

SESAR Solution

Single Airport Remote Tower

Contextual Note

Purpose:

This contextual note is a vehicle to summarize the results stemming from Release delivery activities. It provides a summary of the SESAR Solution in terms of results of the Validation exercises and achievements as well as additional activities to be conducted before or as part of deployment.

This contextual note is part of a package prepared for each SESAR Solution for which exercise results are conclusive and sufficient to support a decision for industrialisation. It complements a technical data pack comprising available deliverables required for further industrialization.

In addition, adequate consideration of the recommendations on the regulatory and standardisation frameworks and the regulatory and certification activities is required. These recommendations are detailed in the 'SESAR Solution Regulatory Overview – Single Airport Remote Tower' included in the technical data pack.

Improvement in ATM Operations

The Remote Tower concept enables Air Traffic Control services (ATS) and Aerodrome Flight Information Services (AFIS) to be provided at aerodromes where such services are either currently unavailable, or where it is difficult or too expensive to implement and staff a conventional manned facility..

The main change to today's current operations is that the ATCO or AFISO will no longer be located at the aerodrome. They will be re-located to a Remote Tower Centre. The aerodrome view will be captured and reproduced in the RTF/RTC. The visual reproduction of the aerodrome view can be overlain with information from additional sources and enhanced through technology for use in all visibility conditions. In addition, the controllers will have access to all necessary remote controls, including communications, lighting and traffic light controls, and access to flight and meteorological information.

Operational Improvements – OI Steps

SDM-0201 Remotely Provided ATS for Single Aerodromes

The Aerodrome Control Service or Aerodrome Flight Information Service for a specific aerodrome is provided from a remote location, i.e. not from a control tower local to the aerodrome. The ATCO (or AFISO) in this facility performs the remote ATS for the concerned aerodrome. The main target for this concept is small rural airports, which today are struggling with low business margins.

Background and validation process

This SESAR Solution has been validated with three exercises EXE-06.09.03-VP-056 & 057 & 058 in Shadow mode. The exercises validated the Remote Provision of Air Traffic Services (ATS) to a Single Aerodrome. The main focus of the concept, and therefore the validation was the assessment of human performance, safety, capacity and cost effectiveness.

Results and performance achievements

The main benefit is Cost Effectiveness. Remote ATS facilities will be cheaper to maintain, able to operate for longer periods and enable lower staffing costs (through centralised resource pools) and training/re-training costs, by large scale effects. It will also significantly reduce the requirement to operate and maintain actual control tower buildings and infrastructure, leading to further cost savings, as well as eliminating the need to build replacement towers. Minimising economic losses includes losses of revenues, for example airport taxes and charges, operating costs such as staff and compensation, reduced losses for the customers of airspace users and reduced costs for the local, regional or European economy.

The main findings from the activity showed that the “Single Remote Tower” concept is operationally feasible and acceptable, this being dependant on the implementation of advanced visual features and an upgraded/enhanced visual reproduction. Providing ATS remotely to single aerodromes is a safe concept, and it has the potential to reduce human error due to the addition of technical enablers, which increase situational awareness. Human performance results indicate that overall the systems were enabling participants to perform to high levels.

Additional activities

The SESAR validation activities for provision of ATS and AFIS at Single Remote Tower are complete.

Actors involved

Actors involved in operations are the same as for regular operations, i.e:

- Airport operators
- Tower Controllers
- Aerodrome Flight Information Service Officers (AFISO)

Impact on A/C system

None

Impact on ground systems

Airport to be remotely operated must be equipped with Video/IT devices such as video cameras, infra-red cameras, microphones, telecom line to Remote Tower Centre so that in the Remote Tower Centre an “out of the window like” image of the airport vicinity can be displayed to controllers. In addition, all the tools and facilities available to a tower controller will also need to be remotely

controlled, including, *inter alia*, ground-ground and ground-air communications, traffic light controls, aerodrome lighting controls.

Consideration of Regulatory Framework

It is foreseen that the use of remote towers will have some impact in the current regulatory and standardization framework for the provision of ATC services in aerodromes, in particular in what specific ratings, local endorsements and continuous training of ATCOs is concerned. These needs should be established in more detail. Nevertheless, it is not foreseen the elimination of different controller ratings for different aerodromes. It is not foreseen the creation of a new license either.

Consideration of Standardisation Framework

It is foreseen that the introduction of new technologies associated to image presentation will have some impact in the current standardization framework, covering aspects such as depth of perception, contrast & brightness, screen layout, automation of camera movements, avoidance of blind areas, procedures in case of image integrity failure.

Considerations of Regulatory Oversight and Certification Activities

- The local safety argument should aim at probing that the impact on the flight operations is minimal for IFR traffic.
- The local airport characteristics require a level of knowledge that should complement the generic training activities for remote service provision.
- The integration of the Remote Tower with the rest of existing systems and equipment's should be subject to a local safety argument.
- More specifically, the cost of introduction of the technology needed has to be assessed in a local CBA dependant on existing systems.

Concept Option reference (OFA and Validation Exercise titles)

OFA 06.03.01 – Remote Tower

EXE-06.09.03-VP-056 & 057 & 058