



# SESAR Solution Regulatory Overview

## *Enhanced terminal operations with LPV procedures*

### Document information

Document Name	Enhanced terminal operations with LPV procedures
Edition	01.00.00

### **Abstract**

This document contains an overview of the SESAR Solution “Enhanced terminal operations with LPV procedures” documented recommendations from regulatory, standardisation, oversight and certification perspectives resulting from the cooperation with EASA and National Authorities.

Founding members



Avenue de Cortenbergh 100 | B-1000 Bruxelles  
[www.sesar.eu](http://www.sesar.eu)

## Authoring & Approval

Prepared By - <i>Authors of the document.</i>		
Name & Company	Position & Title	Date
██████████	██████████	12/11/2015

## Document History

Edition	Date	Status	Author	Justification
00.00.01	12.11.2015	Draft	██████████	Incorporation of initial results
01.00.00	20.11.2015	Final	██████████	Finalised document

Founding members



Avenue de Cortenbergh 100 | B-1000 Bruxelles  
www.sesarju.eu

# Table of Contents

<b>1</b>	<b>INTRODUCTION .....</b>	<b>4</b>
<b>2</b>	<b>GENERAL RECOMMENDATIONS.....</b>	<b>5</b>
<b>3</b>	<b>SPECIFIC RECOMMENDATIONS.....</b>	<b>6</b>
3.1	ON THE REGULATORY FRAMEWORK .....	6
3.2	ON THE STANDARDISATION FRAMEWORK.....	6
3.3	ON THE REGULATORY OVERSIGHT AND CERTIFICATION ACTIVITIES.....	6

funding partners



Avenue de Cortenbergh 100 | B -1000 Bruxelles  
[www.sesar.ju.eu](http://www.sesar.ju.eu)

# 1 Introduction

The purpose of this document is to provide an overview of the SESAR Solutions documented recommendations from regulatory, standardisation, oversight and certification perspectives.

The document presents the Regulatory and Standardisation Frameworks, for an acceptable deployment of the concepts contained in the SESAR Solution. These frameworks must be taken into consideration by the entities in charge of deployment of the correspondent SESAR Solution.

funding partners



Avenue de Cortenbergh 100 | B -1000 Bruxelles  
[www.sesar.ju.eu](http://www.sesar.ju.eu)

## 2 General recommendations

In general terms, it must be underlined that:

- 1) When deploying a SESAR Solution, the compliance with all applicable regulatory requirements must be ensured by the different concerned entities;
- 2) In particular, it must be ensured that the appropriate safety argument for the concerned change to the ATM functional system is performed in accordance with EC regulation 1035/2011 (*under revision; EASA opinion 03-2014*) confirming validity of assumptions of the SESAR solution, addressing local specific risks and mitigation providing evidence that residual risks are acceptable.
- 3) The present SESAR Solution does not constitute in itself an acceptable Means of Compliance with the previously mentioned regulatory requirements. Means of Compliance are subject to their acceptance by the Authorities involved in each concrete local implementation.
- 4) A verification of the existing standardisation and regulatory frameworks has to be done before the date of local deployment to identify possible major changes to the ones applicable for the SESAR Solution.

funding partners



Avenue de Cortenbergh 100 | B -1000 Bruxelles  
[www.sesar.ju.eu](http://www.sesar.ju.eu)

5 of 8

## 3 Specific recommendations

### 3.1 On the Regulatory Framework

Due consideration in the local environment should be given to ensuring consistency with the applicable regulatory framework. This solution is part of PCP IR (AF#1).

As introduced in the Contextual Note, The A-RNP specification in case of RNP values lower than 1 NM may be used in the Initial and/or Intermediate segments, however certification material (EASA AMC) is still to be developed for this specification.

While regulatory material for A-RNP above FL195 is currently under work, additional material may be need to address the concerned subject; either specific Regulatory Material (e.g. AMC or CS) or more generic one could be considered to support the necessary regulatory approach for full deployment of the solution.

This Solution has developed SPR, INTEROP which could be considered as Acceptable Means of Compliance.

### 3.2 On the Standardisation Framework

For this solution, “RNP to LPV” concept (as for other “RNP to xLS” concepts) is based on the use of RF (Radius to Fix) legs in RNP APCH or Advanced RNP specifications. It is therefore needed that the related standardisation and regulation documents are available. In particular, today there is no European regulation baseline for the airborne RF leg capability in RNP APCH or advanced RNP specifications (whereas the RF capability is already specified in FAA AC 20-138 or AC90-105).

From the ground side, the rules to connect a RF leg to a xLS final approach segment will have to be defined in the ICAO PANS OPS.

The use of RF legs in RNP APCH or advanced RNP specifications is included in the fourth edition of the PBN manual. The use of RF legs in procedure design is included in the latest revision of the PANS OPS. There is a need to standardize the “RNP to xLS” transition for Procedure design (PANS OPS doc8168) and ATC procedure (PANS ATM doc4444)

### 3.3 On the Regulatory Oversight and Certification Activities

When proceeding with the implementation of this solution, the applicant shall consider the following topics:

- When elaborating the ground safety arguments for implementation:

funding partners



Avenue de Cortenbergh 100 | B -1000 Bruxelles

[www.sesar.ju.eu](http://www.sesar.ju.eu)

- SPR safety requirements (and associated Safety argument) shall be considered.
- Risks derived from local conditions, such as the potential not-compliance of the airborne part with the SPR hypothesis shall be considered;
- The probabilities of success used in the Accident/Incident Model (AIM) cannot be directly used; rather the known figures for the realistic scenario should be used (e.g. for the assessment of CFIT in final approach).
- For the ground implementation, the mitigation measures addressing abnormal situations, in particular implying loss or failures in the GPS signal, must be carefully assessed.
- For each ground case, the arrangements between affected Authorities have to be checked, to ensure that no gaps are left in the approval process.
- It would be advisable to promote the harmonisation of approval processes for RNP APCH procedures for all types of operations, thus including LPV operations (i.e. potential support from PBN draft IR).

EASA opinion 03-2014 describe that for any change notified in accordance with ATM/ANS.OR.A.045(a)(1), the air traffic services provider shall:

(1) ensure that a safety assessment is carried out covering the scope of the change, which is:

- the equipment, procedural and human elements being changed;
- interfaces and interactions between the elements being changed and the remainder of the functional system;
- interfaces and interactions between the elements being changed and the context in which it is intended to operate;
- the life cycle of the change from definition to operations including transition into service; and
- planned degraded modes; and

(2) provide assurance, with sufficient confidence, via a complete, documented and valid argument that the safety criteria identified via the application of ATS.OR.210 are valid, will be satisfied and will remain satisfied.

funding partners



Avenue de Cortenbergh 100 | B -1000 Bruxelles  
www.sesar.u.eu

**- END OF DOCUMENT -**

funding partners



Avenue de Cortenbergh 100 | B -1000 Bruxelles  
[www.sesar.ju.eu](http://www.sesar.ju.eu)