status monitoring and maintenance activities, allowing better autonomy in terms of operational availability, configuration control and easier customisation and product evolution, through a technology transfer partnership with the ANSP or local partner organizations. ❖