FREQUENTIS
FOR A SAFER WORLD

Digital tower
Enhancing military air traffic control

Increased situational awareness
Static and deployable solution
Optimal protection for operators

Defence

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Ensure safe air traffic control for all missions

Military air traffic management (ATM) must to be modernised to meet new challenges: military flight operations in limited visibility, the vulnerability of deployed / mobile ATC towers and the challenges of increasing unmanned traffic (UAS) traffic such as non-cooperative drones. In addition, air forces need to embrace innovations driven by increased automation, connectivity and data fusion to solve technical and staffing challenges.

Addressing military needs

A digital tower provides technical opportunities to increase situational awareness. With the addition of vision enhancement and data fusion, a conventional military tower becomes a full digital solution. Furthermore, a remote solution replicates the view from the tower t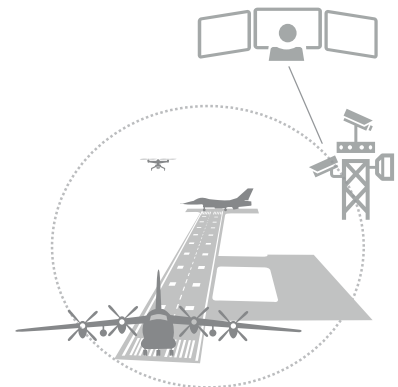o support ATC services between different locations. It also adds new operational capabilities and increases safety for ATCOs in deployed scenarios. Operational safety and security are massively improved for various types of missions and military use cases.
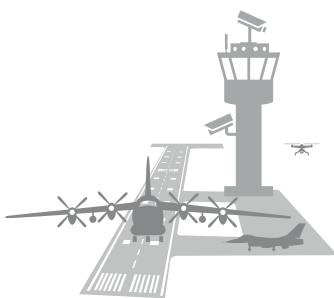
Vision enhancement
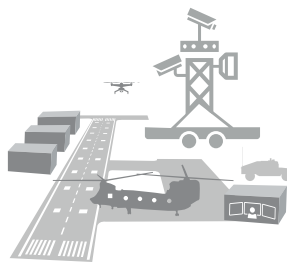
Deployable operations

Remote operations

Enhanced digital tower

The success of training and flight operations is an important factor for any Air Force. By integrating and harmonising all available data into the controller working position, ATC organisations can increase situational awareness as well as enhancing flight safety. This approach enables the fusion of individual and isolated systems into an integrated working position, empowering ATCOs to focus on their primary tasks while reducing stress levels. In addition, selected data can be shared seamlessly with other stakeholders to ensure consistency in information.

Deployable digital tower

Crisis and wartime scenarios require deployable air traffic control to fulfil military missions. In such scenarios, it is vital to protect ATCOs, which can be achieved by controlling air traffic from a safe environment. Positioning control rooms in protected camps while placing sensors and cameras directly next to the runway delivers the benefits of digital tower technology even under harsh environmental conditions.

Remote digital tower

Centralised locations can provide military air traffic control in times of limited or reduced traffic. A remote digital tower replicates the view from the tower to support ATC services for remote locations, thus improving operations and enhancing safety. The major benefits for remote digital tower solutions are more features for improved capabilities with reduced costs for installation and maintenance.

Improved safety and mission success

Secure your assets and maximise the impact of your team's efforts in complex missions by using flexible and scalable digital tower technology to accomplish tasks. A standardised software platform combined with selected sensors provides a tailored solution while meeting regulatory requirements and standards.

Reducing challenges at home and abroad

The Frequentis digital tower solution enables military users with different needs to improve their services and ensure mission success. From domestic to foreign use, this solution increases situational awareness, improves flight safety and at the same time protects operators from potential harm in crisis areas. Separating cameras and sensors from the control room enables numerous opportunities to increase mission support and reduce risks at the same time. Advanced sensor technology in combination with sophisticated video processing and tracking capabilities creates data feeds which can be used beyond ATC in base and technical operations.

Maximum performance tailored to individual military needs

Advanced vision for military ATC

Since not everybody in military aviation needs to move from conventional ATC to centralised services, Frequentis offers a wide range of digital vision tools to optimise your existing ATC tower. Digital enhanced vision includes the use of pan-tilt-zoom (PTZ) cameras to replace binoculars or the use of small visual panoramas to reduce blind spot areas and isolated single camera views.

Deployable ATC solution

Especially in war and crisis scenarios, protecting controllers is of utmost importance to support mission success. The Frequentis deployable digital tower solution combines proven sensor technology, software and network features for foreign missions, increasing situational awareness and at the same time enabling traffic to be controlled from within a protected environment.

Remote and centralised ATC

Meeting the need for centralised and sustained services, the Frequentis digital tower solution provides a perfect baseline to control airbase air traffic from a different location. State-of-the-art network tools enable remote use of sensor data even in areas with reduced and unstable bandwidth. This enables military users to provide uninterrupted 24/7 ATC service.

Deployed digital tower solution concept

Wherever a military mission requires air support, critical infrastructure needs to be set up and protected. A deployable digital tower supports both requirements. The transportable concept enables military forces to move high-end technology from A to B and deploy it in the shortest possible time. Furthermore, the concept ensures safety for staff and air traffic as well as security and efficiency for their mission by providing controller working positions in a protected environment.

Advanced vision at conventional towers

The human eye cannot observe everything at the same time. Therefore, controllers today rely on cameras for support. Advanced vision meets the operational and maintenance requirements of military ATC towers, backed by the highest safety and performance standards. The ability to integrate the solution into an existing tower ensures enhanced situational awareness while preserving the existing procedures and workflows.

Digital tower – worldwide success

The Frequentis digital tower solution benefits from our extensive experience in vision enhancement and our commitment to mission-critical ATM and communication solutions for military users. We take the fulfilment of user needs seriously and they guide our development on a day-to-day basis. Frequentis is actively driving the evolution of image-processing and remote-tower solutions across the world through involvement in major research programs, such as the Fraunhofer Institute and SESAR, and by driving standardisation, e.g. via the EUROCAE working group.

US Department of Defense (DoD), first military remote tower

Frequentis will install two fixed-base systems and two deployable systems for the US Airforce and other DoD agencies. By enabling the provision of military ATC services on demand and remotely, Remote Deployable Tower (RDT) will cut the risk to controllers and infrastructure, while reducing capital investment and allowing for the optimisation of available resources. RDT technology provides military ATC with the resilient situational awareness that the DoD demands, while keeping controllers out of harm's way in safe and secure environments.

Brazilian Air Force, Santa Cruz Air Base

Frequentis installed the smart-VISION solution at Santa Cruz airbase in Brazil to enhance the way air traffic is monitored and managed. The project is the first of its kind in South America to provide remote military air traffic control services using digital tower technology. The solution is made up of high-resolution 360° panorama view and high-performance pan-tilt-zoom (PTZ) cameras located around the airbase. Camera images are fed back to a video wall in the remote tower facility, specially designed to house the smartVISION system and its two integrated controller working positions.

Deutsche Flugsicherung (DFS), various German airports

Saarbrucken airport is equipped with remote tower technology, managing approximately 15,000 air traffic movements per year. 360° visual and IR cameras provide a seamless panorama view, supported by high-performance PTZ cameras with visual and IR sensors. Advanced video tracking allows the detection and tagging of IFR and VFR flights and vehicles, while surveillance information increases situational awareness. The airports of Saarbrucken, Dresden and Erfurt will be controlled from the remote tower centre in Leipzig.

Digital tower product portfolio

→ smartVISION visualisation and surveillance
→ smartTOOLS information display and control
→ smartSTRIPS flight data handling
→ Secure RED/BLACK voice communcation
→ QUADRANT ADS-B multilateration
→ PRISMA approach automation solution

Related solutions and extensions

→ Remote digital tower
→ Deployable digital tower
→ Advanced digital tower
→ Mission-critical network performance
→ UTM and counter UAS solutions

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