

# ED Decision 2019/004/R in Detail

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# Background

→ RMT.0624 initiated in 2014

→ ***Phase 1, 2014 – 2015***

→ Scope limited to single mode & low density aerodromes

→ ***Phase 2, 2016 - 2018***

→ **ED Decision 2019/004/R issued on 19 February 2019**

→ Annex I. – Guidance Material on ‘Remote Aerodrome Air Traffic Services (ATS)’

→ Annex II. – AMC&GM to the ATCO training and licensing Regulation (2015/340)

# GM Structure

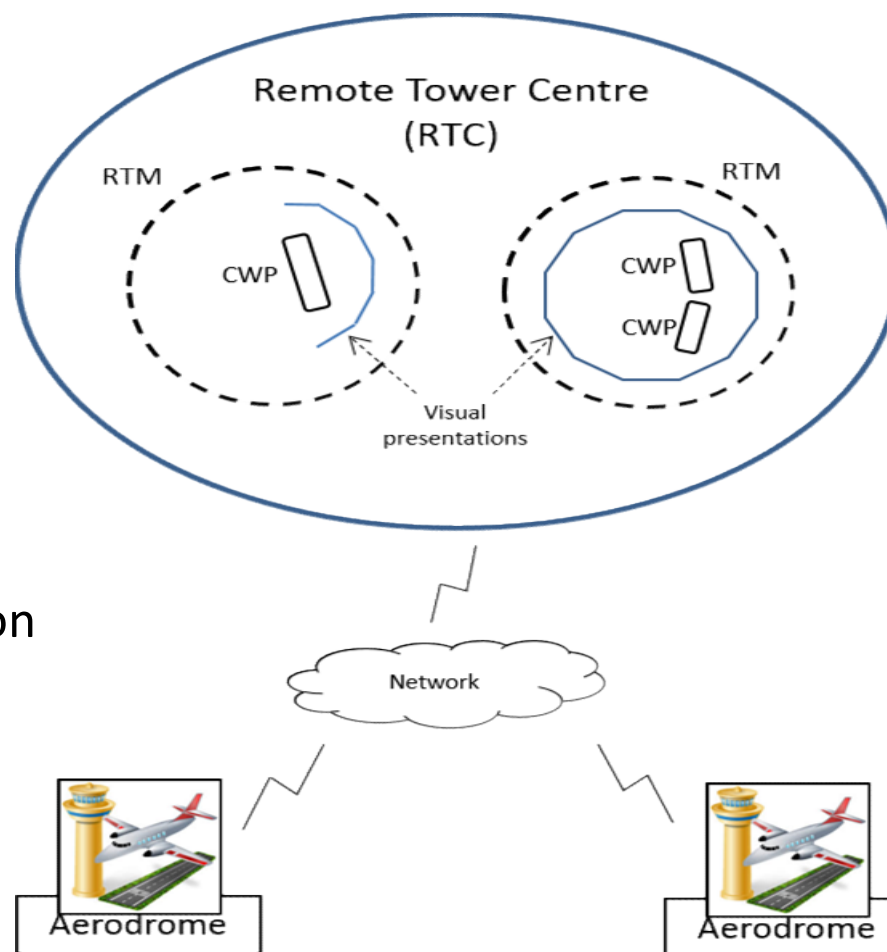
- Introduction/Definitions
- The remote aerodrome ATS concept and modes of operation
  - Single mode of Operation
  - Multiple Mode of Operation
- Operational context/applications and related recommendations
- Operational and system considerations
- Management of change
- Aerodrome-related aspects
- Possible impact on airspace users
- Aeronautical information products and services
- Qualification and training considerations
- References/Appendices

# Concept and Modes of Operation

- Providing a general overview of the concept of remote aerodrome ATS with a short historical retrospect and by introducing:
  - its main operational modes: **single vs. multiple**;
  - remote tower centre operations; and
  - technical enablers that support remote aerodrome ATS.
- Listing also possible operational applications.

*The concept of remote aerodrome ATS enables provision of aerodrome ATS from locations/facilities without direct visual observation. Instead, remote provision of aerodrome ATS is based on a view of the aerodrome and its vicinity through means of technology.*

# High Level Overview



- RTM – Remote Tower Module
- CWP – Controller Working Position

# Single Mode of Operation

- The single mode of operation refers to the provision of ATS to one aerodrome at a time, from a single remote tower module (RTM)
- Possible (not exhaustive) operational applications:
  - ATS to one aerodrome from one RTM
  - ATS to more than one aerodrome from one RTM but **not simultaneously**
  - ATS during planned or unplanned contingency situations
  - ATS to distant areas of an aerodrome from which the view from an existing aerodrome tower is inadequate or non-existent

# Multiple Mode of Operation

- The multiple mode of operation refers to the provision of ATS to more than one aerodrome at a time, i.e. **simultaneous service provision, from a single RTM**
- Possible (not exhaustive) operational applications:
  - ATS to more than one aerodrome simultaneously from one RTM
  - ATS to one (or more) remote aerodrome(s) from a conventional tower cabin, in combination with the (simultaneous) provision of ATS to the local aerodrome
  - Service to a specific area or a specific function for more than one aerodrome (e.g. clearance delivery)

# Operational context/applications and related recommendations

- SESAR JU programme definitions
  - ‘basic and advanced features’ – division of technical enablers to validate different equipage levels
  - ‘low-density aerodromes’ – aerodromes with typically a low capacity utilisation, mostly single aircraft movement operations, rarely reaching or exceeding two simultaneous movements
  - ‘medium-density aerodromes’ – aerodromes with typically a medium capacity utilisation, simultaneous aircraft movement operations can be expected, frequently experiencing more than one movement simultaneously



# Single Mode of Operation Recommendations

## Chapter

- Traffic volume/density and traffic complexity
- Characteristics of the aerodrome layout
- Aerodrome switching under single mode of operation
- Remote tower as backup facility

# Multiple Mode Recommendations Chapter

- Number and size of aerodromes in multiple mode of operation
- Simultaneous aircraft movements on different aerodromes
- Aerodrome switching/merging/transferring/closing under multiple mode of operation
- Service provision in multiple mode of operation
- Recommended implementation and transition steps
- Possible developments of multiple mode of operation

# Common Aspects in Both Single and Multiple Mode of Operation

- Airspace and traffic circuit characteristics
- Traffic characteristics
- Aerodrome environment
- Local weather characteristics
- ATCO/AFISO's roles

# Operational and System Considerations

- Remote aerodrome ATS procedural considerations
  - Formal interfaces with all stakeholders should be re-evaluated
  - Task sharing between ATS provider and aerodrome operator
  - Before initiating (daily) service provision ATCO/AFISO should be able to verify the status of the aerodrome
  - Different methods/procedures between aerodromes in case of multiple mode of operation
  - Standardisation of systems and equipment
  - Staff flexibility/transfer
  - Service transfer/assuming responsibility
  - Training

# Visual Surveillance System 1

- Core element of remote provision of ATS to aerodromes and typically consists of two main operational parts:
  - the 'visual presentation' replacing the OTW view of a conventional tower
    - Panoramic view
    - Hot spot/gap filler
    - Video wall
  - 'binocular functionality' emulating traditional binoculars
    - Pan-Tilt-Zoom (PTZ) camera/function

# Visual Surveillance System 2

→ Primary/direct regulatory requirements

→ Doc 4444 (PANS-ATM) Amendment 8:

*‘Aerodrome controllers shall maintain a **continuous watch** on all flight operations on and in the vicinity of an aerodrome as well as vehicles and personnel on the manoeuvring area. Watch shall be maintained **by visual observation**, augmented when available by an ATS surveillance system.’*

*‘Visual observation shall be achieved through **direct** out-of-the-window **observation**, or through indirect observation utilizing a **visual surveillance system** which is specifically approved for the purpose by the appropriate ATS authority.’*

# Visual Surveillance System 3

→ Primary/direct regulatory requirements (cont.)

→ Doc 9426 (ATS Planning Manual)

*The surveillance system should enable the ATCO/AFISO to survey those portions of the aerodrome and its vicinity over which they exercise ATS and should enable them within their area of responsibility, to see:*

- flight operations (aircraft) in the vicinity of the aerodrome;*
- flight operations (aircraft) on the aerodrome;*
- vehicles and personnel on the manoeuvring area.*

# Visual Surveillance System 4

- Indirect regulatory requirements (Doc. 4444)
  - Detection of abnormal configuration or condition of aircraft
  - Obstructions on the manoeuvring area
  - Significant meteorological conditions

The implementation of remote provision of aerodrome ATS should consider, as part of the local safety assessment, whether and to what extent these indirect regulatory requirements should form **operational requirements** driving the **technical requirements** for the implementation.



# Visual Surveillance System 5

→ To be considered:

→ Camera siting

→ Functional aspects, like:

→ Visual presentation setup and layout

→ Binocular-functionality-related functional requirements

→ Video latency

→ Video update rate

→ Differences in daylight/darkness (night) preception

→ Image quality

→ Protection against natural external influences

→ Failure detection

# Visual Surveillance System 6

- Technical enablers for increased situational awareness
  - Additional sensors
  - Utilising non-visible (IR) spectrum
  - Digitally overlaid information on visual presentation (switchable)
    - Visual/radar tracks
    - Labels
    - Outlines of aerodrome features
    - MET info
    - Geographic/AIP related
    - Etc.

# Other Technical Enablers

- Signalling lamp (Annex 14 requirement)
- Aerodrome sound
- Communications
  - Aeronautical mobile service
  - Aeronautical fixed service
  - Surface movement control service
- Voice and data recording

## Other Technical Enablers (cont.)

- Management of aerodrome assets
  - Ground lights
  - Nav aids
  - Other (e.g. traffic lights, distress alarms, etc.)
- Meteorological information (including ATIS/VOLMET)
- ATS systems functions
  - A-SMGCS (including MLAT, SMR, FDPS, etc.)
  - CDM
  - AFTN

# Additional Considerations for Multiple Mode

- Handling of abnormal and emergency situations
- Communication aspects
- RTM design
- Visual presentation
- Other ATS systems/functions
- Work environment

# Management of Change

- Currently Regulation (EU) No 1035/2011
- From 2<sup>nd</sup> January 2020 Regulation (EU) 2017/373
  - (1035/2011 is repealed)
- Safety assessment
  - No special treatment for remote tower
- Human factors assessment
  - Several aspect shall be considered
  - Special care shall be taken in case of multiple mode of operation
- Transition/implementation plan
- Information- and cybersecurity

# Management of Change (cont.)

- Contingency planning and degraded mode procedures
  - Regulation (EU) 2018/1139 (Basic Regulation)
  - Multiple mode of operation shall be treated with special care
- System constituents (certification)
  - Regulation (EU) 2018/1139
  - Parts of repealed Regulation (EU) 552/2004 (Interoperability Regulation) are still in force

# Aerodrome-related Aspects

## → Certification

- Documentation
- Aerodrome manual
- LOA between ATM/ATS and aerodrome providers

## → Operational aspects

- Coordination in failure mode
- Aerodrome safeguarding
- Maintenance
- Power supply
- Camera service for apron management (if done by aerodrome provider)



# Impact on Airspace Users

- In principle, and as confirmed by recent operational experiences and validation activities, remote aerodrome ATS should not negatively impact airspace users.
- ATS provider is required to 'provide its services in an open and transparent manner'
- Airspace users are informed through the aeronautical information products and services (AIP)

# Qualification and Training Considerations

→ Regulation (EU) 1035/2011 (from 2nd January 2020.: 2017/373)

*‘Air navigation service providers shall employ appropriately skilled personnel to ensure the provision of air navigation services in a safe, efficient, continuous and sustainable manner. In this context, they shall establish policies for the recruitment and training of personnel’*

→ ATCO: Regulation (EU) 2015/340

→ AFISO: Member State responsibility

→ ATSEP: Regulation (EU) No 1035/2011 and 139/2014 apply

# Related Documents

- EU Regulations
- EASA ED Decisions/Opinions
- ICAO provisions/publications
- Technical standards (EUROCAE)
- SESAR JU deliverables/publications
- Other publications (e.g. EUROCONTROL)

# Appendices

- Appendix 1: Checklist for the implementation of remote aerodrome ATS
- Appendix 2: List of operational hazards for ATC services
- Appendix 3: List of operational hazards for AFIS
- Appendix 4: SESAR division of basic and advanced features
- Appendix 5: List of acronyms

## Annex II. To Decision 2019/004/R AMC&GM to Part ATCO

- AMC1 ATCO.B.020(a) Unit endorsements
  - GM1 to AMC1 ATCO.B.020(a) Unit endorsements
- GM1 ATCO.D.055(a) Unit training plan
- GM3 ATCO.D.060(c) Unit endorsement course
  - TRAINING FOR AIR TRAFFIC CONTROLLERS PROVIDING REMOTE AERODROME AIR TRAFFIC SERVICES
- GM4 ATCO.D.060(c) Unit endorsement course
  - MULTIPLE MODE OF OPERATION
- GM1 ATCO.D.080(b) Refresher training
- GM1 ATCO.D.085 Conversion training

# Training Organisations Aspect

- Remote Tower ATCO Training is a Unit Endorsement
- New approach compared to 2015/015/R
  - Training content specified in AMC/GM
  - vs.
  - Training content to be specified by Training Organistaion with NSA approval

# Thank you for your attention!

Questions?

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