

FIWARE TSC meeting minutes

Meeting Information

Date/Time of the Meeting:	May 23, 2019. 09:00-16:00 CEST
Name of the meeting:	FIWARE Roadmap meeting
Venue/bridge info:	GoToMeeting: https://global.gotomeeting.com/join/296239285
Version	1.0

Attendees

Name	Kind of seat	(Y/N)
FIWARE TSC Members:		
Clara Pezuela	Atos (Platinum member) representative	Y
Laura Pucci	Engineering (Platinum member) representative - deputy	-
Stefan Gessler	NEC (Platinum member) representative	Y
Marc Despland	Orange (Platinum member) representative	-
Fermín Galán	Telefónica (Platinum member) representative	-
Marcos Reyes	Telefónica	-
Jose Manuel Cantera	Core chapter	Y
Joaquín Salvachúa	Core chapter	Y
Álvaro Alonso	Data/API Management, Publication and Monetization	Y
Francisco de la Vega	Data/API Management, Publication and Monetization	Y
Miguel Jiménez	Individual	Y

Álvaro Arranz	Context Processing, Analysis and Visualization	Y
Jaime Martin-Losa	Interface with IoT, cyber physical and third party systems	Y
Martin Bauer	Individual	Y
Fernando López	Labs, Ops	Y
Federico M. Facca	Labs, Ops	-
Alfonso Pietropaolo	Individual	-
Marco Cortella	Engineering (Knowage)	Y
Davide Dalle Carbonare	Individual	Y
Angelo Marguglio	ENGINEERING, Individual	Y
Juanjo Hierro	Individual, chairman of the TSC	Y
Stefano de Panfilis	Individual	Y
Other members of the FIWARE Community present at the meeting		
Jose Gato	Atos	-
José Ignacio Carretero	FIWARE Foundation, FIWARE Lab	-
Guiomar Tuñón	NAEVATEC, Kurento	-
Saúl Labajo	NAEVATEC, Kurento	Y
Jason Fox	FIWARE Foundation	Y
Dmitrii Demin	FIWARE Foundation, DevOps Engineer	Y
Bin Cheng	FogFlow GE Representative	-
Tomas Aliaga	Individual - Martel Innovate	-
Carlos Blanco	FICODES	Y
Gernot Boege	FIWARE Foundation	Y
Germán Molina	HOPU (Gold Member)	-
Kazuhito Suda	Individual - NEC	Y
Davide Zerbetto	Data Visualization GE (Knowage) owner - Engineering	-

Gabriele Cerfoglio	Martel Innovate	-
Sonsoles Lopez	UPM	Y
Andres Muñoz	UPM	Y
Alejandro Pozo	UPM	Y
Francisco Melendez	FIWARE Foundation, Robotics	Y
Frédéric Le Bris	Applifarm	Y
Norio Uchida	NEC	Y
Martino Maggio	Engineering - GE Owner (Idra)	Y
Branimir Rakić	OriginTrail	
Parwinder Singh	Data Usage Control - NGSI-LD, FIWARE Evangelist	Y

Proposed agenda topics

Juanjo's input:

Following is a list of items I would propose to tackle (numbers do not reflect ordering, it's just a matter of assigning a number to identify):

1. Reference Architecture for AI
2. Reference Architecture for Robotics
 - a. ROS / OPC-UA -friendly interfaces with Context Broker
3. Data Monetization / Data Marketplaces
4. Evolution of API Management Framework
 - a. Data Usage Control
 - b. Support of IDS Connector concept
5. Integration with blockchains
6. Implementation of "Digital Twin" concept
7. Edge computing and FIWARE

With respect to each topic, I believe it would be important that we address the development of some sort of permanent showcase. The following topics perhaps can be integrated as part of a big showcase on data: 1, 3, 4 (even 5).

Besides topic-specific showcases, we want to address a showcase that illustrates the benefits of adopting FIWARE and FIWARE Data Models in multiple cities (smart parking / navigator). May be integrated with the big showcase on data.

Jose Manuel proposes to make presentation on integration with W3C WoT (Web of Things).

Any question to be addressed related to NGSI-LD?

Anything regarding organization on GitHub?

Anything regarding media stream processing?

Fernando proposes to make a presentation about the performance requirements of IoT Agents requested by ANTEL.

Discussion on May 9th

A [presentation](#) regarding how to structure the discussion was contributed by Martin Bauer and reviewed in a dedicated call on May 9th.

Questions to answer for each topic

- What are typical use cases?
- How could a showcase look like?
- Which GEs are relevant for addressing the topic?
- How are they integrated / can they be integrated?
- What extensions of GEs / integration steps are needed?
- Are we missing complete GEs?
- Do we need common data models?
- What are the players we need to interact with?

Juanjo: Possible showcases

- Smart Cities in collaboration with the World Economy Forum
- Robotics in collaboration with TIS or other partners in the field
- Smart Agri with Blockchain in collaboration with Digitanimal, Agricolus, ...

Jose Manuel: With regards to showcases, we need to solve real problems with hardened solutions (not just for demos) and to have focus as the topics are so broad ...

Juanjo: We need a first sketch on how the topics would be addressed in FIWARE

Joaquin: We need to map NGSI-LD to different database logical information models (relational, document-oriented, graph, key-value, etc.)

Three workstreams as captured by Juanjo on slides.

Juanjo: AI4EU is needed to be addressed. We need to involve DFKI.

Juanjo is capturing caretakers for the meeting in Genoa. See slides.

15 minutes elevator pitch per topic addressing the points made by Martin. Topics will be grouped together in blocks of 2. After elevator pitches discussion will be open to participants. Groups will be:

- AI - Robotics
- Data Marketplace - Blockchain - IDS
- Digital Twin - Edge - WoT

Final agenda

Topics for discussion where:

- Integration with Blockchain
- Robotics roadmap
- Reference architecture for AI
- Implementation of Digital Twin concept
- Data Monetization/Marketplace
- Evolution of API Security/Management framework (Data Usage Control, Alignment with IDS Connector concepts, ...)
- Evolution of IoT aspects: Edge Computing, integration with WoT, performance requirements in IoT Agent - Node lib

Addressed topics

Please place presentations at following [folder](#). And place a link to the presentation here, in the corresponding section.

Integration with Blockchain

Presentation:

https://docs.google.com/presentation/d/1nud7P_Ch_04pH2vNbVC-2LMZRfU5-Xe5eYhvuBjzoTU/edit?usp=sharing Blockchain can be integrated with “Powered by FIWARE” architectures for different purposes. We covered all them during the presentation.

Presentation was prepared with the highly valuable contribution of Branimir Rakic from Origin-Trail <branimir.rakic@origin-trail.com> and Frederic Le Bris from Applifarm <frederic.lebris@applifarm.io> present also at the meeting.

Origin-trail has developed a number of open source components that allow to store elements of a knowledge graph into different kind of blockchains. They provide an API for storing data into this knowledge graph, hiding the complexity of dealing directly with the different blockchain architectures. On top of that, they have developed a proprietary platform named as “TraceLabs Network Operating System” on top of which different applications have been developed.

Origin-trail announced its interest to apply for contributing their open source components as FIWARE components.

Joaquin mentions that a connector based on Draco can be developed that helps to store historic records coming from the Orion Context Broker into the knowledge graphs supported by Origin-Trail on top of Blockchain networks.

Applifarm made a presentation of their proposal how to integrate blockchain. In their case, they take the approach of storing part of the context data (linked to certain context updates - transactions) into the blockchain.

Joaquin presented the idea of supporting Self Sovereign Identity concepts in Keyrock.

Finally, Joaquin presented the idea of storing a hash or secure identifier of contracts generated in natural language from defined terms and conditions expressed in ODRL into the blockchain.

Martin asked what could be a way of characterizing what amount and kind of data would make sense to store on the blockchain without overkilling performance of systems.

Juanjo suggested to target the creation of a position paper on integration of FIWARE and blockchain technologies, to be led by Joaquin, involving contributing partners with the target of getting this ready early September at the latest.

Origin-trail confirmed they will initiate the application process to contribute open source origin-trail components as Incubated FIWARE GEs. The FIWARE Foundation will bring support if needed.

Robotics roadmap

Presentation:

Cloud Robotics (ATOS): Clara Pezuela made a presentation on how to integrate with the RoboMaker service from Amazon:

https://drive.google.com/open?id=1DLXMkRksFaS4eAEXUWiYO_b6mWB1ptJO

There will be an AP on Clara to coordinate within Atos how to refine the proposed architecture and figures to explain how FIWARE components would fit in.

Robotics (eProsima):

https://docs.google.com/presentation/d/1NFsqBcT6Rz5ofxJftPIVHT77OzZsvLSm4CSGvhPLKxl/edit#slide=id.g47edf7e847_0_14

Jaime elaborated on recent developments regarding Fast RTPS.

For the near future, Fast RTPS is considering the implementation of a number of relevant new features:

- Liveliness QoS
- More on Static Allocations
- Better Performance Tests

- SharedMem Transport

Regarding Micro XRCE-DDS, a number of features are already supported in their release 1.1:

- Fragmentation Support
- Peer to Peer Comms
- Micro XRCE DDS to be a GE

XRCE-DDS 1.1, which will be released in Jun 2019 will be in the wait list of FIWARE Release 7.7.1

Next ROSCcon will take place first week in Macao.

OSRF has came with a different vision on how integration with ROS2 should be implemented than the one being adopted in FIROS2 so FIROS2 (as known today) will be abandoned. OSRF will release an integration service that has been developed jointly by OSRF and eProsimia. Such integration service will allow building gateways like FIROS2, by means of adding translator plug-ins to this integration service. Actually, eProsimia confirmed that they have developed this plug-ins for FIWARE NGSI (so the FIROS2 gateway will be ready as soon as the ROS2 integration service gets released).

As last point, Jaime introduced the need to have a fast interface for injection and consumption of data managed through a Context Broker service. Juanjo and Angelo agree this would be interesting and needed to solve the demand for certain use cases.

A team will be created, led by Francisco Melendez, to analyze the matter of whether it is feasible to reconcile that a Context Broker service be able to offer both a Fast RTPS interface as well as a NGSI-LD interface. This means to explain how data that is injected through FAST RTPS would become “visible” using NGSI-LD. Angelo and people from eProsimia will join that team. Target goal is to come with a position paper by early September.

Reference architecture for AI

Presentation:

<https://docs.google.com/presentation/d/1lvWG26CZyUa1CVBp5Errsa-mU8clMwMNIqQEV2HilsU/edit?usp=sharing>

In essence, we find that support to AI in FIWARE comes implicitly through the existing integration of multiple processing engines (Flink, Spark, soon TensorFlow, ...) for processing the stream of context history information.

Therefore, one action here is trying to develop a number of use cases (and/or tutorials) that may help to illustrate how AI can be supported in “Powered by FIWARE” solutions.

Juanjo raised the opportunity to explore whether such use cases can be integrated as part of the showcases to be developed for G20 Smart Cities which will be showcased in the Smart City

Expo World Congress and under the umbrella of activities of the Front-runner Smart Cities initiative in collaboration with TM Forum or the Global Smart Cities coalition in collaboration with the World Economic Forum.

Another source of showcases will be the FIWARE4WATER project.

We will gather potential showcases during June and end of June come with a decision on which ones to select to develop reference examples on the usage of AI.

An action was identified to agree on a way of modeling predictions/forecasts. Recommendations will be produced as part of the documentation of the reference examples. (Addition: Consider the reactive feedback loop back into Context Broker)

Finally, we should work on producing a position paper to get it ready early September.

Implementation of Digital Twin concept

Presentation by Martin:

<https://drive.google.com/open?id=1A-HECpDu8S0ljsKFX1rDDSDnEDMT5SWK>

Juanjo raises relevance of recent developments in RAMI 4.0 See presentation at:

https://drive.google.com/file/d/1C6iplXmYV2_j1XmslxakUn9FeBkuArtP/view?usp=sharing

Some relatively recent documents produced by RAMI 4.0:

- [Details of the Asset Administration Shell: Part 1 on information exchange and model](#)
- [Presentation on recent developments in RAMI 4.0 and what comes next](#)
- [I4.0 language: vocabulary, message structure and semantic interaction protocols](#) (in German)

First action point agreed is that of analysing the recently released information model linked to RAMI 4.0 Asset Administrative Shell to explore compatibility with NGSI-LD. Team to be formed for this purpose: Jose Manuel Cantera and Martin Bauer. Target goal is to come with report in the TSC of June 10th. Early feedback would be nice as to determine whether it is worth to setup a meeting with RAMI 4.0 representatives second half of June.

Evolution of API Security/Management framework (Data Usage Control, Alignment with IDS Connector concepts, ...)

Presentation:

https://docs.google.com/presentation/d/1tFBJQ4C0LePLk9_lxgfg9BZQRWg413BqU_3LOShl8wg

Target next steps:

- Create new GE which covers PDP/PXP functionality, performing decisions based on access/usage control policies specified as extension of ODRL. This components would

be listed in the Catalogue as alternative to AuthzForce. Target goal is to have this component part of Release 7.8

- Create position paper for early September.
- Define standard logs injection API that brings the PDP/PXP component be independent of the concrete logs of each processing engine

Data Monetization/Marketplace

Presentation:

<https://drive.google.com/open?id=1aylm1KGbmrfYbYCDBSW9z81C1PlzVI4o>

Evolution of IoT aspects: Edge Computing, integration with WoT, performance requirements in IoT Agent - Node lib

Presentation Edge + Web of Things:

-<https://drive.google.com/open?id=1i3PQT2euZbce5rzGrmnMZLahrsK9qr0a>

Extended presentation on Web of Things (from FIWARE Summit):

<https://drive.google.com/open?id=1-DIexmA3FnTQTV50I0japLvKEj-KKDH>

Performance requirements in IoT Agent - Node lib:

<https://drive.google.com/open?id=1GJHTYYP74HWQR-W12tp3EnTIRneTiwci>

Any Other Business

No other business.