



# GOF2.0 D2.4 - Appendix D

## Registration Service

### Specification

<b>Deliverable ID:</b>	D2.4-A4
<b>Dissemination Level:</b>	PU
<b>Project Acronym:</b>	GOF2.0
<b>Grant:</b>	101017689
<b>Call:</b>	H2020-SESAR-2020-1 VLD Open 2
<b>Topic:</b>	U-space capabilities and services to enable Urban Air Mobility
<b>Consortium Coordinator:</b>	Lennuliiklusteeninduse Aktsiaselts (EANS)
<b>Edition Date:</b>	05 March 2021
<b>Edition:</b>	00.00.03
<b>Template Edition:</b>	03.00.00

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EUROPEAN UNION



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#### Document History

Edition	Date	Status	Author	Justification
00.00.01	2019		GOF 1 Project Partners (Sebastian Babiarz / Airmap, Teodor Todorov / Airmap, Rupert Benbrook / Altitude Angel, Phil Binks / Altitude Angel, Chris Forster / Altitude Angel, Simon Wynn-Mackenzie/ Altitude, Angel Alkula Sami / Ansfinland, Tanel Jarvet / Cafatech, Vello Mürsepp / EANS, Heidi Himmanen / Ficora, Dan Davies / Fleetonomy, Peter Cornelius / Frequentis, Thomas Lutz / Frequentis, Harald Milchrahm / Frequentis, Jonas Stjernberg / Robots Experts, Charlotte Kegelaers / Unifly, Ronni Winkler Østergaard / Unifly, Andres Van Swalm / Unifly)	
00.00.02	18.03.2021	draft	WP2 Partners	Enhance and update
00.00.03	26.04.2021	released	WP2 Partners	Release

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# GOF2.0

## GOF2.0 INTEGRATED URBAN AIRSPACE VLD

This Updated Service Specification is part of a project that has received funding from the SESAR Joint Undertaking under grant agreement No 101017689 under European Union's Horizon 2020 research and innovation programme.



### Abstract

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This specification introduces a service of a Common Information Service (CIS) which ensures interoperability and hence transparent and reliable information flow between the stakeholders in an operational U-space environment. In accordance with ICAO SWIM, represents an Information Exchange Service.

This document describes one of these Bridge Services, the Registration service in a logical, technology-independent manner.

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# 1 Introduction

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## 1.1 Purpose of the document

The purpose of this service specification document is to provide a holistic overview of the Registration Service and its building blocks in a technology-independent way, according to the guidelines given in [1]. It describes a well-defined baseline of the service by clearly identifying the service version, service and its building blocks in a technology-independent way, according to the guidelines given in [1].

The aim is to document the key aspects of the Registration Service at the logical level:

- the operational and business context of the service
  - requirements for the service (e.g., information exchange requirements)
  - involved nodes: which operational components provide/consume the service
  - operational activities supported by the service
  - relation of the service to other services
- the service description
  - service interface definitions
  - service interface operations
  - service payload definition
  - service dynamic behaviour description
- service provision and validation aspects

Furthermore, this document clearly defines the version of the service.

## 1.2 Scope

This document describes the Registration service.

The Registration service provides a means for the operational nodes to share their intends and make them available for further processing.

## 1.3 Intended readership

This service specification is intended to be read by service architects, system engineers and developers in charge of designing and developing an instance of the Registration Service. Furthermore, this service specification is intended to be read by enterprise architects, service architects, information architects, system engineers and developers in pursuing architecting, design and development activities of other related services.

## 1.4 Background

### 1.4.1 EASA

Due to introduction of the EASA e-Registration service in EU member states, GOF1.0 Services Specification for Registration became outdated. For this reason, it was decided by Consortium Members, to implement at least minimal mock-up of data structures – especially unified pan-European “operator id” in EASA format (i.e. FIN87astrdge12k-xyz-c, see Business Analysis, 3.2.1) for data retrieval and other service layers as described in REPIF documents.

Due to nature of changes, it probably should skip user/drones creation procedures in the scope of GOF 2.0 project.

### 1.4.2 Legal background

As per Article 74 of the Basic Regulation 2018/1139 (BR), “the Agency, in cooperation with the Commission and the national competent authorities, establish and manage a repository of information necessary to ensure effective cooperation between the Agency and the national competent authorities concerning the exercise of their tasks relation to certification, oversight and enforcement under the Regulation [...]”. [13]

### 1.4.3 Regulatory framework for Drones [13]

As per Article 56.7 of the BR: “Member States shall ensure that information about registration of unmanned aircraft and of operators of unmanned aircraft .../... is stored in digital, harmonised, interoperable national registration systems.”

Member States have thus the obligation to share data on certified drones and drone operators registered in their register to other member states. This could be ensured through bilateral agreements with each other Member States but this is not considered efficient.

Article 14 of the Implementing Regulation (EU) 2019/947 on rules and procedures for the operation of drones dealing with: “Registration of UAS operators and certified UAS” states:

*“1. Member States shall establish and maintain accurate registration systems for UAS whose design is subject to certification and for UAS operators whose operation may present a risk to safety, security, privacy, and protection of personal data or the environment.*

*2. The registration systems for UAS operators shall provide the fields for introducing and exchanging the following information:*

*(a) the full name and the date of birth for natural persons and the name and their identification number for legal persons;*

*(b) the address of UAS operators;*

*(c) their email address and telephone number;*

*(d) an insurance policy number for UAS if required by Union or national law;*





*(e) the confirmation by legal persons of the following statement: ‘All personnel directly involved in the operations are competent to perform their tasks, and the UAS will be operated only by remote pilots with the appropriate level of competency’;*

*(f) operational authorisations and LUC held and declarations followed by a confirmation in accordance with Article 12(5)(b).*

*3. The registration systems for unmanned aircraft whose design is subject to certification shall provide the fields for introducing and exchanging the following information:*

*(a) manufacturer's name;*

*(b) manufacturer's designation of the unmanned aircraft;*

*(c) unmanned aircraft's serial number;*

*(d) full name, address, email address and telephone number of the natural or legal person under whose name the unmanned aircraft is registered.*

*4. Member States shall ensure that the registration systems are digital and interoperable and allow for mutual access and exchange of information through the repository referred to in Article 74 of Regulation (EU) 2018/1139.*

*5. UAS operators shall register themselves:*

*(a) when operating within the ‘open category’ any of the following unmanned aircraft:*

*i. with a maximum take-off mass of 250 g or more, or, which in the case of an impact can transfer to a human kinetic energy above 80 Joules;*

*ii. that is equipped with a sensor able to capture personal data , unless it complies with Directive 2009/48/EC.*

*(b) when operating within the ‘specific’ category an unmanned aircraft of any mass.*

*6. UAS operators shall register themselves in the Member State where they have their residence for natural persons or where they have their principal place of business for legal persons and ensure that their registration information is accurate. A UAS operator cannot be registered in more than one Member State at a time.*

*Member States shall issue a unique digital registration number for UAS operators and for the UAS that require registration, allowing their individual identification.*

*The registration number for UAS operators shall be established on the basis of standards that support the interoperability of the registration systems.*

*7. The owner of an unmanned aircraft whose design is subject to certification shall register the unmanned aircraft.*

*The nationality and registration mark of an unmanned aircraft shall be established in line with ICAO Annex 7. An unmanned aircraft cannot be registered in more than one State at a time.*

8. The UAS operators shall display their registration number on every unmanned aircraft meeting the conditions described in paragraph 5.”

#### 1.4.4 Stakeholders [13]

Access to the exchange of information is ruled by Article 74.6 of the BR which states:

“6. Without prejudice to paragraph 7, the Commission, the Agency, national competent authorities and any competent authority of the Member States entrusted with the investigation of civil aviation accidents and incidents shall, for the exercise of their tasks, have on-line and secure access to all information included in the repository. Where relevant, the Commission and the Agency may disseminate certain information included in the repository, other than information referred to in paragraph 2, to interested parties or make it publicly available.”

Note that there is no need identified to make information available to interested parties or to the public for the drones repository at this time.

Note that the term national competent authorities is defined in Article 3(34) of the BR which states: “‘national competent authority’ means one or more entities designated by a Member State and having the necessary powers and allocated responsibilities for performing the tasks related to certification, oversight and enforcement in accordance with this Regulation and with the delegated and implementing acts adopted on the basis thereof, and with Regulation (EC) No 549/2004.”

Table 1 below provides for illustration typical stakeholders which may be given access to the Repository of Information for the Drones domain:

No	Stakeholder	Internal/ external (related to EASA)
1	European Union Aviation Safety Agency (EASA)	Internal
2	National Aviation Authorities (NAAs)	External
3	Law Enforcement Authorities for aviation safety of each Member State (within the scope of the BR)	External
4	Accident Investigation officers of each Member State	External
5	ANSP / USSP / Aeronautical Information Service Providers (as “interested parties” per BR Article 74 .6)	External

**Table 1: Example of typical stakeholders [13]**

#### 1.4.5 Data Protection

Any activities related to the handling of personal data for the purposes of UAS flights must be at least performed in accordance with generally accepted rules and regulations:

- 1 Compliance with Regulation (EU) 2018/1725 of the European Parliament and of the Council of 23 October 2018 on the protection of natural persons with regard to the processing of personal

data by the Union institutions, bodies, offices and agencies and on the free movement of such data, and repealing Regulation (EC) No 45/2001 and Decision No 1247/2002/EC.

- 2 Compliance with Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (GDPR).

#### 1.4.6 (EU) 2018/1725

Persons whose personal data are processed by Union institutions and bodies in any context whatsoever, for example, because they are employed by those institutions and bodies, should be protected. [16]

In order to prevent creating a serious risk of circumvention, the protection of natural persons should be technologically neutral and should not depend on the techniques used. [16]

This Regulation should apply to the processing of personal data by all Union institutions, bodies, offices and agencies. It should apply to the processing of personal data wholly or partly by automated means and to the processing other than by automated means of personal data which form part of a filing system or are intended to form part of a filing system. Files or sets of files, as well as their cover pages, which are not structured according to specific criteria should not fall within the scope of this Regulation.[16]

#### 1.4.7 GDPR (General Data Protection Regulation)

The protection of natural persons in relation to the processing of personal data is a fundamental right. The principles of, and rules on the protection of natural persons with regard to the processing of their personal data should, whatever their nationality or residence, respect their fundamental rights and freedoms, in particular their right to the protection of personal data. This Regulation is intended to contribute to the accomplishment of an area of freedom, security and justice and of an economic union, to economic and social progress, to the strengthening and the convergence of the economies within the internal market, and to the well-being of natural persons. [15]

#### 1.4.8 EASA Registration Broker concept [13]

The diagram below illustrates the EASA broker concept which is based on the existence of national repositories for registration data. At the time of writing this specification, it is known that EASA is establishing a broker, but the technical details are still unknown. The GOF2 consortium accepts this idea, and as soon as the technical specification of the solution is known, it will be integrated into this specification.

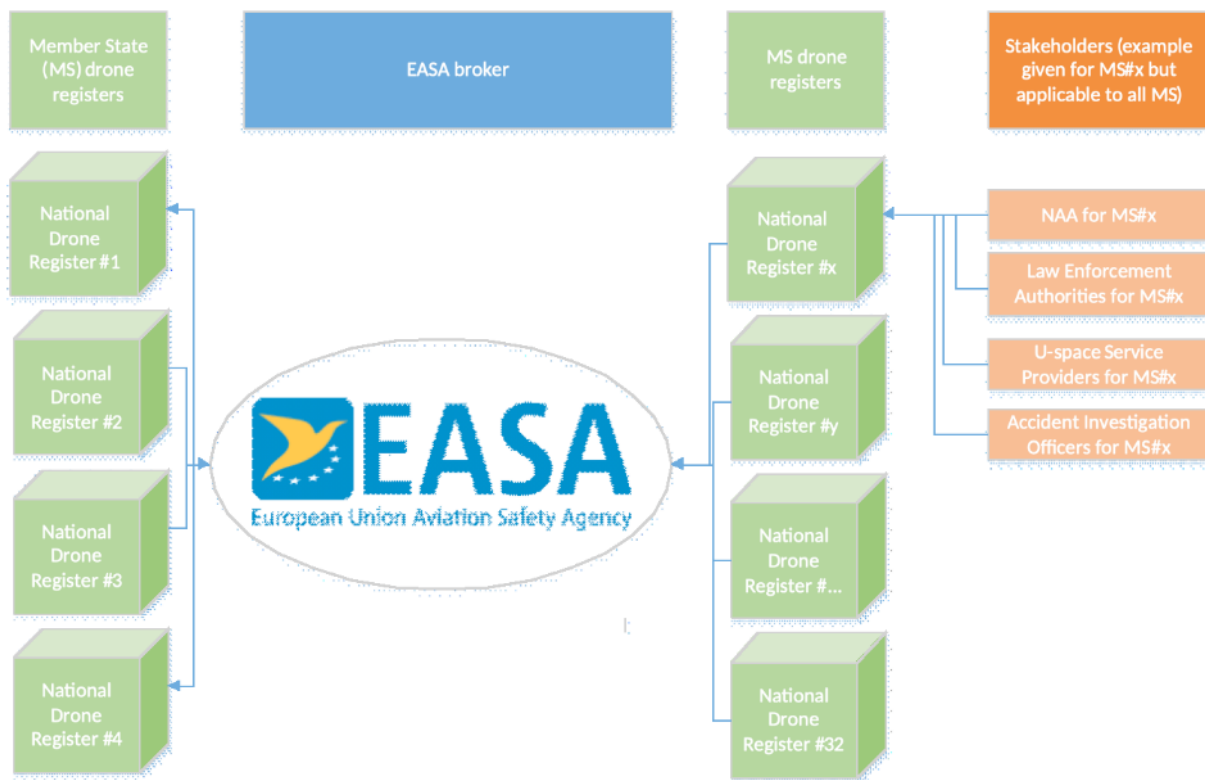


Figure (x): Context diagram (src: REPIF – Business Analysis, Figure 1)

## 1.5 Glossary of terms

Term	Definition
<b>External Model Data</b>	Describes the semantics of the domain (or a significant part thereof) by defining data structures and their relations. This could be at logical level (e.g., in UML) or at physical level (e.g., in XSD schema definitions), as for example standard data models.
<b>Message Exchange Pattern</b>	Describes the principles how two different parts of a message passing system (in our case: the service provider and the service consumer) interact and communicate with each other. Examples:  In the Request/Response MEP, the service consumer sends a request to the service provider in order to obtain certain information; the service provider provides the requested information in a dedicated response.  In the Publish/Subscribe MEP, the service consumer establishes a subscription with the service provider in order to obtain certain information; the service provider publishes information (either in regular intervals or upon change) to all subscribed service consumers.

<b>Operational Activity</b>	An activity performed by an operational node. Examples of operational activities are: Route Planning, Route Optimization, Logistics, Safety, Weather Forecast Provision, ...
<b>Operational Model</b>	A structure of operational nodes and associated operational activities and their inter-relations in a process model.
<b>Operational Node</b>	A logical entity that performs activities. Note: nodes are specified independently of any physical realisation.  Examples of operational nodes are: Control Center, Authority, Weather Information Provider, ...
<b>Service</b>	The provision of something (a non-physical object), by one, for the use of one or more others, regulated by formal definitions and mutual agreements. Services involve interactions between providers and consumers, which may be performed in a digital form (data exchanges) or through voice communication or written processes and procedures.
<b>Service Consumer</b>	A service consumer uses service instances provided by service providers.
<b>Service Model</b>	<b>Data</b> Formal description of one dedicated service at logical level. The service data model is part of the service specification. Is typically defined in UML and/or XSD. If an external data model exists (e.g., a standard data model), then the service data model shall refer to it: each data item of the service data model shall be mapped to a data item defined in the external data model.
<b>Service Description</b>	<b>Design</b> Documents the details of a service technical design (most likely documented by the service implementer). The service design description includes (but is not limited to) a service physical data model and describes the used technology, transport mechanism, quality of service, etc.
<b>Service Implementation</b>	The provider side implementation of a dedicated service technical design (i.e., implementation of a dedicated service in a dedicated technology).
<b>Service Implementer</b>	Implementers of services from the service provider side and/or the service consumer side.
<b>Service Instance</b>	One service implementation may be deployed at several places by same or different service providers; each such deployment represents a different service instance, being accessible via different URLs.

<b>Service Instance Description</b>	Documents the details of a service implementation (most likely documented by the service implementer) and deployment (most likely documented by the service provider). The service instance description includes (but is not limited to) service technical design reference, service provider reference, service access information, service coverage information, etc.
<b>Service Interface</b>	The communication mechanism of the service, i.e., interaction mechanism between service provider and service consumer. A service interface is characterised by a message exchange pattern and consists of service operations that are either allocated to the provider or the consumer of the service.
<b>Service Operation</b>	Functions or procedure which enables programmatic communication with a service via a service interface.
<b>Service Physical Data Model</b>	<p>Describes the realisation of a dedicated service data model in a dedicated technology. This includes a detailed description of the data payload to be exchanged using the chosen technology. The actual format of the service physical data model depends on the chosen technology. Examples may be WSDL and XSD files (e.g., for SOAP services) or swagger (Open API) specifications (e.g., for REST services). If an external data model exists (e.g., a standard data model), then the service physical data model shall refer to it: each data item of the service physical data model shall be mapped to a data item defined in the external data model.</p> <p>In order to prove correct implementation of the service specification, there shall exist a mapping between the service physical data model and the service data model. This means, each data item used in the service physical data model shall be mapped to a corresponding data item of the service data model. (In case of existing mappings to a common external (standard) data model from both the service data model and the service physical data model, such a mapping is implicitly given.)</p>
<b>Service Provider</b>	A service provider provides instances of services according to a service specification and service instance description. All users within the domain can be service providers, e.g., authorities, organizations (e.g., meteorological), commercial service providers, etc.
<b>Service Specification</b>	Describes one dedicated service at logical level. The Service Specification is technology-agnostic. The Service Specification includes (but is not limited to) a description of the Service Interfaces and Service Operations with their data payload. The data payload description may be formally defined by a Service Data Model.

<b>Service Specification Producer</b>	Producers of service specifications in accordance with the service documentation guidelines.
<b>Service Technical Design</b>	The technical design of a dedicated service in a dedicated technology. One service specification may result in several technical service designs, realising the service with different or same technologies.
<b>Service Technology Catalogue</b>	List and specifications of allowed technologies for service implementations. Currently, SOAP and REST are envisaged to be allowed service technologies. The service technology catalogue shall describe in detail the allowed service profiles, e.g., by listing communication standards, security standards, stacks, bindings, etc.
<b>Spatial Exclusiveness</b>	<p>A service specification is characterised as “spatially exclusive”, if in any geographical region just one service instance of that specification is allowed to be registered per technology.</p> <p>The decision, which service instance (out of a number of available spatially exclusive services) shall be registered for a certain geographical region, is a governance issue.</p>

Table: Glossary of terms

## 1.6 List of Acronyms

Acronym	Definition
<b>API</b>	Application Programming Interface
<b>JSON</b>	JavaScript Object Notation
<b>MEP</b>	Message Exchange Pattern
<b>NAF</b>	NATO Architectural Framework
<b>REST</b>	Representational State Transfer
<b>SOA</b>	Service Oriented Architecture
<b>SOAP</b>	Simple Object Access Protocol



<b>SSD</b>	Service Specification Document
<b>UML</b>	Unified Modelling Language
<b>URL</b>	Uniform Resource Locator
<b>WSDL</b>	Web Service Definition Language
<b>XML</b>	Extendible Mark-up Language
<b>XSD</b>	XML Schema Definition

**Table: List of acronyms**



## 2 Service Identification

The purpose of this chapter is to provide a unique identification of the service and describe where the service is in terms of the engineering lifecycle.

<b>Name</b>	<i>Registration Service</i>
<b>ID</b>	<i>urn:gof:services:RegistrationService</i>
<b>Version</b>	<i>2.0.1</i>
<b>Description</b>	<i>A service that allows the registration of the UAS, UAS operators, related persons (crew) and associated data.</i>
<b>Keywords</b>	<i>Registration, eRegistration, Pilot, Operator, UAS, Manufacturer, National Authority, CAA, ANSP, USSP, CIS, Identity, License, Competence</i>
<b>Architect(s)</b>	<i>2021-today The GOF 2.0 Project Consortium 2020-2021 Droneradar Sp. z o.o. 2018-2020 The GOF U-Space Project Consortium</i>
<b>Status</b>	<i>Provisional</i>

**Table: Service Identification**

## 3 Operational Context

### 3.1 Overview

Drone registration is a key part towards commercialization of unmanned air vehicles, and is required by current or upcoming legislation. In most countries, the CAA operates a drone registry which collects data of UTM operators, drone pilots, drones, operational authorizations and verifications of identity.

UAS operators are companies or individuals that operate one or more drones. UAS operators may employ one or more pilots. In the case of private citizens operating drones, they themselves are both UAS operators and the sole pilot.

ID verification systems provide proof of identity of registered pilots and operators. Operators register their drone(s) along with type and id (serial, remoteID, etc.) information, and provide proof of competency as part of their profile in the registry. On December 31, 2020, the registration obligation resulting from the entry into force:

- 1 **Commission Implementing Regulation (EU) 2019/947 of 24 May 2019** on the rules and procedures for the operation of unmanned aircraft
- 2 **Commission Delegated Regulation (EU) 2019/945 of 12 March 2019** on unmanned aircraft systems and on third-country operators of unmanned aircraft systems

The registry allows for drone lookup by ID to support other stakeholders, systems or accident investigations.

The operational context description should be based on the description of the operational model, consisting of a structure of operational nodes and operational activities. If such an operational model exists, this section shall provide references to it. If no such operational model exists, then its main aspects shall be described in this section.

The operational context shall be a description of how the service supports interaction among operational nodes. This can be achieved in two different levels of granularity:

- A description of how the service supports the interaction between operational nodes. This basically consists of an overview about which operational nodes shall provide the service and which operational nodes will consume the service.
- A more detailed description that indicates what operational activities the service supports in a process model.

Moreover, the operational context should describe any requirement the service will fulfil or adhere to. This refers to functional as well as non-functional requirements at high level (business/regulatory requirements, system requirements, user requirements). Especially, information exchange requirements are of much interest since the major objective of services is to support interaction between operational nodes.

The source material for the operational context description should ideally be provided by operational

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users and is normally expressed in dedicated requirements documentation. Ensure that the applicable documents are defined in the References section. If no requirements documents are available, then the basic requirements for the service shall be defined in the dedicated sub-section below.

Architectural elements applicable for this description are:

- *Service*
- *Nodes*
- *Operational Activities*
- *Information Exchange Requirements*

## 3.2 Functional and Non-functional Requirements

This section lists (functional and non-functional) requirements applicable to the service being described. A tabular list of requirements shall be added here. If external requirements documents are available, then the tables shall refer to these requirements, otherwise the requirements shall be documented here.

The service MUST be linked to at least one requirement. At least one of the following tables shall be presented in this section. The first table lists references to requirements available from external documents. Make sure you document the sources from where the requirements are coming from. The second table lists new requirements defined for the first time in this service specification document.

The table below lists applicable existing requirements for the Registration Service.



Requirement Id	Requirement Name	Requirement Text	References
	Common Situational Awareness	At all times, all U-space participants shall operate on the same common set of data, during pre-flight planning stages as well as during all stages of flight operations.	<p>CORUS [4], 4.1.1.2 Amber airspace;</p> <p>B1-RPAS [9];</p> <p>CEF-SESAR-2018-1 [1], Objective O5</p>





Requirement Id	Requirement Name	Requirement Text	References
	Basis for Open Market	The U-space concept shall be designed such as to ensure a well-established line of authority while at the same time ensuring that an open market for VLL services may develop	<p>SESAR Drone Roadmap [11], Foreword, 4.1 and 4.2;</p> <p>U-space Blueprint [13], Benefits to European society and economy;</p> <p>CEF-SESAR-2018-1 [1], Table 8 – Key Challenges</p>





Requirement Id	Requirement Name	Requirement Text	References
	Interoperability	<p>There shall be an implementation of a Flight Information Management System (FIMS) which ensures that, at all times, emerging unmanned traffic management systems and existing technologies from manned operations can exchange any data required to support such common situational awareness, be it for drone operations in areas where established ATC procedures apply, or in zones outside established ATC.</p>	<p>ICAO Doc 10039 [2];</p> <p>[R-2];</p> <p>CEF-SESAR-2018-1 [1], Objective O6;</p> <p>CEF-SESAR-2018-1 [1], Table 8 – Key Challenges</p>





Requirement Id	Requirement Name	Requirement Text	References
	Standard Protocols	Standard communication protocols shall hence be used where available, and such standard protocols be developed otherwise, in order to ensure the lowest level of obstruction for an open VLL airspace use market to develop.	<p>[R-2];</p> <p>SESAR Drone Roadmap [11], 3.5, section 'Standards';</p> <p>CEF-SESAR-2018-1 [1], Table 8 – Key Challenges</p>
	Open Interfaces	Any interface and protocol hence must be openly defined, and its definition be freely accessible in order to ensure the lowest level of obstruction for an open VLL airspace use market to develop.	<p>[R-2];</p> <p>CEF-SESAR-2018-1 [1], Table 8 – Key Challenges</p>



Requirement Id	Requirement Name	Requirement Text	References
	SWIM	The implementation of a Flight Information Management System (FIMS) shall be based on an ICAO SWIM-compliant architecture.	[R-3];  CEF-SESAR-2018-1 [1], 5.3.4 Overall approach and methodology

Tab.: Requirements for the Registration Service

### 3.3 Other Constraints

#### 3.3.1 Relevant Industrial Standards

##### 3.3.1.1 ICAO SWIM

The System Wide Information Management (SWIM, [2]) complements human-to-human with machine-to-machine communication, and improves data distribution and accessibility in terms of quality of the data exchanged. The SWIM Concept addresses the challenge of creating an “interoperability environment” which allows the SWIM IT systems to cope with the full complexity of operational information exchanges. The SWIM environment shifts the ATM information architecture paradigm from point-to-point data exchanges to system-wide interoperability.



# 4 Service Data Model

This section describes the information model, i.e., the logical data structures to be exchanged between providers and consumers of the service.

## 4.1 Overview

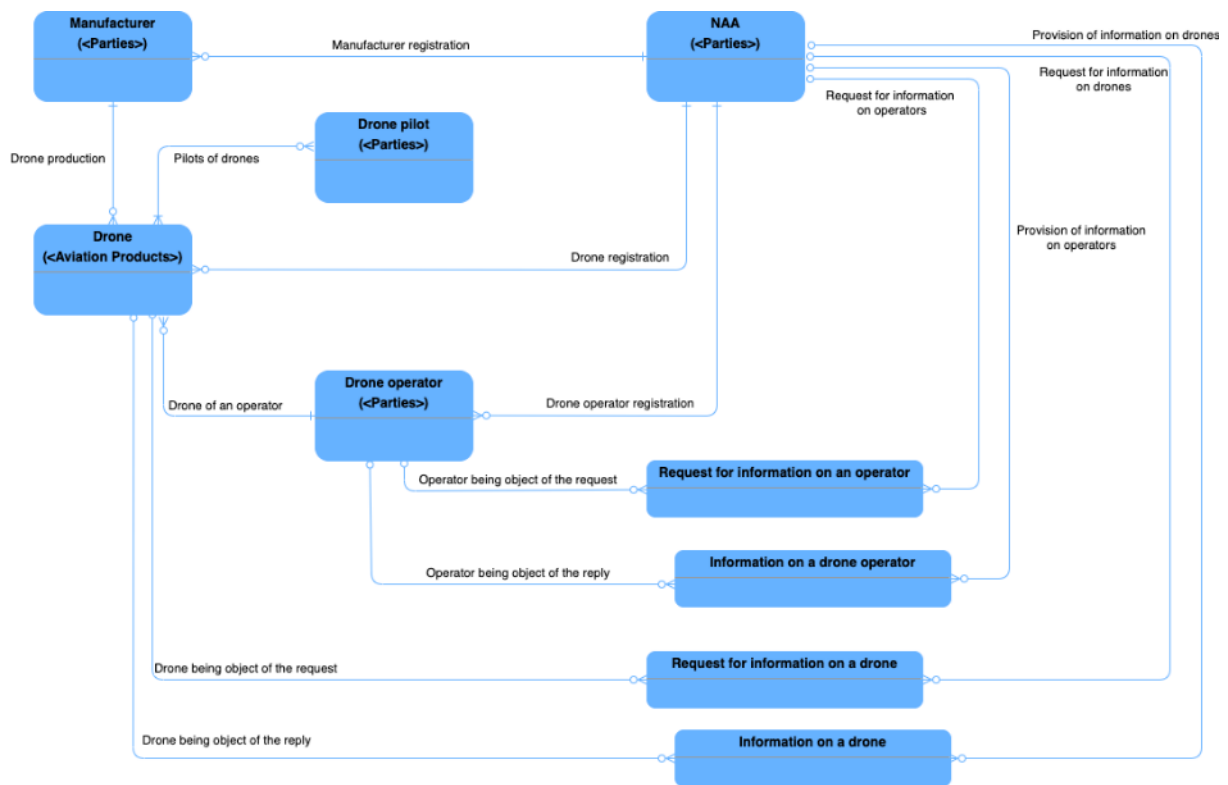


Figure (x+1): Entity-Relations diagram for drones (src: REPIF 0- - Business Analysis, Figure 3)

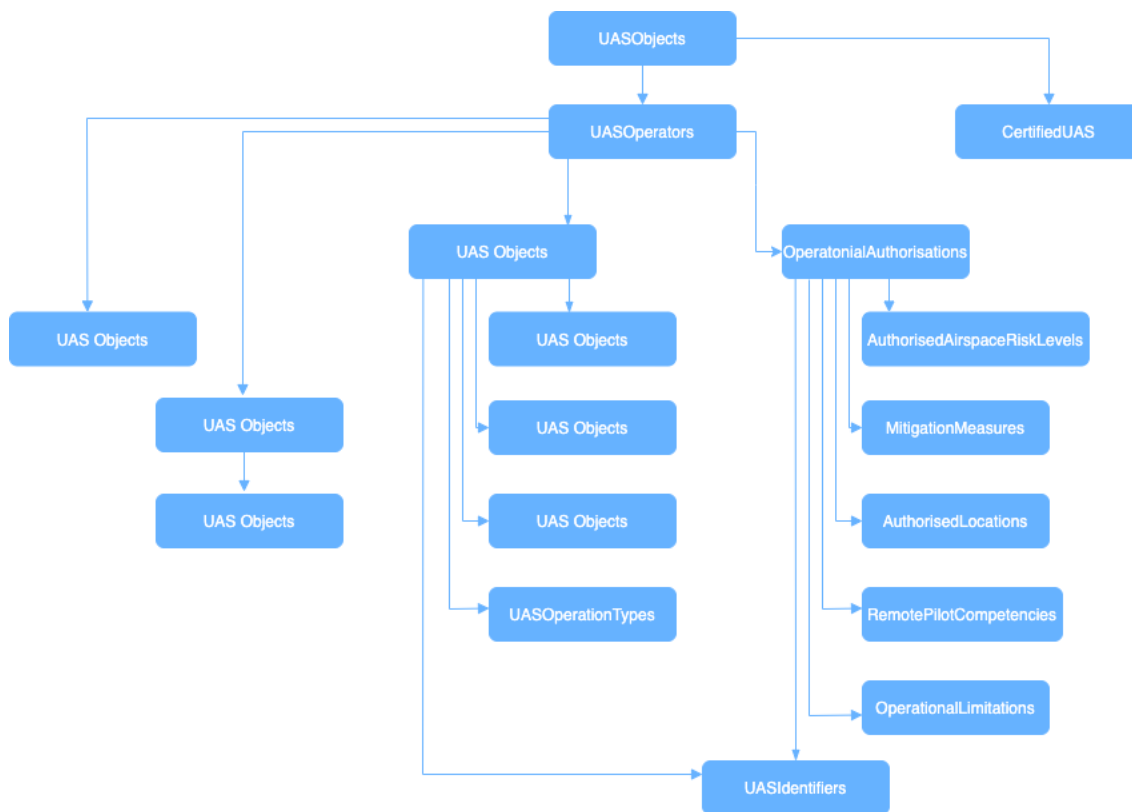


Figure (x+2): Entity Relationships (src: API usage guide)

## 4.2 General comment

Due to the fact that there is no official, approved version of the concept for creating and distributing Registration data, it is at the moment of writing this document, impossible to propose a final, consistent and uniform data model. Given the relatively extensive experience of consortium members represented by technology companies as well as ANSP, the final proposal including best-of-breed practices will be created after the completion of the practical part (trials).

In addition, the conceptual version of the registration as described in EASA official documents appears to be incomplete (API-GUIDE draft status still draft status) and is likely to be modified.

Probably most striking is lack of ‘air-worthiness’ estimation in certified drone data, which will cause problems with operation plan verification flows. For the purpose of this VLD, the verification process of UAS equipment will be skipped, assuming that it is UAS Operator/Pilot responsibility to use a drone satisfying expected requirements.

Other challenges found include (minor ones):

- concatenate operator names, effectively disabling ‘sort/find by surname’
- performance (like mandatory attachment download)

### 4.3 EASA PROTOCOLS

EASA message broker acts as mediating party between the different Member States applications to route a request from a requesting MS to a queried MS. Authentication, integrity and confidentiality on the transport layer are provided using secure TLS connections.



Figure (x+2): Entity Relationships (src: API usage guide, page 5)

#### 4.3.1 Methods (src: API usage guide)

##### 4.3.1.1 GET UAS Operator

This method will return the information object of a UAS operator

GET

`/registration/{DestinationMS}/v1/uas.svc/UASOperators?${filter}=${filterparameters}&${expand}=${expandparameters}`

Required Query Parameters	How to use	Description
<b>DestinationMS</b>	Provide the ISO3166-1 Alpha 3 country code (See Table 1)	This parameter selects the responder server
<b>filterparameters</b>	Provide values at least for the mandatory properties. (see table below)	This is a RESTful filter based on ODataV2. Setting the parameters will return the requested information object
<b>expandparameters</b>	This parameter selects the underlying structures. All of the parameters defined below should be used to get all the data of the information object (see table below)	This parameter selects the underlying structures the requester specifies to be included in the response

filterparameter	M/O <sup>1</sup>	Description
-----------------	------------------	-------------

<sup>1</sup> Mandatory or Optional property

<b>ObjectIDDomain</b>	M	Value should be always 'UAS'
<b>ObjectIDCountry</b>	M	Country code of the Member State where the information object is registered. ISO 3166-1 alpha-3 country codes must be used (see Table 1/Chapter 5).
<b>ObjectIDUniqueIDScheme</b>	M	Select the Scheme.  Value is "UARM" as the requested linked entity is CertifiedUAS.
<b>ObjectIDUniqueID</b>	M	As the requested object is CertifiedUAS the value of this attribute is the requested value of the Certified UAS registration mark.
<b>RequesterType</b>	M	This attribute should contain the code value of the requester type (see Table 4/Chapter 5).
<b>ObjectType</b>	M	Select the object type.  As the requested object is CertifiedUAS value '01' should be set.
<b>OriginatingMS</b>	M	Country code of the MS originating the request. ISO 3166-1 alpha-3 country codes must be used
<b>Timestamp</b>	M	Provide the request timestamp as datetimeoffset
<b>OriginatingMSReference</b>	O	Unique id of a request (see 3.1.3.1)
<b>RepositoryID</b>	O	Attribute not yet in use (attribute should not be provided in request)
<b>RelevantDate</b>	O	This attribute can be used in case of investigation of a past UAS activity, to indicate a date when the activity was executed. It is therefore not the same as Timestamp
<b>ReplyExpectedDate</b>	O	Attribute not yet in use

<b>expandparameter</b>	<b>M/O</b>	<b>Description</b>
<b>UASOperator,</b>	M	UAS Operator basis information
<b>UASOperator/Attachment,</b>	M	Binary attachment and properties
<b>UASOperator/OperationalDeclarations,</b>	M	Operational declaration information

UASOperator/OperationalDeclarations/UASProducts,		
UASOperator/OperationalAuthorisations, UASOperator/OperationalAuthorisations/AuthorisedAirspaceRiskLevels, UASOperator/OperationalAuthorisations/AuthorisedLocations, UASOperator/OperationalAuthorisations/MitigationMeasures, UASOperator/OperationalAuthorisations/OperationalLimitations, UASOperator/OperationalAuthorisations/OtherStaffCompetencies, UASOperator/OperationalAuthorisations/RemotePilotCompetencies, UASOperator/OperationalAuthorisations/UASIdentifiers,	M	Operational authorisations information
UASOperator/LUCHeld, UASOperator/LUCHeld/Privileges, UASOperator/LUCHeld/SpecialLimitations, UASOperator/LUCHeld/Specifications, UASOperator/LUCHeld/UASIdentifiers, UASOperator/LUCHeld/UASOperationTypes	M	LUC held information

#### HTTP status codes

Code	Description
200	OK. The responding server has processed the request. Examine the status of ReplyStatus attribute of the UASObject entity provided in the payload.



	In case of ReplyStatus = "01", the requested information object exists and is included in the result in payload as part of the expanded Property UASOperator  In case of ReplyStatus = "02", the requested information object was not found
<b>400</b>	Bad Request. Please verify the request parameters. Contact EASA for further troubleshooting
<b>403</b>	Forbidden. Request was denied either by the EASA broker or by the responding server. Please verify the credentials used by the client application (client certificate, IP address). Please contact EASA for further troubleshooting
<b>404</b>	Requested path in URI was not found or the responding server provided the error. Please contact EASA for further troubleshooting
<b>500</b>	Internal server error. Please retry and if the problem persists please contact EASA for further troubleshooting
<b>501</b>	Not implemented. Please verify the request parameters. Please contact EASA for further troubleshooting
<b>502</b>	Bad gateway. Typically this problem indicates a problem in the routing of the request. Please retry and if the problem persists please contact EASA for further troubleshooting
<b>504</b>	Gateway Timeout. Typically this problem indicates a problem in the routing of the request. Please retry and if the problem persists please contact EASA for further troubleshooting

Note: The EASA message broker may mask the response of the server when an error occurs and relay only the error code.

Example request URL:

```
https://repif-api-test.easa.europa.eu/registration/ZZZ/v1/uas.svc/UASObjects?
```

```
$filter=ObjectIDDomain eq 'UAS' and ObjectIDCountry eq 'ZZZ' and  
ObjectIDUniqueIDScheme eq 'OPRN' and ObjectIDUniqueID eq 'ZZZ87astrdge12kc' and  
ObjectType eq '02' and OriginatingMS eq 'ZZA' and RequesterType eq '02' and  
Timestamp eq datetimeoffset'2020-07-22T10:10:10Z'&
```

```
$expand=UASOperator,UASOperator/OperationalDeclarations,UASOperator/Operational  
Authorisations,UASOperator/Attachment,UASOperator/LUCHeld,UASOperator/Operational  
Declarations/UASProducts,UASOperator/OperationalAuthorisations/AuthorisedAirs  
paceRiskLevels,UASOperator/OperationalAuthorisations/AuthorisedLocations,UASOpe
```

Founding Members





```
rator/OperationalAuthorisations/MitigationMeasures,UASOperator/OperationalAutho
risations/OperationalLimitations,UASOperator/OperationalAuthorisations/OtherSta
ffCompetencies,UASOperator/OperationalAuthorisations/RemotePilotCompetencies,UA
SOperator/OperationalAuthorisations/UASIdentifiers,UASOperator/LUCHeld/Privileg
es,UASOperator/LUCHeld/SpecialLimitations,UASOperator/LUCHeld/Specifications,UA
SOperator/LUCHeld/UASIdentifiers,UASOperator/LUCHeld/UASOperationTypes
```

Example request URL:

```
https://repif-api-test.easa.europa.eu/registration/ZZZ/v1/uas.svc/UASObjects?
```

```
$filter=ObjectIDDomain eq 'UAS' and ObjectIDCountry eq 'ZZZ' and
ObjectIDUniqueIDScheme eq 'OPRN' and ObjectIDUniqueID eq 'ZZZ87astrdgel2kc' and
ObjectType eq '02' and OriginatingMS eq 'ZZA' and RequesterType eq '02' and
Timestamp eq datetimeoffset'2020-07-22T10:10:10Z'&
```

```
$expand=UASOperator,UASOperator/OperationalDeclarations,UASOperator/Operational
Authorisations,UASOperator/Attachment,UASOperator/LUCHeld,UASOperator/Operational
Declarations/UASProducts,UASOperator/OperationalAuthorisations/AuthorisedAirs
paceRiskLevels,UASOperator/OperationalAuthorisations/AuthorisedLocations,UASOpe
rator/OperationalAuthorisations/MitigationMeasures,UASOperator/OperationalAutho
risations/OperationalLimitations,UASOperator/OperationalAuthorisations/OtherSta
ffCompetencies,UASOperator/OperationalAuthorisations/RemotePilotCompetencies,UA
SOperator/OperationalAuthorisations/UASIdentifiers,UASOperator/LUCHeld/Privileg
es,UASOperator/LUCHeld/SpecialLimitations,UASOperator/LUCHeld/Specifications,UA
SOperator/LUCHeld/UASIdentifiers,UASOperator/LUCHeld/UASOperationTypes
```

Example response in HTTP:

Note: this example does not include operational authorisations, declarations, attachment or LUCHeld in the content to conserve space in this document

```
HTTP/1.1 200 OK
content-type: application/json; charset=utf-8
dataserviceversion: 2.0
{
```

```

"d": {
  "results": [
    {
      "__metadata": {
        "id": "https://repif-api-
test.easa.europa.eu/registration/ZZZ/v1/uas.svc/UASObjects(ObjectIDDomain='UAS'
,ObjectIDCountry='ZZZ',ObjectIDUniqueIDScheme='OPRN',ObjectIDUniqueID='ZZZ87ast
rdge12kc')",
        "uri": "https://repif-api-
test.easa.europa.eu/registration/ZZZ/v1/uas.svc/UASObjects(ObjectIDDomain='UAS'
,ObjectIDCountry='ZZZ',ObjectIDUniqueIDScheme='OPRN',ObjectIDUniqueID='ZZZ87ast
rdge12kc')",
        "type": "EASA.Repository.UAS.v1.UASObject"
      },
      "OriginatingMS": "ZZA",
      "Timestamp": "/Date(1595412610000+0000)/",
      "OriginatingMSReference": "",
      "RequesterType": "02",
      "ObjectType": "02",
      "ObjectIDDomain": "UAS",
      "ObjectIDCountry": "ZZZ",
      "ObjectIDUniqueIDScheme": "OPRN",
      "ObjectIDUniqueID": "ZZZ87astrdge12kc",
      "RepositoryID": "",
      "RelevantDate": null,
      "ReplyExpectedDate": null,
      "ReplyOriginatingMS": "ZZZ",
      "ReplyDestinationMS": "ZZA",
      "ReplyingMS": "ZZZ",
      "ReplyingMSReference": "8392C57C-33D8-4613-A586-5B2F4AFBCB55",
      "ReplyTimestamp": "/Date(1600876185946+0000)/",
    }
  ]
}

```



```

"Language": "EN",

"ReplyStatus": "01",

"DateOfData": "/Date(1600819200000+0000)/",

"UASOperator": {
  "__metadata": {
    "id": "https://repif-api-test.easa.europa.eu/registration/ZZZ/v1/uas.svc/UASOperators(RegistrationNumber='ZZZ87astrdgel2kc',RegistrationCountry='ZZZ')",
    "uri": "https://repif-api-test.easa.europa.eu/registration/ZZZ/v1/uas.svc/UASOperators(RegistrationNumber='ZZZ87astrdgel2kc',RegistrationCountry='ZZZ')",
    "type": "EASA.Repository.UAS.v1.UASOperator"
  },
  "RegistrationNumber": "ZZZ87astrdgel2kc",
  "RegistrationCountry": "ZZZ",
  "RepositoryID": "",
  "FullName": "Adam Xxxxx",
  "Address": "Rheinstrasse 3 12345 Koln",
  "Email": "xxxxx@xx.zz",
  "Telephone": "+1234567890",
  "Birthdate": "/Date(976579200000+0000)/",
  "IdentificationNumber": "",
  "Validity": true,
  "RegistrationDate": "/Date(1576108800000+0000)/",
  "Attachment": null,
  "LUCHeld": null,
  "OperationalAuthorisations": {
    "results": []
  },
  "OperationalDeclarations": {
    "results": []
  }
}

```



```

    }
  },
  "CertifiedUAS": {
    "__deferred": {
      "uri": "https://repif-api-
test.easa.europa.eu/registration/ZZZ/v1/uas.svc/UASObjects(ObjectIDDomain='UAS',
ObjectIDCountry='ZZZ',ObjectIDUniqueIDScheme='OPRN',ObjectIDUniqueID='ZZZ87ast
rdge12kc')/CertifiedUAS"
    }
  }
}
]
}
}

```

EntitySet:	LUCHeld				
Attribute	Description	M/OError!B ookmark not defined.	Type (Mutliplicity)	Length	Notes
LUCNumber	LUC number	M	String		Approval reference (digital and/or letter code) of the LUC, as issued by the competent authority
IssueDate	Issue date	M	Date		
Privileges	Privileges	M	Navigation (1..*)		
UASIdentifiers	Serial number or UA registration mark (for certified UAS)	M	Navigation (1..*)		

UASOperationTypes	Type(s) of operation	M	Navigation (1..*)		
Specifications	Specifications	M	Navigation (1..*)		
SpecialLimitations	Special limitations	M	Navigation (1..*)		
<b>EntitySet: Attachments</b>					
<b>Attribute</b>	<b>Description</b>	<b>M/OError!Bookmark not defined.</b>	<b>Type (Mutliplicity)</b>	<b>Length</b>	<b>Notes</b>
AttachmentID	ID of the attachment	M	String		Technical ID to identify each entity, generated by MS
Filename	Name of the file attached	M	String		
ContentType	Type of file / MIME type	M	String		application/pdf
AttachmentData	Base64 encoded file	M	Binary		

<b>EntitySet: Privileges</b>					
<b>Attribute</b>	<b>Description</b>	<b>M/OError!Bookmark not defined.</b>	<b>Type (Mutliplicity)</b>	<b>Length</b>	<b>Notes</b>
Privilege	Privileges	M	String		

<b>EntitySet: UASIdentifiers</b>					
<b>Attribute</b>	<b>Description</b>	<b>M/OError!Bookmark not defined.</b>	<b>Type (Mutliplicity)</b>	<b>Length</b>	<b>Notes</b>
UASIdentifier	Serial number or UA registration mark (for certified UAS)	M	String		

EntitySet: UASOperationTypes					
Attribute	Description	M/OError!Bookmark not defined.	Type (Mutliplicity)	Length	Notes
UASOperationType	Type(s) of UAS operation	M	String		

EntitySet: Specifications					
Attribute	Description	M/OError!Bookmark not defined.	Type (Mutliplicity)	Length	Notes
Specification	Specifications	M	String		

EntitySet: SpecialLimitations					
Attribute	Description	M/OError!Bookmark not defined.	Type (Mutliplicity)	Length	Notes
SpecialLimitation	Special limitations	M	String		

EntitySet: AuthorisedLocations					
Attribute	Description	M/OError!Bookmark not defined.	Type (Mutliplicity)	Length	Notes
AuthorisedLocation	Authorised location(s)	M	String		Element 4.1 of the form

EntitySet: AuthorisedAirspaceRiskLevels					
Attribute	Description	M/OError!Bookmark	Type (Mutliplicity)	Length	Notes

		not defined.			
AuthorisedAirspaceRiskLevel	Authorised airspace risk level	M	String		Element 4.2 of the form

<b>EntitySet: OperationalLimitations</b>					
Attribute	Description	M/OError!Bookmark not defined.	Type (Mutliplicity)	Length	Notes
OperationalLimitation	Operational limitations	M	String		Element 4.3 of the form

<b>EntitySet: MitigationMeasures</b>					
Attribute	Description	M/OError!Bookmark not defined.	Type (Mutliplicity)	Length	Notes
MitigationMeasure	Mitigation measures	M	String		Element 4.4 of the form

<b>EntitySet: RemotePilotCompetencies</b>					
Attribute	Description	M/OError!Bookmark not defined.	Type (Mutliplicity)	Length	Notes
RemotePilotCompetency	Remote pilot competency	M	String		Element 4.5 of the form

<b>EntitySet: OtherStaffCompetencies</b>					
Attribute	Description	M/OError!Bookmark not defined.	Type (Mutliplicity)	Length	Notes
OtherStaffCompetency	Competency of other staff essential for the safety of the operation	M	String		Element 4.6 of the form

### 4.3.1.2 GET Certified UAS

This method will return the information object of a Certified UAS

**GET**

***/registration/{DestinationMS}/v1/uas.svc/UASOperators?\$filter={filterparameters}&.\$expand={expandparameters}***

Required Query Parameters	How to use	Description
<b>DestinationMS</b>	Provide the ISO3166-1 Alpha 3 country code (See Table 1)	This parameter selects the responder server
<b>filterparameters</b>	Provide values at least for the mandatory properties. (see table below)	This is a RESTful filter based on ODataV2. Setting the parameters will return the requested information object
<b>expandparameters</b>	This parameter selects the underlying structures. All of the parameters defined below should be used to get all the data of the information object (see table below)	This parameter selects the underlying structures the requester specifies to be included in the response

filterparameter	M/O <sup>2</sup>	Description
<b>ObjectIDDomain</b>	M	Value should be always 'UAS'
<b>ObjectIDCountry</b>	M	Country code of the Member State where the information object is registered. ISO 3166-1 alpha-3 country codes must be used (see Table 1/Chapter 5).
<b>ObjectIDUniqueIDScheme</b>	M	Select the Scheme.

<sup>2</sup> Mandatory or Optional property

		Value is "UARM" as the requested linked entity is CertifiedUAS.
<b>ObjectIDUniqueID</b>	M	As the requested object is CertifiedUAS the value of this attribute is the requested value of the Certified UAS registration mark.
<b>RequesterType</b>	M	This attribute should contain the code value of the requester type (see Table 4/Chapter 5).
<b>ObjectType</b>	M	Select the object type.  As the requested object is CertifiedUAS value '01' should be set.
<b>OriginatingMS</b>	M	Country code of the MS originating the request. ISO 3166-1 alpha-3 country codes must be used
<b>Timestamp</b>	M	Provide the request timestamp as datetimeoffset
<b>OriginatingMSReference</b>	O	Unique id of a request (see 3.1.3.1)
<b>RepositoryID</b>	O	Attribute not yet in use (attribute should not be provided in request)
<b>RelevantDate</b>	O	This attribute can be used in case of investigation of a past UAS activity, to indicate a date when the activity was executed. It is therefore not the same as Timestamp
<b>ReplyExpectedDate</b>	O	Attribute not yet in use

expandparameter	M/O	Description
CertifiedUAS	M	Certified UAS information

### HTTP status codes

Code	Description
200	OK. The responding server has processed the request. Examine the status of ReplyStatus attribute of the UASObject entity provided in the payload. In case of ReplyStatus = "01", the requested information object exists and is included in the result in payload as part of the expanded Property CertifiedUAS  In case of ReplyStatus = "02", the requested information object was not found



<b>400</b>	Bad Request. Please verify the request parameters. Contact EASA for further troubleshooting
<b>403</b>	Forbidden. Request was denied either by the EASA broker or by the responding server. Please verify the credentials used by the client application (client certificate, IP address). Please contact EASA for further troubleshooting
<b>404</b>	Requested path in URI was not found or the responding server provided the error. Please contact EASA for further troubleshooting
<b>500</b>	Internal server error. Please retry and if the problem persists please contact EASA for further troubleshooting
<b>501</b>	Not implemented. Please verify the request parameters. Please contact EASA for further troubleshooting
<b>502</b>	Bad gateway. Typically this problem indicates a problem in the routing of the request. Please retry and if the problem persists please contact EASA for further troubleshooting
<b>504</b>	Gateway Timeout. Typically this problem indicates a problem in the routing of the request. Please retry and if the problem persists please contact EASA for further troubleshooting

Note: The EASA message broker may mask the response of the server when an error occurs and relay only the error code.

Example request URL:

```
https://repif-api-test.easa.europa.eu/registration/ZZZ/v1/uas.svc/UASObjects?

$filter=ObjectIDDomain eq 'UAS' and ObjectIDCountry eq 'ZZZ' and
ObjectIDUniqueIDScheme eq 'UARM' and ObjectIDUniqueID eq 'ZZZ-S234' and
ObjectType eq '01' and OriginatingMS eq 'ZZA' and RequesterType eq '01' and
Timestamp eq datetimeoffset'2020-07-22T10:10:10.123Z'&

$expand=CertifiedUAS
```

Example request in HTTP:

Founding Members





```

GET
/registration/ZZZ/v1/uas.svc/UASObjects?$filter=ObjectIDDomain%20eq%20'UAS'%20
and%20ObjectIDCountry%20eq%20'ZZZ'%20and%20ObjectIDUniqueIDScheme%20eq%20'UARM'
%20and%20
ObjectIDUniqueID%20eq%20'ZZZ-S234'%20and%20ObjectType%20eq%20'01'%20and%20
OriginatingMS%20eq%20'ZZA'%20and%20RequesterType%20eq%20'01'%20and%20Timestamp%
20eq%20
datetimeoffset'2020-07-22T10:10:10.123Z'&$expand=CertifiedUASHTTP/1.1

Host: repif-api-test.easa.europa.eu

Accept: application/json

DataServiceVersion: 2.0

```

Example response in HTTP:

```

HTTP/1.1 200 OK

content-type: application/json; charset=utf-8

dataserviceversion: 2.0

{
  "d": {
    "results": [
      {
        "__metadata": {
          "id": "https://repif-api-
test.easa.europa.eu/registration/ZZZ/v1/uas.svc/UASObjects(ObjectIDDomain='UAS',
ObjectIDCountry='ZZZ',ObjectIDUniqueIDScheme='UARM',ObjectIDUniqueID='ZZZ-
S234')",
          "uri": "https://repif-api-
test.easa.europa.eu/registration/ZZZ/v1/uas.svc/UASObjects(ObjectIDDomain='UAS',
ObjectIDCountry='ZZZ',ObjectIDUniqueIDScheme='UARM',ObjectIDUniqueID='ZZZ-
S234')",
          "type": "EASA.Repository.UAS.v1.UASObject"
        },
        "OriginatingMS": "ZZA",

```

```

"Timestamp": "/Date(1595412610123+0000)/",
"OriginatingMSReference": "",
"RequesterType": "01",
"ObjectType": "01",
"ObjectIDDomain": "UAS",
"ObjectIDCountry": "ZZZ",
"ObjectIDUniqueIDScheme": "UARM",
"ObjectIDUniqueID": "ZZZ-S234",
"RepositoryID": "",
"RelevantDate": null,
"ReplyExpectedDate": null,
"ReplyOriginatingMS": "ZZZ",
"ReplyDestinationMS": "ZZA",
"ReplyingMS": "ZZZ",
"ReplyingMSReference": "A3B8C48B-20A2-4DA5-BE3B-5CB44B2E7666",
"ReplyTimestamp": "/Date(1600883169256+0000)/",
"Language": "EN",
"ReplyStatus": "01",
"DateOfData": "/Date(1600819200000+0000)/",
"UASOperator": {
  "__deferred": {
    "uri": "https://repif-api-
test.easa.europa.eu/registration/ZZZ/v1/uas.svc/UASObjects(ObjectIDDomain='UAS'
,ObjectIDCountry='ZZZ',ObjectIDUniqueIDScheme='UARM',ObjectIDUniqueID='ZZZ-
S234')/UASOperator"
  }
},
"CertifiedUAS": {
  "__metadata": {

```

```

    "id": "https://repif-api-test.easa.europa.eu/registration/ZZZ/v1/uas.svc/CertifiedUAS (RegistrationMark='ZZZ-S234',RegistrationCountry='ZZZ')",
    "uri": "https://repif-api-test.easa.europa.eu/registration/ZZZ/v1/uas.svc/CertifiedUAS (RegistrationMark='ZZZ-S234',RegistrationCountry='ZZZ')",
    "type": "EASA.Repository.UAS.v1.CertifiedUAS"
  },
  "CertifiedUASOwner": {
    "__metadata": {
      "type": "EASA.Repository.UAS.v1.CertifiedUASOwner"
    },
    "RepositoryID": "",
    "FullName": "Barbara Kowalska",
    "Address": "Hoża 22 00-123 Warszawa, Polska",
    "Email": "barbara.kowalska@xxx.com",
    "Telephone": "+123456789",
    "Birthdate": "/Date(788054400000+0000)/",
    "IdentificationNumber": ""
  },
  "RegistrationMark": "ZZZ-S234",
  "RegistrationCountry": "ZZZ",
  "UASManufacturer": "ABC",
  "UASModel": "Super 100",
  "UASSerialNumber": "OK1DGT567YF",
  "RegistrationDate": "/Date(1103673600000+0000)/",
  "Validity": true
}
]
}

```

```
}

```

Example of a response where the requested object was not found:

```
HTTP/1.1 200 OK
content-type: application/json; charset=utf-8
dataserviceversion: 2.0

{
  "d": {
    "results": [
      {
        "__metadata": {
          "id": "https://repif-api-test.easa.europa.eu/registration/ZZZ/v1/uas.svc/UASObjects(ObjectIDDomain='UAS',ObjectIDCountry='ZZZ',ObjectIDUniqueIDScheme='UARM',ObjectIDUniqueID='ZZZ-S235')",
          "uri": "https://repif-api-test.easa.europa.eu/registration/ZZZ/v1/uas.svc/UASObjects(ObjectIDDomain='UAS',ObjectIDCountry='ZZZ',ObjectIDUniqueIDScheme='UARM',ObjectIDUniqueID='ZZZ-S235')",
          "type": "EASA.Repository.UAS.v1.UASObject"
        },
        "OriginatingMS": "ZZA",
        "Timestamp": "/Date(1595412610123+0000)/",
        "OriginatingMSReference": "",
        "RequesterType": "01",

```

```

"ObjectType": "01",
"ObjectIDDomain": "UAS",
"ObjectIDCountry": "ZZZ",
"ObjectIDUniqueIDScheme": "UARM",
"ObjectIDUniqueID": "ZZZ-S235",
"RepositoryID": "",
"RelevantDate": null,
"ReplyExpectedDate": null,
"ReplyOriginatingMS": "ZZZ",
"ReplyDestinationMS": "ZZA",
"ReplyingMS": "ZZZ",
"ReplyingMSReference": "D6CFAAF2-6C69-40D6-A620-B4DF66E6DE79",
"ReplyTimestamp": "/Date(1600883316641+0000)/",
"Language": "EN",
"ReplyStatus": "02",
"DateOfData": "/Date(1600819200000+0000)/",
"UASOperator": {
  "__deferred": {
    "uri": "https://repif-api-
test.easa.europa.eu/registration/ZZZ/v1/uas.svc/UASObjects(ObjectIDDomain='UAS'
,ObjectIDCountry='ZZZ',ObjectIDUniqueIDScheme='UARM',ObjectIDUniqueID='ZZZ-
S235')/UASOperator"
  }
},
"CertifiedUAS": null
}
]
}
}

```

## 4.4 Reference Data

### 4.4.1 EASA OData EntitySets (source: API\_USAGE DOC) – Annex A

EntitySet: UASObjects					
Attribute	Description	M/O <sup>3</sup>	Type (Mutliplicity)	Length	Notes
ObjectIDDomain	Object identifier domain	M	String	3	Please read chapter 3 of this document for details on the values and handling of the attributes of this entityset
ObjectIDCountry	Object identifier country	M	String	3	
ObjectIDUniqueIDScheme	Representation scheme of the Unique ID	M	String	4	
ObjectIDUniqueID	Certified UAS registration mark / Operator registration number	M	String		
OriginatingMS	Originating MS	M	String	3	
Timestamp	Request timestamp	M	TimeStamp		
OriginatingMSReference	Originating MS reference	O	String		
RequesterType	Requester type	M	String		
ObjectType	Object type	M	String		
RepositoryID	Repository ID of the registered operator (Placeholder for future use, value should be empty or null)	O	String		
RelevantDate	Relevant date	O	Date		
ReplyExpectedDate	Expected reply date	O	Date		
ReplyOriginatingMS	Originating MS of reply	M	String	3	
ReplyDestinationMS	Destination MS of reply	M	String	3	
ReplyingMS	Replying MS	M	String	3	
ReplyingMSReference	Replying MS reference	M	String		
ReplyTimestamp	Reply timestamp	M	TimeStamp		
Language	Language in which the value of the reply is provided	M	String		
ReplyStatus	Reply status	M	String		
DateOfData	Date of the data	O	Date		

<sup>3</sup> Mandatory / Optional to provide a value for the attribute

UASOperator	UASOperator linked entity	O	Navigation (0..1)		
CertifiedUAS	CertifiedUAS linked entity	O	Navigation (0..1)		

EntitySet: CertifiedUAS					
Attribute	Description	M/OError!Bookmark not defined.	Type (Mutliplicity)	Length	Notes
RegistrationMark	UA registration mark	M	String		
RegistrationCountry	Registration country	M	String	3	Values from Table 1 of API usage guide
UASManufacturer	Manufacturer's name	M	String		
UASModel	Manufacturer's designation of the UAS	M	String		
UASSerialNumber	UAS Serial Number	M	String		
RegistrationDate	Registration date	M	Date		
Validity	Validity of the certified unmanned aircraft registration	M	Boolean	1	
CertifiedUASOwner	Operator details of the certified UAS	M	Complex		
ComplexType: CertifiedUASOwner					
Attribute	Description	M/OError!Bookmark not defined.	Type (Mutliplicity)	Length	Notes
RepositoryID	Repository ID of the person under whose name the certified drone is registered	O	String		Will become mandatory once the technical solution available. Value should be empty or null for now
FullName	Full name of the person under whose name the	M	String		

	certified drone is registered				
Address	Address of the person under whose name the certified drone is registered	M	String		
Email	Email of the person under whose name the certified drone is registered	M	String		
Telephone	Tel. number of the person under whose name the certified drone is registered	M	String		
Birthdate	Date of birth of the person under whose name the certified drone is registered in case it is a natural person	O	Date		
IdentificationNumber	Identification number of the person under whose name the certified drone is registered in case it is a legal entity	O	String		

EntitySet: UASOperators					
Attribute	Description	M/OError!Bookmark not defined.	Type (Mutliplicity)	Length	Notes
RegistrationNumber	Operator registration number	M	String	16	Example: FIN87astrdge1
RegistrationCountry	Registration country	M	String	3	Values from Table 1 of API usage guide
RepositoryID	Repository ID of the registered operator	O	String		Value should be empty or null if not now
FullName	Full name of the registered operator	M	String		
Address	Address of the registered operator	M	String		
Email	Email of the registered operator	M	String		
Telephone	Tel. number of the registered operator	M	String		



Birthdate	Date of birth of the registered operator in case it is a natural person	O	Date		Each of these t attributes is optional but it mandatory to specify one of two, depending the person type (natural or lega
IdentificationNumber	Identification number of the registered operator in case it is a legal entity	O	String		
Validity	Validity of the UAS operator registration	M	Boolean	1	
RegistrationDate	Registration date	M	Date		
OperationalAuthorisations	Operational authorisations	O	Navigation (0..*)		
OperationalDeclarations	Operational declarations	O	Navigation (0..*)		
LUCHeld	LUC held	O	Navigation (0..1)		
Attachment	Reply attachment	O	Navigation (0..1)		MS should provide a copy of the operational authorisation a of the LUC 'te of approval' he by the UAS operator registered in th Member State. The copy shou be exchanged through the repository as a unstructured attachment (e.g PDF file)

EntitySet: OperationalAuthorisations					
Attribute	Description	M/OError!B ookmark not defined.	Type (Mutliplicity)	Length	Notes
AuthorisationNumber	Authorisation number	M	String		Elemen the for elemen form a numbe



					accord Operat author templa includ AMC UAS.S (1)
UASIdentifiers	Serial number or UA registration mark (for certified UAS)	M	Navigation (1..*)		Elemen the for
AuthorisedLocations	Authorised location(s)	M	Navigation (1..*)		
AuthorisedAirspaceRiskLevels	Authorised airspace risk level	M	Navigation (1..*)		
OperationalLimitations	Operational limitations	M	Navigation (1..*)		
MitigationMeasures	Mitigation measures	M	Navigation (1..*)		
RemotePilotCompetencies	Remote pilot competency	M	Navigation (1..*)		
OtherStaffCompetencies	Competency of other staff essential for the safety of the operation	O	Navigation (0..*)		
ExpirationDate	Expiration date	M	Date		Elemen the for

EntitySet: OperationalDeclarations					
Attribute	Description	M/OError!Bookmark not defined.	Type (Mutliplicity)	Length	Notes
OperationalDeclarationID	Technical ID to identify each entity	M	String		Techn identif entity, genera MS
UASProducts	UAS products	M	Navigation (1..*)		
STSNumber	STS number	M	String		Value Table usage
ExpirationDate	Expiration date	M	Date		



EntitySet:	UASProducts				
Attribute	Description	M/OError!Bookmark not defined.	Type (Mutliplicity)	Length	Notes
UASManufacturer	UAS manufacturer	M	String		
UASModel	UAS model	M	String		

#### 4.4.2 Country Codes

The following table shows the ISO3166-1 alpha-3 country codes (always in CAPITAL) that shall be used for attributes indicating a Member State (eg OriginatingMS, RegistrationCountry). Additionally, for the test environment, the EASA test server will emulate the country code “ZZZ”.

Member State	Code
Austria	AUT
Belgium	BEL
Bulgaria	BGR
Croatia	HRV
Cyprus	CYP
Czech Republic	CZE
Denmark	DNK
Estonia	EST
Finland	FIN
France	FRA
Germany	DEU
Greece	GRC
Hungary	HUN
Iceland	ISL
Ireland	IRL
Italy	ITA

Latvia	LVA
Liechtenstein	LIE
Lithuania	LTU
Luxembourg	LUX
Malta	MLT
Netherlands	NLD
Norway	NOR
Poland	POL
Portugal	PRT
Romania	ROU
Slovakia	SVK
Slovenia	SVN
Spain	ESP
Sweden	SWE
Switzerland	CHE

Table 2

#### 4.4.3 Language Codes

The following table shows the ISO639-1 language codes (always in CAPITAL) that shall be used for attributes indicating an EU language (Language attribute in UASObject).

Language	Code
Bulgarian	BG
Croatian	HR
Czech	CS
Danish	DA
Dutch	NL
English	EN



Estonian	ET
Finnish	FI
French	FR
German	DE
Greek	EL
Hungarian	HU
Irish	GA
Italian	IT
Latvian	LV
Lithuanian	LT
Maltese	MT
Polish	PL
Portuguese	PT
Romanian	RO
Slovak	SK
Slovenian	SL
Spanish, Castilian	ES
Swedish	SV

**Table 3**

**4.4.4 STS Values**

<b>Value</b>
STS-01
STS-02

**Table 4**

**4.4.5 Requester Types**

<i>Code</i>	<i>Description</i>
-------------	--------------------



01	Public
02	Police
03	Other law enforcement authority
04	Search & Rescue
05	Competent authority entrusted with the investigation of civil aviation accidents and incidents
06	ANSP / U-space Service Providers
07	National Aviation/Competent Authority

**Table 5**



Founding Members





# 5 Service Provisioning

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## 6 References

Nr.	Version	Reference
[1]		
[2]		
[3]		
[4]		
[5]		
[6]		
[7]		
[8]		<a href="https://www.atmmasterplan.eu/">https://www.atmmasterplan.eu/</a>
[9]		<a href="https://www.sesarju.eu/u-space-blueprint">https://www.sesarju.eu/u-space-blueprint</a>
[10]		Efficient, safe and sustainable traffic at sea (EfficienSea2), a Horizon 2020 Project, Grant Agreement No 636329  <a href="https://efficiensea2.org">https://efficiensea2.org</a> <a href="https://efficiensea2.org/wp-content/uploads/2018/04/Deliverable-3.6.Standard-proposal-for-Maritime-Cloud-service-specification.pdf">https://efficiensea2.org/wp-content/uploads/2018/04/Deliverable-3.6.Standard-proposal-for-Maritime-Cloud-service-specification.pdf</a>
[11]		IALA specification for e-navigation technical services  <a href="https://www.iala-aism.org/product/g1128-specification-e-navigation-technical-services">https://www.iala-aism.org/product/g1128-specification-e-navigation-technical-services</a>
[12]		IATA Safety Report 2014 (Issued April 2015)  <a href="http://www.aviation-accidents.net/report-download.php?id=90003">http://www.aviation-accidents.net/report-download.php?id=90003</a>
[13]		



[14]		
[15]		<p><i>REGULATION (EU) 2016/679 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL</i></p> <p><i>of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation)</i></p>
[16]	2018/1725	

