

# SWIM-SERV-022 Information definition

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## Requirement

<b>Title</b>	Information definition
<b>Identifier</b>	SWIM-SERV-022
<b>Requirement</b>	<p>A service description <b>shall</b> describe the elements of the exchanged information including:</p> <ul style="list-style-type: none"><li>• the name of the element;</li><li>• the definition of the element;</li><li>• the cardinality applicable to the element, including whether the element is optional, conditional or mandatory in the exchange;</li><li>• constraints applicable to the element, such as:<ul style="list-style-type: none"><li>• datatype;</li><li>• value ranges;</li><li>• special values;</li><li>• character set restrictions;</li></ul></li><li>• the semantic correspondence of the element with the AIRM; and</li><li>• the structure and relevant relationships between the elements.</li></ul>
<b>Rationale</b>	This requirement ensures that the precise meaning of the exchanged information is shared by all parties of the information exchange.
<b>Verification</b>	<p>Completeness: Verify that the service description describes all elements of the exchanged information and that the required details are provided.</p> <p>Consistency: Verify that the elements are consistent with each other and with the AIRM concepts used in the semantic correspondence.</p> <p>Correctness: Not Applicable.</p>
<b>Examples/Notes</b>	<p>Note: The service description must describe all elements of the exchanged information at all levels, down from the service operation parameters to attributes and data types.</p> <p>Note: It is best practice to base the information definition on the requirements found in the EUROCONTROL Specification for SWIM Information Definition [RD 2], ensuring that it contains the extra details required by this requirement.</p> <p>Note: The information definition can be provided by reference, for example when using an AIRM conformant standardised information exchange models, such as Aeronautical Information Exchange Model (AIXM) [RD 15] and ICAO Meteorological Information Exchange Model (IWXXM) [RD 16].</p>
<b>Level of Implementation</b>	Mandatory

## Guidance

This requirements sets out the minimum detail needed to **describe** each element of the information that is exchanged. For example, if the exchange involves information about "aerodromes" the "aerodrome" **element type** should be described. This means the element type should be given a name, a description, etc based on the bulleted list in the requirement. The result is called an **information definition**.

Most of the details required are self-explanatory. The **semantic correspondence** of the element type with the AIRM is established following the requirements found in the [Guidance on semantic correspondence](#) section of the SWIM Information Definition Handbook.

The information definition should be complete, covering all of the element types that are exchanged, including a definition of service operation parameters, attributes and data types. However, the information definition can be provided in several ways e.g.:

- embedded into the service description
- by reference to an external document
- by reference to a standardised information exchange model.

Regardless of the option chosen, [SWIM-SERV-023 AIRM conformance](#) requires that the service description contains a statement on its AIRM conformance. This requirement affects SWIM-SERV-022; the information definition shall follow the semantic correspondence requirements in the EUROCONTROL Specification for SWIM Information Definition in order to provide evidence of its AIRM conformance.

#### Best Practice

It is best practice to base the information definition on the requirements found in the EUROCONTROL Specification for SWIM Information Definition, ensuring that it also contains the extra details required by this requirement.

 The EUROCONTROL Specification for SWIM Information Definition requires less detail to be provided for each element type: [SWIM-INFO-007 Information definition concepts](#) requires only a name, definition and (if needed) a data type.

However, the specification also goes beyond what is asked for by the EUROCONTROL Specification for SWIM Service Description. For example, it requires that each element type has a unique identifier ([SWIM-INFO-008 Unique identifiers for concepts](#)) and a dedicated namespace.

## Examples

See the [Information Definition section](#) within the [Donlon TOBT Setting Service Description](#).

## Guidance for JSON service description

#### tentative JSON Guidance

[Guidance for JSON service descriptions](#) integrated within the [SWIM Service Description Handbook](#).

#### scope

The guidance below includes guidance for requirement [SWIM-SERV-023 AIRM conformance](#).

## Schema

The guidance concerns JSON Schema v0.0.3 (see [Schema releases](#)).

```

"ServiceInformationDescription" :
{
  "description" : "A container for the description of the information exchanged by
the information service.",
  "type": "object",
  "additionalProperties": false,
  "required": ["informationDefinition", "exchangeSchema"],
  "properties":
  {
    "informationDefinition":
    {
      "description" : "A formal representation of information concepts
or data concepts. [SWIM-SERV-022]",
      "type" : "array",
      "items" : { "$ref": "#/definitions/InformationDefinition" },
      "minItems": 1
    },
  }
},

"InformationDefinition" :
{
  "description" : "A formal representation of information concepts or data
concepts. [SWIM-SERV-022]",
  "type": "object",
  "additionalProperties": false,
  "required": ["name", "description", "airmConformant"],
  "properties":
  {
    "name":
    {
      "description" : "The name of the Information Definition. [SWIM-
SERV-022]",
      "type" : "string",
      "minLength":1
    },
    "description":
    {
      "description" : "The description of the Information Definition.
[SWIM-SERV-022]",
      "type" : "string",
      "minLength":1
    },
    "airmConformant":
    {
      "description" : "An indication whether the information
definition used by the service conforms
to the ATM Information Reference Model. [SWIM-SERV-023]",
      "type" : "boolean"
    },
    "airmVersion":
    {
      "description" : "The applicable version of the ATM Information
Reference Model. [SWIM-SERV-023]",
      "type" : "string"
    }
  }
},

```

Rules expressed for the cases as defined in Registry URD.

case	rules
COMPLIANT	mandatory
CANDIDATE	
DEFINITION	

## Guidance

Within field `informationDefinition` (itself within field `serviceInformationDescription`) list **one or more** occurrences of type `InformationDefinition`.

### InformationDefinition - Mandatory

A formal representation of information concepts or data concepts.

Rational: Enables to understand the information provided by the service, with a specific focus to the semantics of the information

attribute name	description	type	guidance	rule
name	The name of the Information Definition.	string	Provide a name that indicates which part of all the information exchanged by the service is going to be described. In the absence of multiple parts a generic name can be provides e.g. Information Definition	Mandatory
description	The description of the Information Definition.	string	<p>Introduce this information definition.</p> <ul style="list-style-type: none"> <li>Eg use the information definition abstract <a href="#">SWIM-INFO-005 Information definition scope</a>.</li> </ul> <p>Make sure to have one or several service documents with type <code>INFORMATION_DEFINITION</code>. See <a href="#">Guidance on serviceDocument</a>.</p>	Mandatory
airmConformant	An indication whether the information definition used by the service conforms to the ATM Information Reference Model.	boolean	<p>Indicate whether the service payload has semantic correspondence with the AIRM.</p> <div style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;">  This attribute is for requirement <a href="#">SWIM-SERV-023 AIRM conformance</a> </div>	Mandatory
airmVersion	The applicable version of the ATM Information Reference Model.	string	<p>Guidance: Version of the AIRM that was used to establish semantic correspondence.</p> <p>Rule: Mandatory when <code>airmConformant</code> is true. No use otherwise.</p> <p>Note: Whether stand-alone or integrated, make sure the semantic correspondence is made available in a service document (see below).</p> <div style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;">  This attribute is for requirement <a href="#">SWIM-SERV-023 AIRM conformance</a> </div>	Mandatory Conditional

### Information Definition document - Mandatory

The JSON Schema does not include attributes to describe all elements exchanged. The full description of the information definition is provided as a service document.

Within "serviceDocument" field (itself within "serviceDescriptionReferences" field) create **one or more** instances of Document with type `INFORMATION_DEFINITION`.



#### semantic correspondence

When the semantic correspondence is a separate document from the Information Definition, create **one or more** instances of Document with type `AIRM_TRACE` (in addition to the document(s) with type `INFORMATION_DEFINITION`).

See [Guidance on serviceDocument](#) on how to fill in documents.

## Example

### Semantic correspondence within info defn

```

    "serviceInformationDescription": {
      "informationDefinition": [
        {
          "name": "Service Information Definition",
          "description": "The information definition is described in a
separate document. This includes the semantic correspondence. See References.",
          "airmConformant": true,
          "airmVersion": "1.0.0"
        }
      ],
    }

    "serviceDocument": [
      {
        "documentType": "INFORMATION_DEFINITION",
        "title": "TOBT Setting Information Definition",
        "version": "1.0",
        "description": "Information Definition for the DONLON TOBT Setting
service. Includes Semantic correspondence with traces to the AIRM",
        "reference": "public:/2019-09/InformationDefinition.txt"
      }
    ]

```

## Semantic correspondence separate from info defn

```

    "serviceInformationDescription": {
      "informationDefinition": [
        {
          "name": "Service Information Definition",
          "description": "The information definition is described in a
separate document. The semantic correspondence is still another document. See References.",
          "airmConformant": true,
          "airmVersion": "1.0.0"
        }
      ]
    }

    "serviceDocument": [
      {
        "documentType": "INFORMATION_DEFINITION",
        "title": "TOBT Setting Information Definition",
        "version": "1.0",
        "description": "Information Definition for the DONLON TOBT Setting
service. Without AIRM Semantic correspondence.",
        "reference": "public:/2019-09/InformationDefinition.txt"
      },
      {
        "documentType": "AIRM_TRACE",
        "title": "TOBT Setting Semantic Correspondence",
        "version": "1.0",
        "description": "AIRM Semantic correspondence for the DONLON TOBT
Setting service",
        "reference": "public:/2019-09/TraceToAIRM.txt"
      }
    ]

```

A complete JSON example is available in page [JSON example - Donlon TOBT Setting service description](#).