

Around the world with Remote Digital Towers

A look at the live RDT systems that are in action across the continents

Passenger numbers in 2023 are set to reach pre-pandemic levels making airspace efficiency and capacity management the key focus again. Frequentis DFS Aerosense remote digital tower experts Veit Voges and Eric Wernsperger look at where current solutions are already enhancing performance around the world. Both believe that remote towers are the future and will progressively replace conventional towers worldwide.

Remote digital towers (RDT) are being favoured over conventional ones in terms of cost savings, while they also enable safety enhancements and controller job satisfaction. Although first developed for airports with low traffic volumes, its benefits were also realised by busier airports that required vision enhancement, a contingency solution, or support of the controller's workload. It even helped to enable the separation of approach and departure control depending on the need in a specific case, supporting resilience.

Remote tower workplace design *Frequentis*

Germany

The German air navigation provider (ANSP) Deutsche Flugsicherung (DFS), installed the Frequentis RDT solution for Saarbrücken Airport in 2018, with control services carried out from the Remote Tower Centre (RTC) in Leipzig, 450km away. After the successful implementation project the pair formed the joint venture Frequentis DFS Aerosense to deliver turnkey remote tower solutions worldwide, working on several projects together since.

In the middle of 2022, a second airport, Erfurt-Weimar, took up the solution, with a third, Dresden Airport, expected to be monitored from Leipzig by the end of 2024.

Currently, DFS Aviation Services GmbH (DAS), a subsidiary of DFS is establishing a RTC in the German state of Niedersachsen. The new control centre will begin operations at the Braunschweig airport site in mid-2024. Going forward, air navigation services for both the airports of Braunschweig-Wolfsburg (air traffic control – ATC) and

Emden (automatic flight information services – AFIS) will be provided from the new RTC at the Braunschweig site, becoming the second such centre in Germany. In the long term, other regional airports will be integrated into the RTC to adopt this approach and further optimise the costs of providing ATC services.

France

French ANSP, Direction des Services de la Navigation Aérienne (DSNA), selected Frequentis to supply its state-of-the-art RDT solution in France in early 2022.

The RTC, with several single remote tower controller working positions (CWP) will be in Toulouse, which will firstly manage air traffic for Tours Val De Loire Airport more than 500km away. The RDT will allow this airport to preserve passenger traffic and ultimately to increase it. The solution will include on-site video technology with view enhancements using several overlays to allow a full 3D look at the airport, central equipment in the RTC in Toulouse-



Blagnac Airport with several working positions, and a test system for training.

A further four more tower operations will be implemented at the same centre in the future. The centre will allow DSN to deal with higher traffic growth while at the same time increase its overall operational efficiency.

Jersey UK

Jersey Airport, part of Ports of Jersey Limited, became the first airport in the British Isles to achieve approval for operational use of a RDT in 2019 and the first to use this type of system to actively control commercial aircraft movements.

The system uses a network of 13 cameras to create a 240° field-of-view of Jersey Airport, which is then displayed at the RT working position in the nearby contingency facility. The Frequentis solution provides seamless contingency ATC services should the airport tower be unavailable for any reason.

Approval for the Channel Islands airport followed a comprehensive testing period through 2018, including training for all ATCOs. It was the first-time RT approval directly involved the European Aviation Safety Agency (EASA), as the ANSP Competent Authority for Jersey.

Australia

In the southern hemisphere, Airservices Australia contracted the Frequentis Australasia office, together with DFS Aviation Services, to install a RT system for two airports. Not only is there a need to support predicted air traffic increases in the region over the coming decade but also to progress digitalisation and automation in general. This will enhance ATCO efficiency and flexibility. The solution will include 360° visual panoramas, pan tilt zoom cameras and a number of CWPs.

Nordics and Baltics

In Denmark, Danish ANSP Naviair selected the integrated tower and approach solution from Frequentis DFS Aerosense in 2020 to manage the increase in airspace demand, support the workload of ATCOs, and digitalise their work environments.

The initial RTC at Billund airport is a combination of an RDT, and an approach automation solution (PRISMA APP). Naviair intends to provide central ATC services to regional airports instead of locally from individual airports. This will be the first time that both digital



About

Eric Wernsperger

Digital Tower Expert and Vice President Sales, Frequentis DFS Aerosense.

Eric joined Frequentis in 2007 as a Solution Consultant for international RDT solution projects. He became VP Sales for Frequentis DFS Aerosense in 2022.

Veit Voges

RTC Product Manager, DFS Aviation Services GmbH

Veit joined DFS Aviation Services GmbH in 2022 as a Product Manager for RTC. In his former roles at Zurich Airport AG and PwC he gained extensive knowledge, both on RDT and airport operations.

Frequentis DFS Aerosense

Frequentis and German ANSP DFS Deutsche Flugsicherung GmbH, through its wholly owned subsidiary DFS Aviation Services, formed joint venture Frequentis DFS Aerosense in 2018, to deliver turnkey remote tower solutions worldwide.

tower and approach services have been combined into one integrated system allowing the possibility to merge or split the two tasks depending on airspace demand. This will allow Naviair to scale services up or down with fluctuations in air traffic (similar to what was required but not possible during the pandemic), to further save on costs.

In Iceland, Icelandic ANSP, Isavia, and Frequentis, formed a technology partnership in 2017 to investigate suitable RT camera and casing solutions to perfectly adapt to the harsh Icelandic weather conditions. The partnership analysed the benefits for isolated airports, by enabling central ATC for smaller, low traffic volume airfields.

South America

In 2018, Brazil successfully installed the Frequentis smartVISION solution at Santa Cruz airbase to enhance the monitoring and management of its air traffic. The

project was carried out by Brazilian Airspace Control Department, DECEA, via the Commission for Implementation of the Brazilian Air Space Control System, CISCEA. It was the first of its kind in South America to provide actual remote ATC services using digital tower technology and was completed within a record time of six months.

Elsewhere in the region, in the same year, Argentina's Buenos Aires International Airport contracted Frequentis to install its smartVISION airport camera system, to enhance all-weather surveillance coverage during preparation for its airport expansion, providing additional tower control after construction of a new ATC tower.

USA

The US Department of Defense (DoD) became the first military organisation to opt for remote tower, also in 2018. The project included two fixed-base systems and two deployable systems with the technology for use by the Air Force and other DoD agencies. The systems operational verification test took place at Homestead Air Reserve Base over the course of one week in late 2020. Testing was done using real-world scenarios as well as the airbase's daily operations.

With the deployable technology, ATCOs will be able to operate from safe locations without the need for permanent facilities at airfields. The mobile RDT consists of an array of cameras on a trailer next to a tower that can be extended to the same height as the primary ATC tower. Images are then sent back to ATCOs in shipping containers, away from the scene.

Testing at two further airfields is also underway.

Preparing for the Future

As increasingly more ANSPs leverage the full potential of RDTs and more airports are managed via the RTC concepts, we will also see further breakthroughs in technology solutions, such as artificial intelligence (AI) in object recognition or augmented reality. Innovative operating concepts also have the potential for the integration of vertiports into the RTC environment.

Furthermore, implementation in regions with low-network quality requiring a low-bandwidth compact RTC solution, or modular and highly flexible temporary installations in contingency solutions, will prove that RDT can successfully master an even wider range of challenges in the future. **ATM**