



**Private Public Partnership Project (PPP)**

Large-scale Integrated Project (IP)



**D.18.7.3: FIWARE Technical Roadmap (I2ND Chapter)**

**Project acronym:** FI-Core

**Project full title:** Future Internet Core

**Contract No.:** 632893

**Strategic Objective:** FI.ICT-2011.1.7 Technology foundation: Future Internet Core Platform

**Project Document Number:** ICT-2013-FI-632893-18-D.18.7.3

**Project Document Date:** 18.10.2016

**Deliverable Type and Security:** Public

**Author:** Miguel Carrillo (TID)

**Contributors:** Jaime Martín Losa (EPROS)

# 1 Introduction

**IMPORTANT NOTE:** after the discontinuation of most of the GERis in the I2ND chapter, there is one single GERi applicable to this roadmap, Advanced Middleware (Kiara). This component has focused the evolution in R5 in the development of encryption mechanisms contained in a single Feature. Most of the effort will be allocated to tasks other than development of new functionality: in-depth code review, optimization of code, support to adopters and participations in events and demos.

Despite the fact that the deliverable is therefore extremely short and the roadmap is concentrated in a single Feature, we must deliver it to comply with our formal obligations and also for the sake of consistency with the procedures across different technical chapters in FIWARE.

## 1.1 Executive Summary

This document describes the roadmap of the features that FIWARE I2ND chapter delivered in Release 5, providing a final snapshot of the results of this chapter at the end of this major release.

A clear table shows the releases & sprints mapping them to calendar dates in the whole history of the platform until the end of Release 5 (September 2016). This technical chapter provides its internal roadmap for Release 5 in relation with this table.

The I2ND Chapter has been reduced in Release 5 to one single GERi (KIARA) after the decision of the EC to stop the activities in the rest of them. The situation depicted in this document is consistent with this decision.

## 1.2 About This Document

The Advanced Middleware, Interface to Networks and Robotics (I2ND) chapter develops Generic Enablers which provide different kind of functionalities that can be exploited both among GEs and towards external applications and services developed using FIWARE components.

The GEs developed in the chapter include an advanced integration middleware to be used by all FIWARE GEs requiring advanced communication, and a GE to ease management of Robotic devices and their integration with other FIWARE GEs. Moreover, the chapter deals with GEs to enable Software-Defined Networks (SDN) in private, enterprise and public settings. They can be involved in the whole spectrum of communication infrastructure, all the way from network operators' infrastructure (where single nodes typically are under direct control of an operator) to data center networking devices (under control of a single cloud provider). The node functionality is virtualized – for example the I2ND functionality could be accessed by further potential providers, like virtual operators.

The FIWARE I2ND Chapter's Technical Roadmap supplies information about what the different major releases of the chapter will develop. Releases are composed of features associated with overall epics. An epic captures a large body of work. It is essentially a large user story that can be broken down into a number of smaller stories. A feature may have a few related stories. This document supplies the Release 5 roadmap including a description of the features and epics associated with the release.

### 1.3 Intended Audience

The document targets those interested in the intended direction of FIWARE's I2ND Chapter.

### 1.4 Structure of this Document

The document is generated out of a set of documents provided in the public FIWARE wiki. For the current version of the documents, please visit the public wiki at <http://wiki.fiware.org/>

The following resources were used to generate this document:

- [FIWARE Technical Roadmap](#)
- [Releases and Sprints numbering, with mapping to calendar dates](#)
- [Roadmap of Advanced middleware, Interface to Networks and Robotics](#)
- [FIWARE.Feature.I2ND.Kiara.RPCJavaSecurity.Encryption](#)

The present document has been created from the wiki using automated tools and part of the links may not work. You may occasionally find oddities in the text format that side effects of the process but they do not deter the quality of the technical contents.

### 1.5 Keyword list

FIWARE, FI-Core, Acceleration Programme, Accelerators, PPP, Architecture Board, Steering Board, Roadmap, Reference Architecture, Generic Enabler, Open Specifications, I2ND, Cloud, IoT, Data/Media and Context Management, Applications/Services and Data Delivery, Delivery Framework, Security, Advanced Middleware, Interfaces to Networks and Robotics, Communities, Tools, Sustainability Support Tools, ICT, es.Internet, Apiary, Github, Latin American Platform.

### 1.6 Changes History

Release	Major changes description	Date	Editor
v1	Initial Version of deliverable	2016-10-03	TID
v2	Minor changes	2016-10-11	EPROS
v3	Minor changes in the wording and addition of caveats	2016-10-18	TID

### 1.7 Table of Contents

1 Introduction ..... 2

    1.1 Executive Summary ..... 2

- 1.2 About This Document ..... 2
- 1.3 Intended Audience ..... 3
- 1.4 Structure of this Document..... 3
- 1.5 Keyword list ..... 3
- 1.6 Changes History ..... 3
- 1.7 Table of Contents ..... 3
- 2 FIWARE Technical Roadmap ..... 5
- 3 Releases and Sprints numbering, with mapping to calendar dates ..... 6
- 4 Roadmap of Advanced middleware, Interface to Networks and Robotics..... 8
  - 4.1 Introduction..... 8
  - 4.2 Fifth Release ..... 8
- 5 Advanced Middleware (Kiara) ..... 10
  - 5.1 FIWARE.Epic.I2ND.Kiara.RPCJavaSecurity ..... 10
  - 5.2 FIWARE.Feature.I2ND.Kiara.RPCJavaSecurity.Encryption ..... 10

## 2 FIWARE Technical Roadmap

FIWARE's technical roadmap brings information about what the different major releases of FIWARE will bring and when they will be available on FIWARE Lab. For each of the FIWARE chapters and for every generic enabler, the list of features available for the particular release is linked within the following pages. You can explore which release number the particular features are currently scheduled for and contact the affiliated responsible persons in charge if you need more details.

The first version of the FIWARE platform was made available on the FIWARE Testbed during 3Q2012 for experiments by the use case projects within the FI-PPP program. The overall goal for this first Release was to provide a sufficiently complete set of FIWARE GEs which Use Case Projects selected in the first phase of the FI-PPP program could test and use in their proof of concepts. The second release of FIWARE is focused on integration (both inside and across chapters) as well as evolution of FIWARE GEs based on feedback from target Users (both Use Case Projects selected in the first phase of the FI-PPP or other stakeholders like current/target customers of FIWARE partners). The third release is focused on consolidation of the platform and packaging.

The fourth and fifth releases were delivered by a new set of partners (many of them already present in releases 1,2 and 3) and will bring a reorganization of the map of GEs. These GEs will continue building the core platform ensuring that the results are open and royalty free.

Once the development of a given minor release of FIWARE is finished, it can be made available on FIWARE Lab, typically by the end of the following month. Updates of all FIWARE GEs on FIWARE Lab will be planned after each major release completion. Nevertheless, updates of FIWARE Lab may be decided on a more frequent basis at FIWARE GE level, i.e., the following month after completion of some Sprint. Please check the [Releases and Sprints numbering, with mapping to calendar dates](#) for further information.

FIWARE's Technical Roadmap is broken into 7 partial roadmaps, one per FIWARE Technical Chapter:

- [Roadmap of Cloud Hosting](#)
- [Roadmap of Data/Context Management](#)
- [Roadmap of Internet of Things \(IoT\) Services](#)
- [Roadmap of Applications/Services Ecosystem and Delivery Framework](#)
- [Roadmap of Security](#)
- [Roadmap of Advanced middleware, Interface to Networks and Robotics](#)
- [Roadmap of Advanced Web-based UI](#)

The Developers Community and Tools chapter has changed their focus and they do not produce GEs as such anymore. We keep their past roadmap as it was at the end of 2014 for future reference:

- [Roadmap of Developers Community and Tools](#)

**Important Note:** it is important to mention that most (if not all) of the Generic Enabler implementations are based on existing baseline assets (open source or proprietary), actively developed and promoted by the corresponding companies. Each company has done internal analysis of requirements and priorities for each of the technologies, based on their business needs and the needs of their customers. The goal of FIWARE is to develop these assets even further, to integrate them together to form a coherent platform, and to offer them to the FI-PPP ecosystem, for the benefit of the community. This roadmap reflects this approach.

### 3 Releases and Sprints numbering, with mapping to calendar dates

The list of Releases and Sprints together with the time frame of each one of them is depicted in the following two tables.

Release and Sprint numbering

Versions	Nov 2011	Dec 2011	Jan 2012	Feb 2012	Mar 2012	Apr 2012	May 2012	Jun 2012	Jul 2012	Aug 2012	Sep 2012	Oct 2012	Nov 2012	Dec 2012	Jan 2013	Feb 2013	Mar 2013	Apr 2013	May 2013	Jun 2013	Jul 2013	Aug 2013	Sep 2013	Oct 2013	Nov 2013	Dec 2013	Jan 2014	Feb 2014	Mar 2014	Apr 2014	May 2014
FIWARE(Closed) Month Number	M7	M8	M9	M10	M11	M12	M13	M14	M15	M16	M17	M18	M19	M20	M21	M22	M23	M24	M25	M26	M27	M28	M29	M30	M31	M32	M33	M34	M35	M36	M37
FIWARE Continuation (ongoing) Month Number																															
First Major Release	1.1.1	1.1.2	1.1.3	1.2.1	1.2.2	1.2.3	1.3.1	1.3.2	1.3.3	1.4.1	1.4.2	1.4.3																			
Second Major Release										2.0.1	2.0.2	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2	2.2.3	2.3.1	2.3.2	2.3.3											
Third Major Release																					3.1.1	3.1.2	3.1.3	3.2.1	3.2.2	3.2.3	3.3.1	3.3.2	3.3.3	3.4.1	3.4.2
Fourth Major Release																															
Fifth Major Release																															

Jun 2014	Jul 2014	Ago 2014	Sep 2014	Oct 2014	Nov 2014	Dec 2014	Jan 2015	Feb 2015	Mar 2015	Apr 2015	May 2015	Jun 2015	Jul 2015	Aug 2015	Sep 2015	Oct 2015	Nov 2015	Dec 2015	Jan 2016	Feb 2016	Mar 2016	Apr 2016	May 2016	Jun 2016	Jul 2016	Aug 2016	Sep 2016	Oct 2016	Nov 2016	Dec 2016
M38	M39	M40	M41	M42	M43	M44																								
			M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15	M16	M17	M18	M19	M20	M21	M22	M23	M24	M25	M26	M27	M28
3.4.3	3.5.1	3.5.2	3.5.3																											
				4.1.1	4.1.2	4.1.3	4.2.1	4.2.2	4.2.3	4.3.1	4.3.2	4.3.3	4.4.1	4.4.2	4.4.3															
																5.1.1	5.1.2	5.1.3	5.2.1	5.2.2	5.2.3	5.3.1	5.3.2	5.3.3	5.4.1	5.4.2	5.4.3			

**PLEASE NOTE** that software associated to Minor Releases may be made available on FIWARE Lab after completing that Minor Release, typically by the end of the following month. A revised version of the documentation accompanying software delivered after closing a Minor Release is also typically delivered by end of the following month.

As explained in [FIWARE Agile Development Methodology](#), the Releases and Sprints are referred to as

- FIWARE.Release.x.y
- FIWARE.Sprint.x.y.z

**IMPORTANT NOTE FOR FIWARE DEVELOPMENT TEAMS:** Make sure that you adhere to this convention when you fill in the fields "FIWARE Release id" and "FIWARE Sprint Id" in the backlog trackers.

## 4 Roadmap of Advanced middleware, Interface to Networks and Robotics

### 4.1 Introduction

The Advanced Middleware, Interface to Networks and Robotics (I2ND) chapter in FIWARE originally provided interfaces to run an open and standardised network infrastructure (underlying a network operator control or network virtualisation), an Advanced Middleware which enables flexible, efficient, scalable, and secure communication between distributed applications and to/between FIWARE GEs, and interfaces to easily manage robots within FIWARE. Starting from FIWARE Release 5, the chapter will fully support the Advanced Middleware only, while further development for other GEs will not take place.

You can learn more about the I2ND Chapter by reading the [FIWARE Product Vision](#) . The following sections contain a description of the Technical Roadmap planned for the chapter, which will be developed through subsequent releases of the FIWARE Platform.

### 4.2 Fifth Release

Following is a description of the major features that will be added in the fifth major release of FIWARE. These features will be implemented by the Advanced Middleware (Kiara) FIWARE GE implementing the Reference Architecture of the I2ND Chapter. Most KIARA features have been already developed, and only Security related tasks were pending on the roadmap.

#### 4.2.1.1 **Advanced Middleware (Kiara)**

The FIWARE Advanced Middleware GE (Kiara) is a Java based implementation of a modern communication middleware for efficient and secure applications.

- Encryption Pluggable API
- AES based default encryption plugin supporting all cryptographic operations, including encryption, decryption, and digital signatures.

#### 4.2.1.2 **Summary of Supported Features**

FI-WARE GE	Supported Features	Epics under analysis
Advanced Middleware (Kiara)	<p><i>IMPORTANT NOTE: until Release 3 this GE was under the chapter formerly known as "Advanced Middleware and Web UI " (now called <a href="#">Advanced Web-based UI</a> ). From Release 4 on, this GE is managed within this chapter.</i></p> <p>Release 5.1</p>	<ul style="list-style-type: none"> <li>• <a href="#">FIWARE.Epic.I2ND.Kiara.RPCJavaSecurity</a></li> </ul>

	<ul style="list-style-type: none"><li>• <a href="#">FIWARE.Feature.I2ND.Kiara.RPCJavaSecurity.Encryption</a></li></ul>	
--	--	--

You can check out the previous releases of this FIWARE chapter on [Roadmap of Advanced middleware, Interface to Networks and Robotics\(previous releases\)](#)

## 5 Advanced Middleware (Kiara)

### 5.1 FIWARE.Epic.I2ND.Kiara.RPCJavaSecurity

<b>Name</b>	FIWARE.Epic.I2ND.KIARA-J.RPCJavaSecurity	<b>Chapter</b>	<a href="#">I2ND</a>
<b>Goal</b>	KIARA Java Remote Procedure Call Framework Security (Authentication, Access Control and Encryption)		
<b>Description</b>	Extend the RPC Java Framework to provide APIs to configure security mechanisms for Authentication, Access Control and Encryption. These APIs should be created in a pluggable way, allowing the user to develop its own security plugins.		
<b>Rationale</b>	Make KIARA Java Remote Procedure Call Framework Secure, creating a default set of security features allowing extending them through user security plugins		

### 5.2 FIWARE.Feature.I2ND.Kiara.RPCJavaSecurity.Encryption

<b>Name</b>	RPCJavaSecurity Encryption	<b>Chapter</b>	<a href="#">I2ND</a>
<b>Goal</b>	KIARA JAVA Encryption Pluggable API and Encryption Default Plugin (AES Based)		
<b>Description</b>	The KIARA Java Encryption mechanism will Implement (or interfaces with libraries that implement) all cryptographic operations, including encryption, decryption, digital signatures, etc. The API will be pluggable with a default plugin based on AES		
<b>Rationale</b>	Provide the KIARA Java Encryption mechanism using a pluggable API. The Framework will provide a default plugin based on AES (Advanced Encryption Standard) and will allow the user to provide its own authentication plugins.		