

Translator

Service Description

Service ID: *"translator"*

Abstract

This document describes an abstract service that provides functions and features to communicate producers and consumers with different protocols.



ARTEMIS Innovation Pilot Project: Arrowhead
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[Production and Energy System Automation Intelligent-Built environment and urban infrastructure for sustainable and friendly cities]

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1 Overview

This document describes an abstract Eclipse Arrowhead service that was designed to allow data producers and consumers with different protocols to communicate in a transparent implementation. The Translator service can enable communication between CoAP, HTTP and FIWARE.

The rest of this document is organized as follows. In the remainder of this section we consider significant prior art, describe how this service is meant to be used and comment on the status of this document. In Section 2, we describe the abstract interface, in terms of functions invoked by messages, provided by this service. Finally, in Section 3, we present the data types used by those functions.



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1.1 Introduction

This Arrowhead Core service [1] proposal is a vital part for enabling message and data exchange in an Arrowhead local cloud with different protocols. The Translator service provides features to enable communication between different protocols.

1.2 Status of this Document

This document represents the current version of the Translator service. Eclipse Arrowhead, being part of an academic and R&D community is constantly evolving to provide more features and increased performance and stability. More features can therefore be added to the Translator service in the future. This document will be updated to incorporate any new features or changes.

2 Service Interface

This section lists the *functions* that must be exposed by a Translator service. Each function represents one feature the Translator service can *perform* a task, e.g. list systems or services, or store and fetch data. In particular, each following subsection names an abstract function, an input type and an output type, in that order. The input type is named inside parentheses, while the output type is preceded by a colon. Input and output types are only denoted when accepted or returned, respectively, by the function in question.

All abstract data types named in this section are defined in Section 3.

2.1 function **PostTranslator** (**TranslatorSetup**) : **TranslatorHubAccess**

Create a TranslatorHub with the Translator Setup parameters.

2.2 function **GetTranslatorList** () : **TranslatorHubAccess**

Get List of Enabled TranslatorHubs.

2.3 function **PluginGetEntityValue** () : **Object**

Plugin to parse from FIWARE to SenML, Plain Text, or JSON.

2.4 function **FiwareGetIt** () : **FiwareUrlServices**

Return all the FIWARE services enabled.

2.5 function **FiwareListEntities** (**id,type,idPattern,typePattern,q,mq,georel,geometry,coords,lin**) : **FiwareEntity**

Return list of FIWARE Entities and Arrowhead Providers.

2.6 function **FiwareCreateEntity** (**FiwareEntity**)

Create a new FIWARE Entity.

2.7 function **FiwareRetrieveEntity** (**id,type,attrs,metadata,options**) : **FiwareEntity**

Request a FIWARE Entity and/or an Arrowhead Service.

2.8 function **FiwareRetrieveEntityAttributes** (**id,type,attrs,metadata,options**) : **Object**

Request Attributes of a specific FIWARE Entity or an Arrowhead Service.

2.9 function **FiwareUpdateAppendEntityAttributes** (**id,type,attrs,metadata,options,Object**)

Update or Append an attribute to a FIWARE Entity.

2.10 function **FiwareRemoveEntity** (**id,type**)

Remove a FIWARE Entity.



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2.11 function **FiwareListEntityTypes** (**limit,offset,options**) : **Object**

Request the list of FIWARE types.

2.12 function **FiwareRetrieveEntityType** (**type**) : **Object**

Request an specific FIWRE type.

3 Information Model

Here, the main data object model that is used by the Translator service is listed.

3.1 struct **TranslatorHubAccess**

Below is a summary of the most used data entries in an JSON document.

Field	Type	Description
id	Id	Hub Id.
ip	IP address	IP Address of the Hub.
port	IP port	IP port of the Hub.

3.2 struct **TranslatorSetup**

Below is a summary of the most used data entries in an JSON document.

Field	Type	Description
producerName	Name	Producer Name.
producerAddress	Address	Producer Address.
consumerName	Name	Consumer Name.
consumerAddress	Address	Consumer Address.

3.3 struct **FiwareUrlServices**

Below is a summary of the most used data entries in an JSON document.

Field	Type	Description
entities_url	URL path	Entities URL path.
types_url	URL path	Types URL path.
subscriptions_url	URL path	Subscriptions URL path.
registrations_url	URL path	Registrations URL path.

3.4 struct **FiwareEntity**

Below is a summary of the most used data entries in an JSON document.

Field	Type	Description
id	Entity Id	Id of the Entity.
type	Entity Type	Type of the Entity.
others	Any	Any other parameters.

3.5 Primitives

Types and structures mentioned throughout this document that are assumed to be available to implementations of this service. The concrete interpretations of each of these types and structures must be provided by any IDD document claiming to implement this service.

Type	Description
Id	Unique String that points to a Translator Hub.
IP address	String of an IP Address.
IP port	Number of the port.
Name	Unique String that points to a Producer or Subscriber.
Address	String of a host, it contains the IP Address and can include also the port number.
URL path	String of the Path of a URL.
Entity Id	Unique String that points to a FIWARE Entity.
Entity Type	String that points to a FIWARE Type.
Any	Any JSON Element (JSON Object or JSON Array).
Object	JSON Object.
type	Comma-separated list of elements. Retrieve entities whose type matches one of the elements in the list.
idPattern	A correctly formatted regular expression. Retrieve entities whose ID matches the regular expression. Incompatible with id.
typePattern	A correctly formatted regular expression. Retrieve entities whose type matches the regular expression. Incompatible with type.
q	A query expression, composed of a list of statements separated by ;.
mq	A query expression for attribute metadata, composed of a list of statements separated by ;.
georel	Spatial relationship between matching entities and a reference shape.
geometry	Geographical area to which the query is restricted.
coords	List of latitude-longitude pairs of coordinates separated by ','.
limit	Limits the number of entities to be retrieved.
offset	Establishes the offset from where entities are retrieved.
attrs	Comma-separated list of attribute names whose data are to be included in the response. The attributes are retrieved in the order specified by this parameter. If this parameter is not included, the attributes are retrieved in arbitrary order.
metadata	A list of metadata names to include in the response.
orderBy	Criteria for ordering results.
options	Options dictionary.



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4 References

[1] J. Delsing, “Iot automation : Arrowhead framework,” 2017.



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5 Revision History

5.1 Amendments

No.	Date	Version	Subject of Amendments	Author
1	2019-03-27	1.0	Initial	Pablo Puñal Pereira
2	2019-05-02	1.1	Models and Interfaces update	Pablo Puñal Pereira
3	2020-12-11	2.0	Template Update	Pablo Puñal Pereira

5.2 Quality Assurance

No.	Date	Version	Approved by
1			