

Digital tower steps for success

Remote digital towers are becoming more interesting for ANSPs looking for efficiency gains and to enhance tower operations. Moritz Manzel, Regional Manager Middle East and Yannick Beyer, Sales Director at Frequentis DFS Aerosense, explain the importance of stakeholder involvement and change management for a successful digital tower project delivery.

Replacing an air traffic controllers (ATCOs) traditional “out-of-the-window” view with a digital/virtual environment has many operational as well as cost benefits, however it is also a complex task that relies on operator participation to make it a success.

Any project involving change will come up against a number of challenges. For ATCOs working in remote locations it is not only a complete change of technology but also a potential change of location, as they move away from the airport tower to a bespoke facility or even a remote tower centre including multiple airports.

A project of this kind relies on the appropriate involvement of operational staff from the very beginning and throughout the project. A thorough change management process should consist of safety, transition and training aspects to fully prepare operators, but also to ensure a seamless approval process within the regulatory authorities.

Remote digital towers (RDT) are not new and have already been implemented and put into operational use around the world; experience and lessons learned have been gained. The remote tower solution Frequentis and the German air navigation service provider (ANSP), DFS Deutsche Flugsicherung (DFS), developed, has been successfully managing air traffic



The working station for air traffic control of Saarbrücken Airport in the remote tower centre in Langen. Optimally adapted to the needs of the ATCOs. The entire control environment can be grasped by the controllers at a glance.

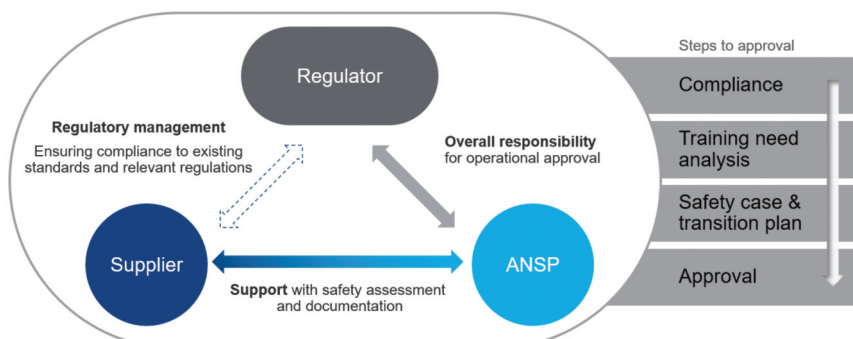
for Saarbrücken airport, South West Germany, from a remote tower centre in Leipzig, East Germany (over 450 kilometres away), for two years now. DFS implemented this remote digital tower over a three-year period starting in 2015; to ensure success we set up several workshops with all stakeholders and assigned a core team in Leipzig. We also involved a representative team of ATCOs to

participate in six validation cycles and in the iterative process to define the final operational layout and HMI. The solution, made up of cameras located at the airport, feeding information to high definition screens in a remote facility at Leipzig Airport, ensures the safe handling of over 15,000 flight movements per year.

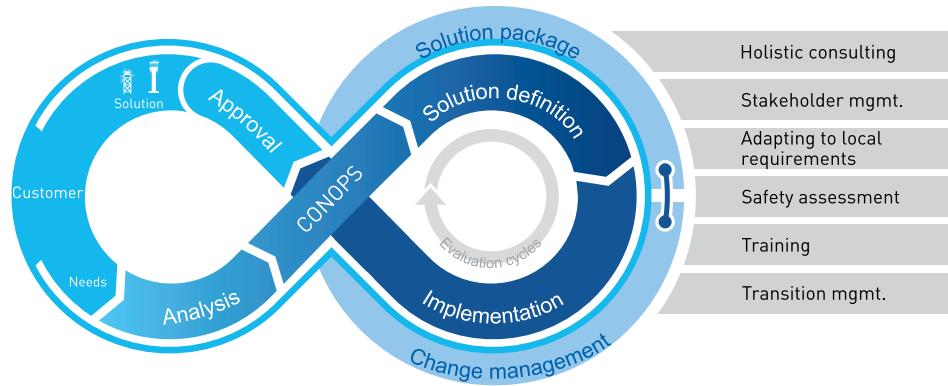
It was during the project that, together, both Frequentis and DFS came to the realisation that we worked well as a team and could use the lessons learned to deliver further projects for other ANSPs. It was at the start of 2018 that Frequentis DFS Aerosense was formed.

A turnkey solution

Frequentis DFS Aerosense GmbH is a joint venture company between Frequentis and DFS Aviation Services, which focuses on providing advanced turnkey remote sensing solutions for air traffic control (ATC) across the world, supporting airports with capacity and growth. Frequentis contributes the technologies, as well as



Steps to regulatory approval.



The Frequentis DFS Aerosense turnkey solution provides technical and operational support in all process phases.

expertise in developing customised remote tower systems, while DFS Aviation Services contributes its operational air traffic management experience in consulting, validation, transition and regulatory support.

As interest in remote digital towers grows for ANSPs looking for efficiency and tower operation enhancements, we believe that every airport in the world will have one in the next decade, just with different use cases. For bigger airports, RDTs will begin as more of a contingency service or a vision enhancement, but the same technology will allow physical towers to be replaced (cost effectively) with an RDT, a logical alternative to expensive investments in tower buildings.

The other benefit of an RDT is a digital or virtual tower centre where more than one airport can be located at the same facility. For regions like the Middle East, with quite some low traffic volume airports, this becomes a real benefit for efficiently managing air traffic volume. DFS also analysed this potential for its own airports in a research project with the German Aerospace Centre (DLR) in 2010. On this basis Frequentis and DFS developed the advanced solution with a remote tower centre (RTC) in Leipzig for the three international airports, Saarbrücken, Erfurt and Dresden, but with the potential to add two more airports later. In December 2018, remote tower control was put into regular operation for Saarbrücken International Airport. The other two airports will be phased into the Remote Tower Control Centre in Leipzig step by step. Control of Erfurt from the centre in Leipzig is already close. And the topic of digital tower control in Germany does not end here.

DFS and Frequentis have mastered the new challenges posed by an RDT project and so Frequentis DFS Aerosense is able to offer RDT consulting, which means that ANSPs can avoid a lot of the potential complications of an RDT project, just by

using the lessons learned from the DFS change management process.

The early involvement of all stakeholders, including the local regulator and relevant authorities, is a critical factor for a timely and successful project implementation. In order to earn full acceptance, DFS involved the German Regulator BAF (in German Bundesaufsichtsamt für Flugsicherung) from the very beginning through the introduction of regular workshops and active collection of feedback. This regulatory approval approach, developed by DFS, offers a suitable guide for others as well. The new safety cases and their respective documentation can be adapted and customised.

Agile techniques for a complex project

The operational and technical experiences DFS and Frequentis gained during their launch project in Germany can be shared among the ATM world and support other ANSPs in pursuing their own RDT plans. Because of the complex change of the technical and operational environment, an agile approach during the implementation phase is recommended. This includes a close coordination of all involved parties in short intervals, the consistent use of agile project tools and a combined and continuous adaptation of next steps. Because the right project basis is also a critical success factor, the agile methods should be clearly defined at the very beginning of the project and all those involved should be informed and, if necessary, trained accordingly.

Even though each project and its requirements must be considered individually, the experience gained during the Frequentis/DFS RDT project can help ANSPs to facilitate acceptance throughout the whole stakeholder landscape and save exhausting loops in the evaluation stage, along the change process. By relying on proven experience, the implementation of a RDT project can be significantly

accelerated. In addition, ANSPs can reduce usage of valuable internal resources by leveraging the experienced external support from Aerosense, leading to cost savings during project planning and execution.



Moritz Manzel, Regional Manager Middle East, Frequentis DFS Aerosense

With a degree in International Management and a Masters' in Service Marketing, Moritz joined

the DFS Group in 2010 as a Project Manager and Consultant for several aviation/ATC projects throughout the Middle East, where he was based for three-years. In 2018 he was appointed Managing Director for DFS Aviation Services Bahrain Co WLL, a subsidiary of DFS Aviation Services.



Yannick Beyer, Sales director, Frequentis DFS Aerosense

Yannick joined the DFS Group in 2012 as a Consultant for international ATM projects. With a degree

in Aviation Management and a Masters' in Business Administration, he today serves customers from all over the world in ATM topics. Since 2020 Yannick is Director Sales at Frequentis DFS Aerosense.

FREQUENTIS DFS AERONSENSE

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

Frequentis contributes the technologies, as well as expertise in developing customised remote tower systems, and its worldwide network of locally represented subsidiaries that can implement remote towers globally. DFS Aviation Services contributes its operational air traffic management experience in consulting, validation, transition and training, as well as the deep operational experience gained through developing its own remote tower solution.

For more information, visit www.aerosense.solutions