



European Aviation Safety Agency  
**Terms of Reference**  
for a rulemaking task

## Technical requirements for remote tower operations

RMT.0624 — ISSUE 1 — 9.12.2014

<b>Applicability</b>		<b>Process map</b>	
Affected regulations and decisions:	Commission Implementing Regulations (EU) Nos 1034/2011, 1035/2011 and 923/2012); Commission Regulations (EU) Nos 805/2011 and 139/2014.	Concept Paper:	No
Affected stakeholders:	ANS providers; aerodrome operators; competent authorities; ATM system developers.	Rulemaking group:	Yes
Driver/origin:	Legal obligation (SESAR); safety; proportionality and cost-effectiveness; technological developments.	RIA type:	Full
Reference:	N/A	Technical consultation during NPA drafting:	TBD
		Publication date of the NPA:	2015/Q2
		Duration of NPA consultation:	1.5 months
		Review group:	Yes
		Focussed consultation:	TBD
		Publication date of the Opinion:	TBD
		Publication date of the Decision:	TBD



## 1. Issue and reasoning for regulatory change

The development and introduction of new technologies permits the provision of aerodrome Air Traffic Services (ATS) from a remote location either in the form of AFIS or ATC. This concept also provides the possibility to use the remote facility for contingency purposes. The direct visual observation by personnel physically present at the aerodrome would be replaced by cameras and sensors reproducing the 'out-the-window' (OTW) view, adding information from other sources (when available) such as radar, multilateration or other positioning and surveillance systems providing the positions of moving objects within the aerodrome movement area and its vicinity. The latest trials and validation activities have demonstrated the viability of the concept. The approach followed by some stakeholders suggests, as is also validated within the SESAR programme, that the implementation of the concept of remote provision of aerodrome ATS will permit optimised operations with aircraft, vehicles and persons operating within the airspace and/or the areas of the aerodrome.

The increasing number of initiatives taken worldwide to provide remote aerodrome ATS have been duly noted also by ICAO, as indicated in the ICAO Global Air Navigation Plan (Doc 9750) and in the Working Document for the 'Aviation System Block Upgrades' of 28 March 2013 (Section B1-RATS Remotely Operated Aerodrome Control).

The biggest challenge is to ensure that ATS are provided to aircraft with at least the same level of safety as if the ATS are provided locally, and that operations and airspace users are not negatively affected by the new concept.

The new concept shall support the functions, technical enablers and responsibilities associated with the aerodrome control service, aerodrome flight information services and alert services to be carried out by air traffic controllers (ATCOs) and aerodrome flight information officers (AFISOs) respectively.

According to applicable EU legislation, the implementation of remote aerodrome ATS shall fulfil the requirements on the change to the ATM functional system, following the provisions of:

- Regulation (EU) No 1034/2011<sup>1</sup>, and more specifically its Article 9 on the safety oversight of changes to functional systems, and its Article 10 on the review procedure of the proposed changes; and
- Regulation (EU) No 1035/2011<sup>2</sup>, and more specifically paragraph 3.2 'Safety requirements for risk assessment and mitigation with regard to changes' of Annex II, where the procedures to assess the change to the ATS provision are regulated.

It is important to note that these requirements are currently under revision by EASA through the rulemaking task RMT.0469 'Requirements for safety assessment of changes to functional systems'.

The implementation of remote aerodrome ATS would presumably affect also the aerodrome operations. Therefore, Regulation (EU) No 139/2014 on aerodrome rules is also considered as relevant.

It is envisaged that without common minimum safety requirements for remote aerodrome ATS, the potential issues could be the following:

<sup>1</sup> Commission Implementing Regulation (EU) No 1034/2011 of 17 October 2011 on safety oversight in air traffic management and air navigation services and amending Regulation (EU) No 691/2010 (OJ L 271, 18.10.2011, p. 15.)

<sup>2</sup> Commission Implementing Regulation (EU) No 1035/2011 of 17 October 2011 laying down common requirements for the provision of air navigation services and amending Regulations (EC) No 482/2008 and (EU) No 691/2010 (OJ L 271, 18.10.2011, p. 23).



- The lack of consistency in the specific parameters to be applied in the risk assessment and mitigation of the remote aerodrome ATS concept implementation at local level could negatively impact safety.
- The lack of minimum technical requirements could negatively impact both the safety and the economic development of this new concept.
- The lack of minimum operational and training requirements could negatively impact safety.
- The lack of a consistent approach to ensure the continuity of those tasks currently performed by ATCOs and AFISOs that will no longer be carried out by these personnel due to the remote location could negatively impact safety.

## 2. Objectives

Following a phased approach, the first task would be to develop the necessary guidance and possibly means of compliance to ensure that aerodrome ATS provided from a remote location meet the applicable EU and ICAO requirements and ensure at least the same level of safety as when provided from a control tower, physically located at the aerodrome. The visual reproduction and the system support shall enable visualisation and environmental reproduction of the areas of responsibility of the ATS to provide a level of safety at least equivalent to those provided from a control tower. The implementation of the concept would be based on the premise of a change in the ATM functional system.

The following specific objectives of the remote aerodrome ATS concept implementation are envisaged and established here per area of issues (and may also be addressed following a phased approach):

- Establishment of the essential elements, such as complexity, traffic density, airspace design, etc., to be part of the safety assessment (to be conducted before the implementation of the change).
- New technology:
  - implementation of safe, redundant/resilient and interoperable equipment;
  - development of a cost-efficient validation/certification, considering one or more technical specifications, based on industry standards, if available;
  - provision of a regulatory framework for economic and competitive development.
- Operations:
  - ensuring safe operations;
  - ensuring cost-efficient operations;
  - achievement, as a long-term objective, of the mobility of staff trained in this new technology;
  - ensuring a smooth transition from current interface tasks to future interfaces, mainly with aerodrome operators (for MET observation, runway inspections, etc.).
- Interface with stakeholders:



- ensuring that the current airspace users are not negatively affected in terms of operational/flight procedures, flight schedule, and additional aircraft equipage or operational requirements;
- ATS provision and qualification of personnel
  - ensuring that air traffic service providers are not negatively affected in terms of operational procedures or operational requirements;
  - ensuring that air traffic service provision personnel licensing or qualification requirements are satisfactorily addressed.

After the first phase of the activities, the objectives of the rulemaking task will be reviewed in relation to different operational concepts and taking into consideration the developments achieved and the experience gained in this field.

### 3. Activities

Due to the complexity of the concept, its development should follow a 'phased approach', which would allow to gain experience and to evaluate in more detail the benefits and constraints. These phases could comprise:

- ATS provision to single aerodromes,
- ATS provision to multiple aerodromes,
- contingency situations.

With all these premises, the visual reproduction, which is understood as being a crucial part of the system, may be addressed on a consistent set of requirements, regardless of the type of operation (single, multiple, contingency).

During the development of this Rulemaking Task, the following subtasks are envisaged (which are not meant to be performed in any specific order):

**Subtask a):** Definition of the way the aforementioned phases should be addressed, and definition of the common elements, taking into consideration a total-system approach. The following elements should be considered:

- visual reproduction (including prevention and/or resolution of spurious alarms/images),
- system failures modes
- cyber security
- human factors<sup>3</sup>,
- competence<sup>2</sup>,
- interfaces with other actors and roles (e.g. aerodrome operators),

<sup>3</sup> This element is considered to be affected by the type of operation (single/multiple aerodrome or contingency purposes). This means that the requirements are likely to differ significantly depending on their application.



- airspace users,
- data link,
- pure operational aspects<sup>2</sup>.

**Subtask b):** Participation in the EUROCAE WG-100, whose scope is to develop standards for remote and virtual towers, which are to be widely recognised and taken as reference, encompassing technical systems and related constituents but not focussing on the human aspect (as a first step). Minimum Aviation System Performance Standards (MASPS) applicable only to the visual surveillance function shall be specified in detail, encompassing the whole chain from sensor to display.

As visual reproduction is one of the key elements in the system, it can be addressed regardless of the type of operational scenario that is going to be supported (single aerodrome, multiple aerodromes or contingency purposes).

The EASA work related to this subtask should consist of supporting the EUROCAE WG-100 and recognising the results through one or more technical specifications.

**Subtask c):** Collection of information and analysis through operational experience, validation activities and trials carried out by different Member States and stakeholders in order to apply the experience and positive inputs both to the rulemaking task and to the rulemaking group. In this regard, close collaboration with the relevant SESAR projects is considered essential.

**Subtask d):** Review of existing ICAO documentation, EU legislation and international standards in order to identify the need for amendments to any particular element.

**Subtask e):** Development of Agency measures, as necessary.

## 4. Deliverables

Within the activities under the scope of this rulemaking task, and its different phases, it is planned to draft the following rulemaking deliverables:

The first phase is due to be completed in 2015/Q2, and will include Agency measures, as necessary:

- (a) a Notice of Proposed Amendment (NPA) containing AMC and/or GM to the current applicable regulations, including a Regulatory Impact Assessment (RIA) proportionate to the NPA content;
- (b) a Comment-Response Document (CRD) to the NPA referred to in (a); and
- (c) a Decision including the EASA proposal for AMC/GM, concerning the technical and operational requirements for remote aerodrome ATS.

Deliverables included in the envisaged future phases will be defined when reviewing the objectives of the rulemaking task after its first phase will have been completed.

## 5. Interface issues

The deliverables will ensure consistency with the provisions contained in the following existing regulations:



- Regulation (EU) No 1034/2011;
- Regulation (EU) No 1035/2011;
- Regulation (EU) No 139/2014<sup>4</sup>;
- Regulation (EU) No 923/2012<sup>5</sup> ;
- Regulation (EU) No 805/2011<sup>6</sup>.

The deliverables will also take into account the existing EASA draft rules stemming from:

- RMT.0148 and RMT.0149 on the 'Requirements for ATM/ANS providers and the safety oversight thereof'
- RMT.0464 on the 'Requirements for Air Traffic Services (ATS)'
- RMT.0485 and RMT.0465 on the 'Requirements for apron management services at aerodromes'. RMT.0469 on the 'Assessment of changes to functional systems by service providers in ATM/ANS and the oversight of these changes by competent authorities'.

## 6. Focussed consultation

Focussed consultation may be organised, prior to the publication of the final outcome of the planned rulemaking actions and during the review process thereof. This will be determined during the drafting phase, and may include:

- (a) meetings with stakeholders,
- (b) workshops, and/or
- (c) RAG/TAGs and SSCC consultation (written or meetings).

## 7. Profile and contribution of the rulemaking group

A rulemaking group shall be established to support EASA in the conduct of this RMT.

The rulemaking group:

- shall be composed of approximately 8 to 11 experts representing aviation authorities, ANSPs (ATCOs/AFISOs), system and constituents developers (industry), unions/ATCO professional organisations and airport operators.
- shall hold 2 to 3 meetings within the first half of 2015 and further meetings later on depending on the review of the task objectives.

<sup>4</sup> Commission Regulation (EU) No 139/2014<sup>4</sup> of 12 February 2014 laying down requirements and administrative procedures related to aerodromes pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (OJ L 44, 14.2.2014, p. 1).

<sup>5</sup> Commission Implementing Regulation (EU) No 923/2012<sup>5</sup> of 26 September 2012 laying down the common rules of the air and operational provisions regarding services and procedures in air navigation and amending Implementing Regulation (EU) No 1035/2011 and Regulations (EC) No 1265/2007, (EC) No 1794/2006, (EC) No 730/2006, (EC) No 1033/2006 and (EU) No 255/2010 (OJ L 281, 13.10.2012, p. 1).

<sup>6</sup> Commission Regulation (EU) No 805/2011<sup>6</sup> of 10 August 2011 laying down detailed rules for air traffic controllers' licences and certain certificates pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (OJ L 206, 11.8.2011, p. 21).



The members of the rulemaking group shall have knowledge of and experience in the ATS operational environment, certification standards, ATS systems development and human factor aspects.

## 8. Annex I: Reference documents

### 8.1. Affected regulations

- Regulation (EU) No 805/2011
- Regulation (EU) No 1034/2011
- Regulation (EU) No 1035/2011
- Regulation (EU) No 139/2014
- Regulation (EU) No 923/2012

### 8.2. Affected decisions

n/a

### 8.3. Reference documents

- Regulation (EU) No 805/2011
- ICAO ANNEX 11 'Air Traffic Services'
- ICAO Doc 4444 'Procedures for Air Navigation Services — Air Traffic Management (PANS-ATM)'
- ICAO Doc 9750, 4th Edition, 'Global Air Navigation Plan (GANP)'
- ICAO Working Document for The Aviation System Block Upgrades — 28 March 2013 (section B1-RATS Remotely Operated Aerodrome Control)
- EUROCONTROL Manual for Aerodrome Flight Information System (Edition number 1.0)
- D04 — OSED for Remote Provision of ATS to Aerodromes, including Functional Specification, Edition 00.04.01 (SESAR)
- D08 — 'Remote Provision of ATS to a Single Aerodrome VALR', Edition 00.04.00 (SESAR)
- D03 — 'Remote and Virtual Tower: Rules & Regulations Assessment Report', Edition 00.01.01 (SESAR)
- OFA06.03.01 Remote Tower — Safety Assessment Report for Single Remote Tower, Edition 00.01.00 (SESAR)
- PP 6.9.3 Intermediate HP Assessment Report, Edition 00.01.01 (SESAR)
- Regulation (EC) No 216/2008<sup>7</sup>
- Regulation (EU) No 923/2012
- ICAO Annex 3 on Meteorological Service for International Air Navigation

<sup>7</sup> Regulation (EC) No 216/2008 of the European Parliament and of the Council of 20 February 2008 on common rules in the field of civil aviation and establishing a European Aviation Safety Agency, and repealing Council Directive 91/670/EEC, Regulation (EC) No 1592/2002 and Directive 2004/36/EC (OJ L 79, 19.3.2008, p. 1).



- Subpart D ‘Instruments, Data, Equipment’ of Annex IV to Commission Regulation (EU) No 965/2012<sup>8</sup>
- ICAO Annex 14 ‘Aerodromes Volume I Aerodrome Design and Operations’
- ICAO Annex 14 ‘Aerodromes Volume II Heliports’
- ICAO Doc 9426 ‘Air Traffic Services Planning Manual’
- ICAO Circular 211-AN/128 ‘Aerodrome Flight Information Service’

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<sup>8</sup> Commission Regulation (EU) No 965/2012<sup>8</sup> of 5 October 2012 laying down technical requirements and administrative procedures related to air operations pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (the air operations Regulation) (OJ L 296, 25.10.2012, p. 1).

