

Distant Aerodrome Control Service

From visual observation to instrument control



DFS Deutsche Flugsicherung

Instrument aerodrome control

While pilots flying under instrument flight rules (IFR) primarily rely on their instruments on board, aerodrome controllers today mainly depend on visual observation out of the tower at the airport. This leads to constraints for airport operators and ANSPs because maintaining a working tower is costly and often inefficient, especially in regard to infrastructure and staff. This is true for small- and medium-sized airports but also for large airports that are looking for cheap alternatives to conventional expensive contingency towers. Controlling aerodrome traffic or providing ramp control does not necessarily have to be done at the aerodrome itself. Location and visibility independent control is an innovative concept that allows for greater cost-efficiency as well as for enhanced business continuity.

With its operational and technological expertise in ensuring the safe and punctual flow of air traffic, DFS Deutsche Flugsicherung GmbH has developed an aerodrome control solution that provides these benefits to airport operators and ANSPs. This “distant aerodrome control” allows for location-independent control for aerodromes of all sizes. This includes operational ATC procedures as well as ramp control and contingency operations. After successful trials, Munich Airport plans to implement the DFS distant aerodrome control service in its existing tower environment for its third runway instead of building a new tower.

The approach:

From visual to instrument control

The distant aerodrome control solution of DFS provides the controller with a combination of visual and instrument data showing the air and ground traffic situation at the airport and its vicinity. Data derived from cameras allow for a customised real-time view of the aerodrome. The aerodrome control “tower” can be built independent of the runway. Several airports could be controlled efficiently from one central remote “tower” unit resulting in a significant economic benefit for small- and medium-sized airports. Costs can be drastically reduced by more efficient staffing and lower building expenses. The latter is a consideration for large airports as they can place their air traffic control unit at any location thus saving costs for building a new tower when, for example, runway configurations are changed or contingency operations are planned.

In addition to the augmented vision the DFS solution supports the controller with highly reliable instrument data such as surveillance, weather or flight plan information. In adverse weather conditions, tower controllers today reduce capacity to increase safety margins. The distant aerodrome control solution is able to display the ground situation in great detail. A resulting increase in situational awareness will lead to improved safety, fewer low-visibility procedures and thus more capacity and better punctuality.

Distant aerodrome control is a highly efficient solution in terms of resources and increased safety. Furthermore, using data provided by

systems and sensors makes it possible to change the control paradigm from visual observation to instrument control. This means that controllers could work under instrument control rules (ICR), comparable to IFR for pilots. ICR procedures help maintain capacity despite adverse visibility and, at the same time, pave the way for future automation in aerodrome control.

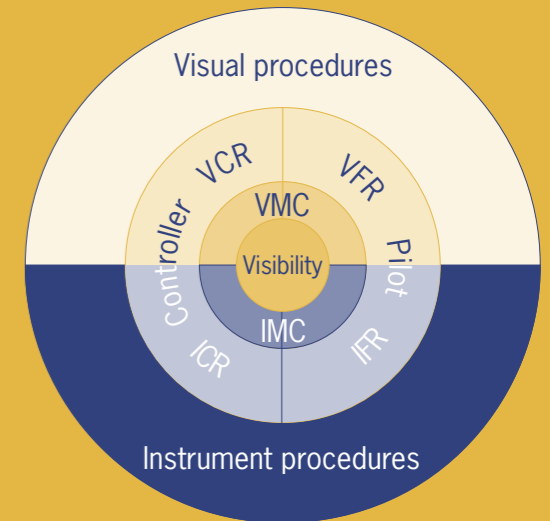
A new working environment for controllers

Expertise and experience from several projects have been consolidated in creating the innovative controller working environment for distant control. With the expedient and intelligent linkage of an augmented sight facility with instrument-based data the console can meet the targets and operational requirements of both visual control rules (VCR) as well as ICR procedures. The digital environment provides visual control which replaces the direct out-of-window view. High-resolution cameras with automatic tracking function enable real-time views of the airport displayed on two 46 inch monitors. It is possible to readily switch between air and ground situation display. The DFS advanced sensor technology allows the controller to easily zoom in on the ground situation;

several zoom windows can be displayed simultaneously. Reliable and detailed information ranging from approaching aircraft to the runway situation can be supplied at the same time. The ground situation display shows runways, buildings and the lighting system in great detail. Besides the augmented vision, the controller working position consists of the traditional control and maintenance tools as found in a conventional tower.

Your benefits at a glance

- Cost-efficiency
- Solution for different operational environments (distant ATC, ramp control, contingency tower control)
- Enables both visual and instrument-based control
- Automation of non-safety-critical functions
- Harmonisation of pilot and controller operation mode



Visual and instrument control rules



Evolution of Controller Working Environment

Control by direct visual observation

On site

Control by augmented sight
Visual control rules (VCR)

Location independent

Control by Instruments
Instrument control rules (ICR)

Location and visibility independent

Imprint

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