Remote Tower Control

An innovative solution for the provision of aerodrome control services

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Overview

With its Remote Tower Control (RTC) project, DFS aims to cut costs in the long term by using new technologies and procedures and by optimizing the number of staff (i.e. increase productivity):

- Reducing costs in the provision of aerodrome control services by using human resources more efficiently and pooling operational, technical and administrative support functions.

- Reducing operating and maintenance costs by using uniform infrastructure and harmonizing the ATM technology for the aerodrome control towers to be relocated.

- Reducing staff costs in the long term by optimising the operational staff scheduling based on the further development from the single to the multiple remote approach.
Functionality

- Location-independent provision of aerodrome control services with a camera surveillance and control system (out of the window view, OTW).

- Create a dedicated "remote tower" licence group for the RTC airports.

- Integration of the Clearance-Delivery-Function at one working position for all aerodromes.

DFS Project, Remote Tower Control
06.03.2018
Challenges and success factors

- Proof of compliance of the RTC project with EU regulations and ICAO requirements
- Provision of the necessary infrastructure and technology
- Use of new technologies and procedures
- Change of paradigm in the provision of aerodrome control services → Cultural change for air traffic controllers
## Operational/technical synergistic effects

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<tr>
<th>Operational</th>
<th>Technical</th>
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<tr>
<td>Grouping of clearance delivery function and supervisor role across all locations</td>
<td>Use of existing systems at the Remote Tower Centre for all locations to be relocated (including TWR Leipzig)</td>
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<td>Fewer resources needed to cater for breaks and night shifts and easier compensation of staff absences</td>
<td>Lower local maintenance expenditures (spaces + costs + resources)</td>
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<td>Harmonisation of the deployment of resources for all RTC units by means of the cross training for all units.</td>
<td>Higher situational awareness in adverse weather conditions and at night</td>
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<td>Central maintenance services, including better upkeep of proficiency</td>
<td>Use of state-of-the-art technologies to increase situational awareness, e.g. with regard to bird strike or distance measuring</td>
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General information
Tender process

Main requirements were

1. Provison of aerodrome control services with the new technology without any impact on airspace users.

2. No specific requirements regarding the technical solution → Goal of this requirement was to asses state of the art technology like infrared- and/or HD-cameras.

3. Using specific aspects of the competitiveness between potential suppliers.

4. To be in line with the European public procurement law (fair and non-discriminatory).
Result of the tender process

After an extensive tender process, DFS selects remote tower technology by Frequentis. Within the next months, the solution will be validated and certified for operations.

**Validation phase in Saarbrücken (SCN) → Operational and technical validation:**

- Following the selection of an off-the-shelf product, the operational requirements (e.g. use cases from the Manual of Operations for the Air Traffic Services) from the joint validation with the German Aerospace Centre (DLR) made in Erfurt (ERF) will be checked in Saarbrücken (SCN).

- If necessary, the selected off-the-shelf product will be customised to meet the specifications and requirements of DFS.
Conduct and evaluation of a human factors study with 26 DFS tower controllers by the German Aerospace Centre (DLR). The following milestones were reached:

- M1 capacity: Simulation 1 airport (traffic volumes: 12 aircraft per 45 minutes alone, 23 aircraft per 45 minutes with support)
- M2 scope of controller unit endorsements: Simulation: handling of 3 airports + PG remote (complexity, facing north/south, sector family structure, unit endorsement concepts)
- M3: Workshop to work out suggestions for solutions/recommendations

Conclusion:

- The results of the human factors study show that workload and situational awareness are acceptable.
- Suggestions for solutions/recommendations will be included in the further course of the project.
Installations for validation in SCN (1 / 2)

Current controller working position for validations in SCN
Installations for validation in SCN (2 / 2)

Current camera installation for validations in SCN
New Ops room for Remote Tower Centre (1 / 2)

Remote Tower Centre Layout
New Ops room for Remote Tower Centre (2 / 2)

Remote Tower Centre
Thank you for your attention!