

Remote Tower Control (RTC)

An innovative solution for the provision of aerodrome control services

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29 March 2019, Multi Remote Tower Open Day in Langen

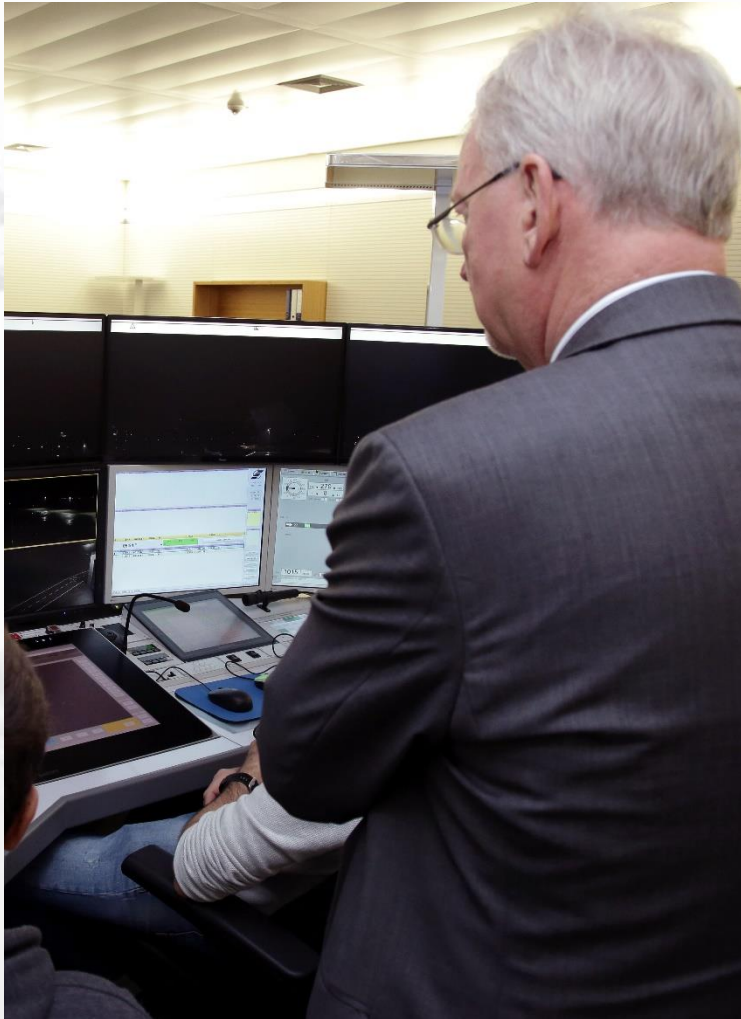


DFS Deutsche Flugsicherung



Co-financed by the European Union
Connecting Europe Facility

Cutover in Leipzig on December 4, 2018



A Luxair regional airliner was the first aircraft controlled from the DFS Remote Tower Control Centre.

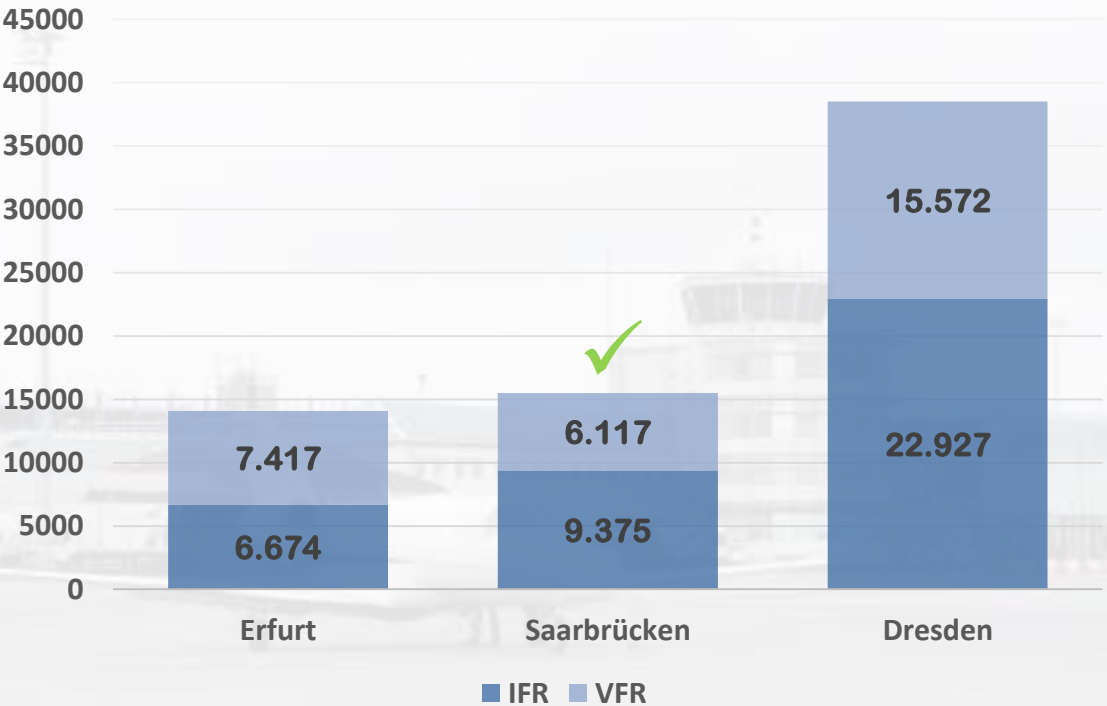
The Bombardier DHC 8-400 from Luxembourg, touched down on the runway in Saarbrücken at 6:51 hrs.

"Our system is an example of how new digital technologies can be used innovatively in the aviation sector. We have established a new standard in the world of remote tower technology," said DFS CEO Klaus-Dieter Scheurle.

DFS RTC Project – Current situation



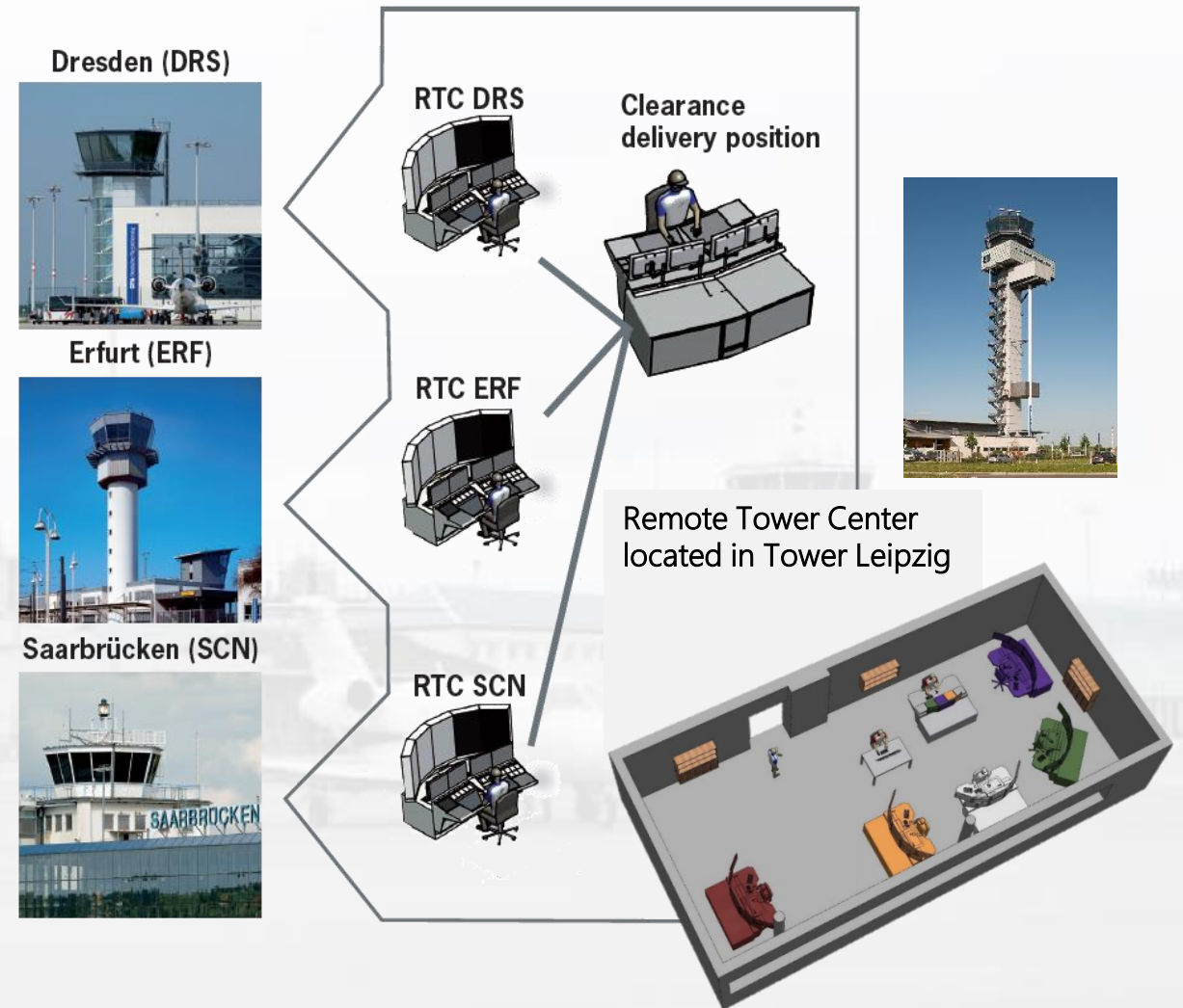
Total Aircraft Movements 2018



RTC Saarbrücken TWR:
Operational since December 4, 2018

DFS RTC Project - Overview

- 3+ air traffic controllers (AIR+GND combined) will provide aerodrome control to 3 RTC airports (Single mode)
- All controllers becoming cross-trained to provide control services for every airport.
- Future integration of 1 Clearance Delivery position for all airports is planned (Multi mode)



From trial to permanent operations



- Intensive simulator and passive shadow training
- 9 days of 2 shifts each with live trials (active shadow)

From trial to permanent operations



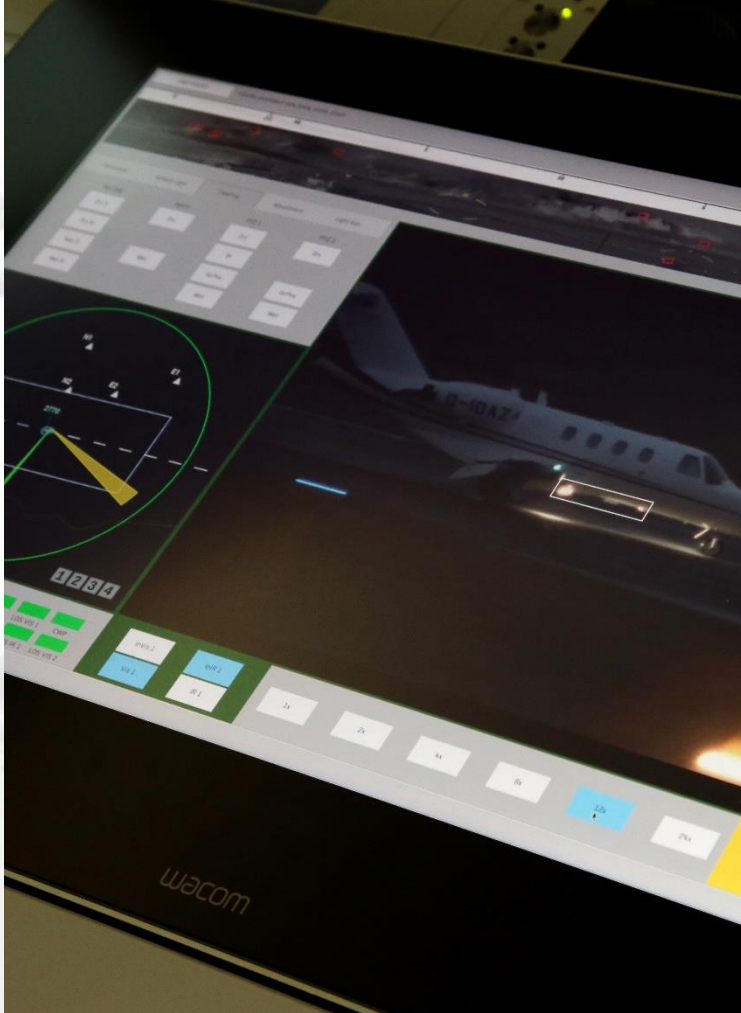
- ✓ All systems and procedures successfully proven and tested, but adjustments were necessary
- ✓ No fallback on conventional tower occurred during live trials
(1 exception: precaution when aircraft in distress)
- ✓ Since December 2018 RTC Leipzig has been operating (without fallback). However, minor issues occurred and were corrected one-by-one
- ✓ Fallback phase ended January 02, 2019

Lessons learned (1)



- CONOPS is key before developing a technical solution
- It is about more than just out-of-the-window view
- It is about the integration of all systems and procedures over long-distance

Lessons learned (2)



- A well timed system freeze before cutover is important
- Stakeholder and change management is absolutely critical
- Do not underestimate integration and operation of third party systems in an RTC scenario (e.g. mobile radio and airfield lighting)

Remote Tower Center in Leipzig – OPS-room



Controller Working Position



Camera tower „OTW“ Saarbrücken (1)



Camera tower „OTW“ Saarbrücken (2)

Height 25 metres



Information:

- old radar tower
- accessible from inside
- concrete blocks

DFS RTC – Technical Highlights



Scaleable and scrollable 360° panorama
Video (Full-HD) and Infrared - synchronized
Stitched and harmonised, high dynamic range

2 Pan-Tilt-Zoom
(PTZ)-
cameras for
tracking (Video+IR)

Picture recognition
& surveillance
based tracking

Flexible CWP
design

Mini ATM HMI to
control the PTZ
(PTZ-MAP)

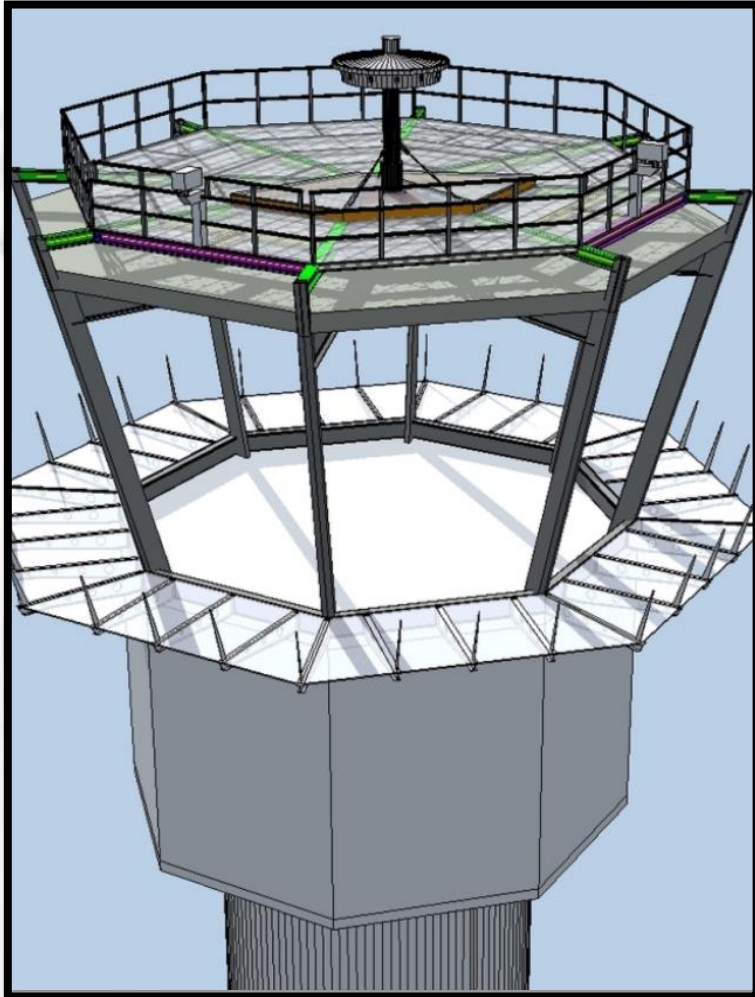
Object detection
(Bounding)

Multi layer
redundancy
concept

Augmented reality
(overlay
information)

Remote Light Gun

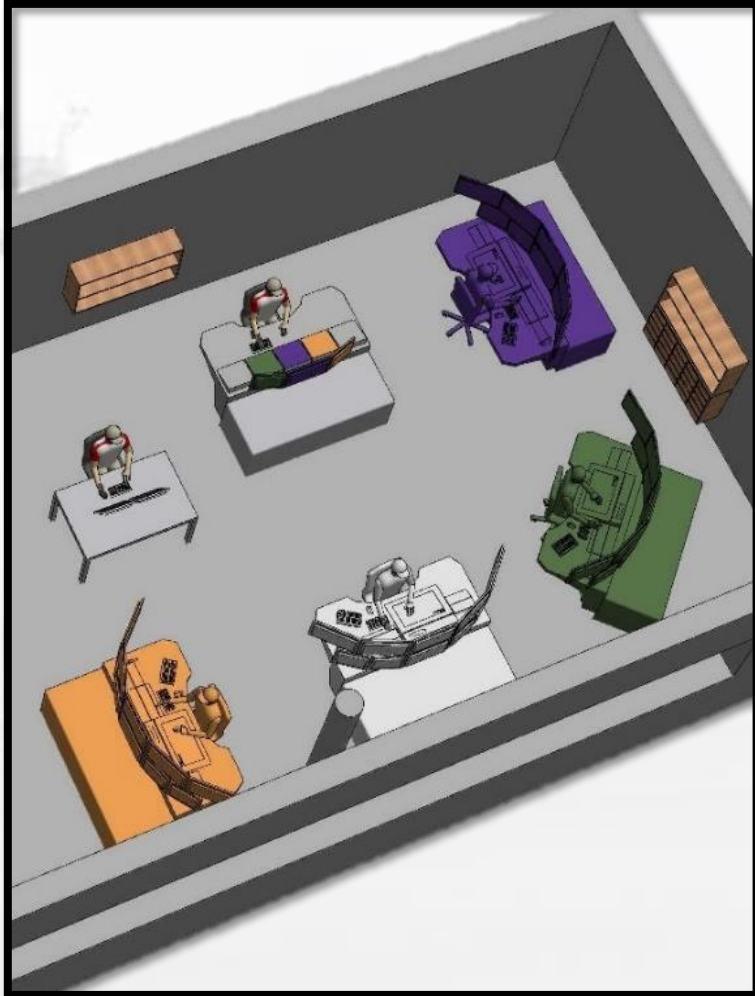
Next Steps (1)



2019 Erfurt (ERF)

- Installation sensor site
- ATCO training incl. simulator sessions
- FAT ERF@ERF (Functional Acceptance Test)
- SAT ERF@LEJ (Site Acceptance Test)

Next Steps (2)



2020

ERF@LEJ

- Technical Cutover (TCO)
- Live Operations (Active Shadow)
- Cutover ERF@LEJ

Next Steps (3)



2020

Dresden (DRS)

- Re-validation due to expected traffic scenario in DRS
- Cutover DRS@LEJ:
18-24 months after cutover ERF@LEJ

Vielen Dank für Ihre Aufmerksamkeit!

Thank you for your attention!

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