



# SESAR SOLUTION PJ.18-04a CONTEXTUAL NOTE TRL6

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# PJ.18-04a

## IMPROVED AIM INFORMATION

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### Abstract

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This TRL6 Contextual note provides SESAR Solution description for the solution Aeronautical Dataset Service proposed by PJ.18-04a.

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# 1 Purpose

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This contextual note introduces the TRL6 Aeronautical Dataset Service developed in PJ.18-04a Improved AIM information. The document presents a summary of the results stemming from R&D activities and contribution to deployment. It provides to any interested reader (external and internal to the SESAR programme) an introduction to the Solution in terms of scope, main benefits, relevant system impacts as well as additional activities to be conducted during the industrialisation phase or as part of deployment. This contextual note complements the technical data pack comprising the SESAR deliverables required for further industrialisation/deployment.

## 2 Improvements in Air Traffic Management (ATM)

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PJ.18-04a designs and develops improved Aeronautical Information (AIM) services that provide AIM information contributing to enhanced better information sharing. The activities of PJ.18-04a were organised with operational use in mind where the information services were developed based on the need of operational solutions within the SESAR 2020 Industrial Research (IR) programme.

At the end of Wave 1, PJ.18-04a proposes the Aeronautical Dataset Service as a TRL6 solution that has been matured in the course of Wave 1. The Aeronautical Dataset service is a new activity in SESAR 2020. The objective is to develop a SWIM service providing digital datasets defined by ICAO.

The Aeronautical Dataset Service supports the provision of the aeronautical information product digital data set as defined by ICAO Annex 15:

- AIP data set
- Obstacle data set
- Terrain data set
- Airport mapping data set
- Instrument flight procedure data set

In addition, in the context of Wave 1, the service also provides dataset for a specific purpose. An example is the provision of airport lighting data in the context of SESAR 2020 PJ03a-04, which is a derivation of the airport mapping dataset containing precise lighting information for a very specific purpose.

The target service provider could be any Aeronautical Information Service Provider that wishes to provide their datasets in digital format and the service could be offered to any interested parties that need to consume these datasets (i.e. airspace user, ANSP, ATS provider, MET service provider, Data service provider, NM, etc.)

Providing dataset in digital format will improve the consistency and quality of the data and enhance the exchange of information. The Aeronautical Dataset Service will also help service providers meet the requirements for the provision of digital dataset information required by ICAO.

The service is created fully in line with the requirements and guidelines defined in the EUROCONTROL SWIM Specifications. As a result, the service can be considered as a SWIM conformant information service and a realistic application of SWIM principles.

## 3 Operational Improvement Steps (OIs) & Enablers

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The following OI and EN have been introduced to address the solution:

- POI-0031-IS: Digital AIS data as SWIM Services [CR03590].
- SVC-041: Provision of Aeronautical Dataset Service [CR03591].

Dataset 20 is the applicable dataset for the OI and EN.

## 4 Background and validation process

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In SESAR 1, AIM activities mainly focussed on the development of Digital Integrated Briefing which addressed provision of AIS and MET information to pilots and dispatchers in the form of briefing products and services.

The Aeronautical Dataset Service is a new activity in SESAR 2020. The objective is to provide the capability to provide and consume pre-defined digital data sets containing aeronautical data. The service has been defined and developed in conformance with the Specification for SWIM Service Description, and applies the SWIM Technical Infrastructure Yellow Profile. Definition of the Aeronautical Dataset Service is line with the requirements set out in the SWIM Specifications.

In addition, the Aeronautical Dataset Service supports the SESAR2020 PJ.03a-04 on Enhanced Visual Operations, by allowing the Combined Vision System (CVS) to access specified aerodrome data, terrain and obstacle data for defined aerodromes in accordance with specified quality requirements.

The Aeronautical Dataset service is developed for SESAR2020 purposes and in accordance with the data need of the dependency operational solution; however the Aeronautical Dataset service is defined with the larger ICAO digital data set provision scope in mind. Therefore, the Aeronautical Dataset service definition encompasses the larger scope and the requirements for the service developments are also targeting the SESAR2020 validation.

The applied technical validation process consists of two parts: the technical feasibility of the service and a fit-for-purpose evaluation performed by the 'service customer'. The technical feasibility assessment verified whether the capabilities, requirements and objectives are met as defined in the technical specification and validation plan. After that a follow-up evaluation was performed to assess if the service provides the output required by the service consumer.



## 5 Results and performance achievements

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The technical validation exercise of the Aeronautical Dataset Service focused on the technical feasibility of the service, where the system capabilities turned out to be functional, able to provide the output (data) as expected. Following the technical validation, the service has been proven to be able to perform functions as required. Since the validation only addressed the specific case (i.e. ground lights data of four airports), although it demonstrated that the information was provided according to the requirements, however the full potential of the service has not been explored when large amount of data samples are available.

The follow-up evaluation showed that the ATM solution PJ.03a-04 considers it to beneficial to use this information and its data in a manner that quality and consistency are maintained. It stated the following: “The primary interest of PJ.03-04a is in digital dataset of ground lighting data of a specific airport. In the database, four different datasets of ground lighting data from different airports in the US were found. The query tasks were fully functional and provided 100% match with the user's requests which indicate a high quality of the service. The tested service provides an important benefit to PJ.03a-04 solution.”

## 6 Recommendations and Additional activities

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Regarding Aeronautical Dataset service, it is recommended to refine the interface to adapt for deployment as the service has demonstrated its technical feasibility and proven to be useful. Depending on the need to the implementer, the functional requirements are to be further detailed to fit the need of deployment.

The scope and capabilities of the web service providing aeronautical dataset information is wider than in the validation context. It should provide datasets defined by ICAO Annex 15 in order to provide the benefit of having one service that is fit for all dataset needs.

Regarding SESAR 2020 Wave 2, it is recommended to embed AIM-related developments into ATM/OPS solution to ensure AIM developments fulfils the operational needs.

Finally, PJ.18-04a believes that the Aeronautical Dataset Service is ready for deployment. It is recommended for any service provider who are interested in providing datasets to adopt the service definition and start implementing an instance of this service. As a pilot, the European AIS Database (EAD) is drafting plan to implement digital datasets (as service) based on the service definition created by PJ.18-04a.

## 7 Actors impacted by the SESAR Solution

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Intended service provider: Aeronautical Information Service Provider

Intended service consumers:

- Airspace User
- Air Navigation Service Provider
- Air Traffic Service Provider
- Meteorological Service Provider
- Aeronautical Information Service Provider
- Data Service Provider
- Network Manager



## 8 Impact on Aircraft System

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The solution provides a web service that is not intended to be used directly by aircraft systems, therefore no specific impact on aircraft system.

## 9 Impact on Ground Systems

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The solution provides a web service with a human machine interface with no direct link with ground systems for the current design, therefore no specific impact on ground systems.

# 10 Regulatory Framework Considerations

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No specific considerations on regulatory framework.

# 11 Standardization Framework Considerations

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The solution applies the principles and guidance within the framework of EUROCONTROL Specifications for SWIM Service Description, SWIM Information Definition and SWIM Technical Infrastructure Yellow Profile.

## 12 Solution Data pack

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The Data pack for this Solution includes the following deliverables:

- TS/IRS D4.1.140 SESAR 2020 PJ.18-04a TRL6 Technical Specification, Edition 00.02.00.
- TVALR D4.1.130 SESAR 2020 PJ.18-04a TVALR for TRL6, Edition 00.01.00.



