



HORIZON 2020

The EU Framework Programme for Research and Innovation



HORIZONS 2020 PROGRAMME

Research and Innovation Action – FIRE Initiative

Call Identifier:	H2020-ICT-2014-1
Project Number:	643943
Project Acronym:	FIESTA-IoT
Project Title:	Federated Interoperable Semantic IoT/cloud Testbeds and Applications

Dissemination and Activity Report V2

Document Id:	FIESTA-IoT-D72-170305-Draft
File Name:	FIESTA-IoT-D72-170305-Draft.pdf
Document reference:	Deliverable 7.2
Version:	Draft
Editor:	Paul Grace
Organisation:	IT Innovation
Date:	05/ 03 / 2017
Document type:	Deliverable
Dissemination level:	PU

Copyright © 2016 FIESTA-IoT Consortium: National University of Ireland Galway – NUIG-Insight / Coordinator (Ireland), University of Southampton IT Innovation – ITINNOV (United Kingdom), Institut National de Recherche en Informatique & Automatique – INRIA (France), University of Surrey – UNIS (United Kingdom), Unparallel Innovation, Lda – UNPARALLEL (Portugal), Easy Global Market – EGM (France), NEC Europe Ltd. – NEC (United Kingdom), University of Cantabria – UNICAN (Spain), Association Plateforme Telecom – Com4innov (France), Athens Information Technology – AIT (Greece), Sociedad para el desarrollo de Cantabria – SODERCAN (Spain), Ayuntamiento de Santander – SDR (Spain), Fraunhofer Institute for Open Communications Systems – FOKUS (Germany), Korea Electronics Technology Institute KETI (Korea). The European Commission within HORIZON 2020 Program funds the FIESTA-IoT project.

PROPRIETARY RIGHTS STATEMENT

This document contains information, which is proprietary to the FIESTA-IoT Consortium. Neither this document nor the information contained herein shall be used, duplicated or communicated by any means to any third party, in whole or in parts, except with prior written consent of the consortium.

DOCUMENT HISTORY

Rev.	Author(s)	Organisation(s)	Date	Comments
V01	Paul Grace	ITINNOV	2017/01/01	Initial Draft Proposal
V02	Paul Grace	ITINNOV	2017/01/15	Introduction and dissemination strategy
V03	ALL PARTNERS	Com4Innov, NUIG, NEC, UC, INRIA, EGM, SANTANDER, ITINNOV, UNIS, AIT, SODERCAN	2017/02/21	Partner dissemination input
V04	Paul Grace	ITINNOV	2017/02/28	Final reporting input
V05	Luis Sanchez	UC	2017/03/02	Internal Review
V06	Paul Grace	ITINNOV	2017/03/06	Final version for approval
V07	Martin Serrano	NUIG	2017/03/05	Format Update and Final Checks
V08	Martin Serrano	NUIG	2017/03/05	Circulated for Approval
Draft	Martin Serrano	NUIG	2017/03/05	EC Submitted

TABLE OF CONTENTS

EXECUTIVE SUMMARY	5
1 INTRODUCTION	6
1.1 THE ROLE OF WP7 IN FIESTA-IoT	6
1.2 DISSEMINATION, COMMUNICATION AND GLOBAL OUTREACH.....	7
2 DISSEMINATION STRATEGY	9
3 DISSEMINATION ACTIVITIES (Y2)	11
3.1 SCIENTIFIC DISSEMINATION	11
3.1.1 Joint Scientific Publications	11
3.1.2 Scientific Publications	12
3.2 FIESTA EVENTS (WORKSHOPS, TUTORIALS).....	14
3.2.1 Tutorial @ ISWC 2016.....	14
3.2.2 FIESTA-IoT Open Call 1 Workshop.....	15
3.2.3 US-Europe Invited Workshop on Next-Generation Internet of Things.....	15
3.3 DEMONSTRATIONS	16
3.3.1 ISWC 2016.....	16
3.3.2 SIDO 2016	17
3.3.3 ETSI IoT/M2M Workshop 2016	18
3.4 REPRESENTATION AT RELEVANT EVENTS	19
3.5 ANALYSIS OF PROGRESS AGAINST PROJECT KPIS	21
4 OUTLOOK.....	23
4.1 PLANNED ACTIVITIES.....	23
4.2 PROGRESS TO PROJECT GOALS.....	24
4.3 PLANNED PUBLICATIONS	25
5 PROMOTIONAL MATERIAL AND CHANNELS	25
5.1 WEB SITE	25
5.2 POSTERS, LEAFLET AND FLYERS	26
5.3 WEB 2.0	29

LIST OF FIGURES

FIGURE 1: RELATIONSHIPS BETWEEN THE FIESTA-IoT PROJECT WORK PACKAGES.....	6
FIGURE 2: UPDATED DISSEMINATION PLAN	11
FIGURE 3: ISWC 2016 TUTORIAL.....	14
FIGURE 4: FIESTA-IoT OPEN CALL 1 WORKSHOP.....	15
FIGURE 5: ISWC 2016 DEMONSTRATION.....	16
FIGURE 6: SIDO 2016.....	17
FIGURE 7: FIESTA-IoT DEMONSTRATION @ ETSI/ONEM2M WORKSHOP 2016.....	18
FIGURE 8: FIESTA-IoT WEB PAGE RESULTS	26
FIGURE 9: FIESTA-IoT OPEN CALL 1 FLYER.....	27
FIGURE 10: FIESTA-IoT OPEN CALL 2 FLYER.....	28
FIGURE 11: FIESTA-IoT TWITTER FEED	29

LIST OF TABLES

TABLE 1: DISSEMINATION PLAN	9
TABLE 2: PROGRESS IN Y2 AGAINST DISSEMINATION KPIS	22
TABLE 3: PLANNED PROGRESS IN Y2 AGAINST DISSEMINATION KPIS	24

TERMS AND ACRONYMS

FIRE	Future Internet Research and Experimentation
M2M	Machine-to-Machine
ETSI	European Telecommunications Standards Institute
W3C	World Wide Web Consortium
SME	Small and medium-sized enterprise

EXECUTIVE SUMMARY

This document describes the dissemination and communication activities for the FIESTA-IoT project for the period M13 (February 2016) to M24 (January 2017). The dissemination plan is first presented describing how promotional material, FIESTA-IoT results, and FIESTA-IoT activities will be used to promote and engage with target communities in order to increase awareness of FIESTA-IoT results, and the FIESTA experimental facility itself.

The dissemination activities carried out in the second year are described; these already cover a broad range of activities and communities:

- Scientific publications.
- Participation (and presentation) at relevant (IoT) events, conferences, workshops, meetings.
- Demos and exhibitions.
- Standards community events.

Finally, the dissemination plan for the final year of the project (February 2017 to January 2018) is presented. This outlines potential joint publications for research results, and target events where the FIESTA-IoT facility can be demonstrated, and the upcoming Open Calls can be advertised.

1 INTRODUCTION

1.1 The Role of WP7 in FIESTA-IoT

The FIESTA-IoT project is creating a blueprint experimental infrastructure for the testing and evaluation of heterogeneous IoT technologies. For this purpose, FIESTA-IoT provides the tools, techniques, processes and best practices that will enable IoT testbed/platforms operators to interconnect their facilities in an interoperable way based upon cutting edge semantics-based solutions.

Work package 7 will ensure that FIESTA **engages** well with the community outside of the project to: i) increase public awareness of the FIESTA facility and its tools and services, ii) attract users (potential customers) to leverage the facility's offering, and iii) provide front-line support to the current users of FIESTA. This will be carried out in a **coordinated manner** such that a **consistent message** and **professional service** is maintained across the project activities. Figure 1 highlights how the activities of WP7 crosscut the activities of the other project work packages. WP7 will also explore how the technical and research results of the project can be **exploited**; and most importantly how the FIESTA facility can be **sustained in the long-term** (i.e. beyond the conclusion of the project).

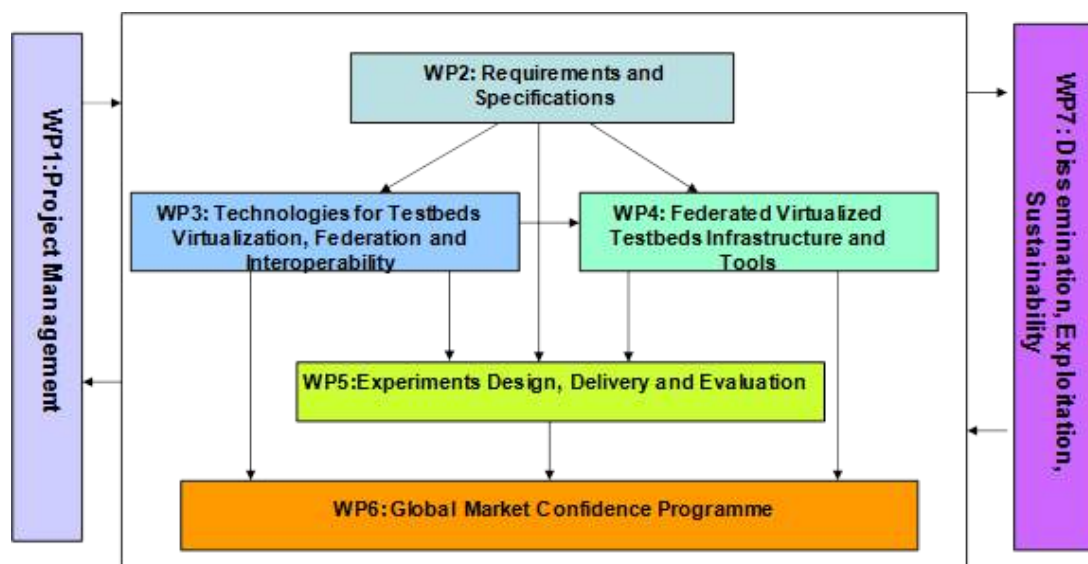


Figure 1: Relationships between the FIESTA-IoT project work packages.

Hence, the overall objectives of WP7 are:

- to create *significant awareness* of the project's offering, activities and exploitable results both within the Future Internet community and beyond, e.g., the general public, policy makers, and politicians;
- to create a *clear, simple, and attractive offering* for a key target stakeholder: SMEs, that is understandable in their terms;

- to *align with other initiatives* within the FIRE and wider Future Internet community through the participation at and organization of co-located workshops and events;
- to create and operate an ecosystem desk to act as a single point of first contact to support both experimental users and SMEs;
- to *exploit* key results in order to create a sustainable experimental IoT facility.

1.2 Dissemination, Communication and Global Outreach

This document reports on the activities of Task 7.1 (T7.1) as carried out in the second year of the FIESTA-IoT project and proposes the future activities to be performed in year 3:

This task will focus on the planning and execution of dissemination activities which will increase the awareness of the FIESTA project, facility and the services that it offers. The task will create promotion material, i.e. the project website, poster, flyer and brochure (these will be subject to continuous improvement as the facility services evolve). The task will produce a newsletter for wide dissemination and will establish a social network strategy (e.g. involving twitter feeds, web blogs). This task will also organise project workshops and dissemination activities at relevant Future Internet events (e.g. FIA / Net Futures, IoT Forum's IoT Week, etc.)—this will enable project results to reach a wider community. Finally, the task will coordinate the interactions with standardization bodies, disseminating relevant project results.¹

Dissemination Strategy

We analyse the current **FIESTA-IoT's dissemination plan**. The purpose of the plan is to devise a strategy to be followed by the project consortium (and participants in T7.1 dissemination activities) in order to maximise the impact of the outreach communication. The key features of the plan (described in Sections 2 and 3) are:

- *Target communities*: identifies the specific target communities who can benefit from knowing about FIESTA-IoT and its results, and may also provide potential users of the facility, or future proposers to the FIESTA-IoT open calls.
- *Materials*: describe the promotional material to be created and then distributed to communities via appropriate communication channels.
- *Promotion Strategy*: individual strategies that determine how specific materials and content generated by the project are utilised in a particular activity. For example: poster and demos utilised at a conference exhibition, scientific publication sent to an academic conference, etc.

¹ Taken from the FIESTA-IoT Description of Activities (DOA)

Activity Reporting

Subsequently, we describe the concrete activities that were carried out during the first year of the project. This includes: the dissemination of scientific publications, activities carried out by members of the FIESTA consortium to promote FIESTA at relevant events, FIESTA organised community events, and finally FIESTA demonstration activities at conference exhibitions and workshops.

Planning

Finally, we describe our dissemination and communication plan for the second year of the project. With specific reference to publications in the pipeline, events we plan to organise, events we plan to exhibit at and also how we will liaise with external communities further.

2 DISSEMINATION STRATEGY

In Deliverable D7.1² we described the initial FIESTA-IoT dissemination plan, in terms of the target communities to market the FIESTA-IoT promotional materials to. Here, we revisit this plan—identifying the activities that have progressed during Y2, and the extension of the plan to consider further user communities who may see value in the services offered by FIESTA-IoT. This strategy is outlined in Table 1.

Table 1: Dissemination Plan

Community	Y2 Activities	Plan Y3
Big Data and Data Science	<ul style="list-style-type: none"> Not originally targeted. FIESTA has a unique data offering for users in this community 	<ul style="list-style-type: none"> Promotion @ European Big Data Value Association events European data Forum (UK/Malta) EDF '17
Scientific Community	<ul style="list-style-type: none"> 16 scientific articles published at scientific venues (see Section 3). FIESTA-IoT advertised during article presentations at conferences. Scientific presentations added to FIESTA-IoT slideshare. Scientific papers promoted on FIESTA web page and twitter. 	<ul style="list-style-type: none"> Continue publication activities including further joint scientific publications. The list of planned publications is provided in section 3.
FIRE Community	<ul style="list-style-type: none"> FIESTA-IoT news promoted on FIRE Web Page (e.g. open calls) FIESTA-IoT presented at FIRE events: TRIDENTCOM publication 	<ul style="list-style-type: none"> Joint publication to EUCNC submitted. Demo @ Net Futures 2017 planned.
IoT and Smart City	<ul style="list-style-type: none"> Demonstrations @ SIDO 2016 Participation and dissemination @ IoT Week 2016 	<ul style="list-style-type: none"> Demo @ IoT Week 2017

² FIESTA-IoT Consortium: "Dissemination and Activity Report V1", FIESTA-IoT Deliverable D7.1, February 2016.

<p>SMEs and local stakeholders</p>	<ul style="list-style-type: none"> Local stakeholder workshops for the FIESTA-IoT open calls Partner dissemination to SME networks (see section 3). 	<ul style="list-style-type: none"> Stakeholder engagement activities as described in Task 7.2. Targeted web page content and Web 2.0 promotion. Advertisement of FIESTA in appropriate SME interest networks.
<p>Standards</p>	<ul style="list-style-type: none"> Demonstration @ ETSI/OneM2M workshop. 	<ul style="list-style-type: none"> Submit new standards and specifications to the appropriate standards body.
<p>Open Source Community</p>	<ul style="list-style-type: none"> FIESTA-IoT platform project Github has been setup 	<ul style="list-style-type: none"> Release of FIESTA software on open source communities (e.g. GitHub and/or Sourceforge0). Technical articles and blogs promoted via Web 2.0.

Figure 2 presents how the dissemination plan is prioritised for the remainder of the project. This shows that dissemination targets two communities to highlight FIESTA-IoT and attract users from these communities:

- **IoT:** SMEs, Scientific researchers, SMEs and industry building IoT applications and systems, standard bodies developing IoT specifications, and open source IoT developers. All can be either data consumers using the data and services provided by FIESTA-IoT, or they can be data providers (e.g. a testbed) wanting to join and federate their data within the FIESTA-IoT marketplace.
- **Big data:** broadening the scope of the project from the IoT and FIRE communities, FIESTA-IoT will target SMEs, Scientific researchers, standards, and open source developers in the Big Data and Data Science communities. FIESTA-IoT offers a significant source of unique data that can provide significant benefits to this community. Again, data users and data providers will be targeted as with IoT.

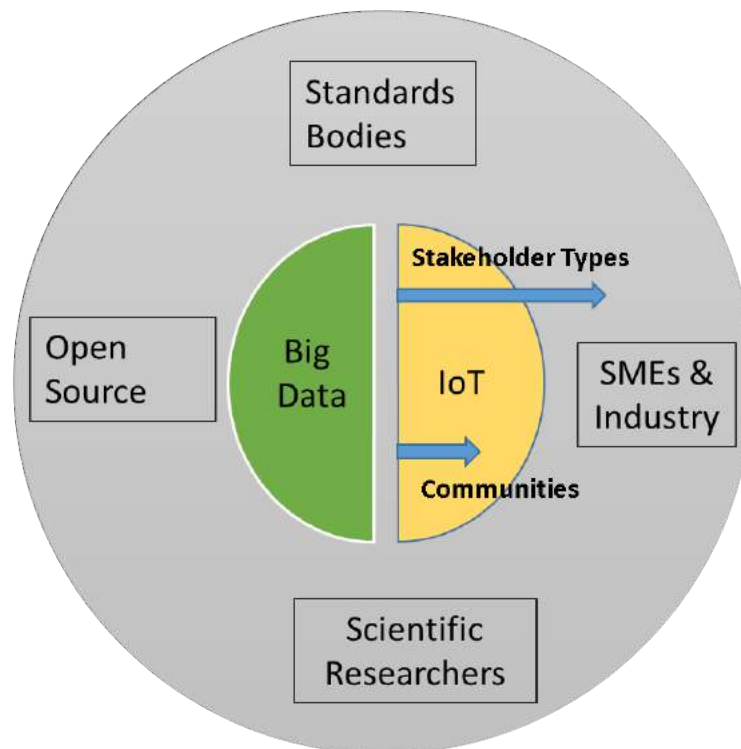


Figure 2: Updated Dissemination Plan

3 DISSEMINATION ACTIVITIES (Y2)

We now provide a list and description of the dissemination activities carried out during the first year of the project.

3.1 Scientific Dissemination

3.1.1 Joint Scientific Publications

The following are the list of four joint publications, where a joint publication is defined as a publication where authors from two or more FIESTA-IoT partners are contributors to the article.

Journal Articles

- 1) Lanza, J., Sanchez, L., Gomez, D., Elsaleh, T., Steinke, R. and Cirillo, F., 2016. "A Proof-of-Concept for Semantically Interoperable Federation of IoT Experimentation Facilities". In: *Sensors*, 16(7), p.1006. doi:10.3390/s16071006 (<http://www.mdpi.com/1424-8220/16/7/1006/htm>)
 - Authors come from following partners: **UNICAN, UNIS, FOKUS, NEC**
 -

- 2) Kovacs, E., Bauer, M., Kim, J., Yun, J., Le Gall, F., and Zhao, M., "Standards-based Worldwide Semantic Interoperability For IoT", In: IEEE Communications Magazine – Communication Standards Supplement, ISSN 0163-6804, December 2016, pp. 40-46, DOI 10.1109/MCOM.2016.1600460CM
 - Authors come from following partners: **NEC, KETI, EGM**

Conference Publications

- 3) Agarwal, R., Gomez, D., Elsaleh, T., Gyrard, A., Lanza, J., Sanchez, L., Georgantas, N. and Issarny, V., 2016, December. "*Unified IoT Ontology to Enable Interoperability and Federation of Testbeds*". In: 3rd IEEE World Forum on Internet of Things. (<http://wfiot2016.ieee-wf-iot.org/program/>)
 - Authors come from following partners: **INRIA, UNICAN, UNIS, NUIG, NEC**
- 4) Zhao, M., Kefalakis, N., Grace, P., Soldatos, J., Le Gall, F., and Cousin, P, "*Towards an Interoperability Certification Method for Semantic Federated Experimental IoT Testbeds*", In: 11th EAI International Conference on Testbeds and Research Infrastructures for the Development of Networks & Communities, Hangzhou, June 2016.
 - Authors come from following partners: **EGM, AIT, ITINNOV**

3.1.2 Scientific Publications

The following is the list of 13 scientific publications where the article contains only authors from a single FIESTA-IoT partner.

Journal Articles

- Gyrard, A., Patel, P., Sheth, A., and Serrano, M., 2016. "Building the Web of Knowledge with smart IoT applications". In: IEEE Intelligent Systems Magazine, 31(5), p83-87, September/October 2016. (<http://ieeexplore.ieee.org/document/7579395>)
- Maria Bermudez-Edo, Tarek Elsaleh, Payam Barnaghi, Kerry Taylor, "IoT-Lite: A Lightweight Semantic Model for the Internet of Things and its Use with Dynamic Semantics", (to appear in) Personal and Ubiquitous Computing Journal – Springer, 2017.

Book Chapters

- Serrano, M., and Gyrard, A., "A Review of Tools for IoT Semantics and Data Streaming Analytics", In: The Building Blocks of IoT Analytics - Internet-of-Things Analytics, Ed: Soldados, J., River Publishers, November 2016, ISBN: 9788793519039.

Conference Publications

- Gyrard, A., Serrano, M., “*Connected Smart Cities: Interoperability with SEG 3.0 for the Internet of Things*”, In: 30th IEEE International Conference on Advanced Information Networking and Applications Workshops, March 23-25 2016, Crans-Montana, Switzerland.
- Bermudez-Edo, M., Elsaleh, T., Barnaghi, P., and Taylor, K. “IoT-Lite: A Lightweight Semantic Model for the Internet of Things”, In the 13th IEEE International Conference on Ubiquitous Intelligence and Computing (UIC 2016), Toulouse, France, July 2016
- Gyrard, A., Atemezing, G., Bonnet, C., Boudaoud, K., and Serrano, M., “*Reusing and Unifying Background Knowledge for Internet of Things with LOV4IoT*”, In: 4th International Conference on Future Internet of Things and Cloud (FiCloud 2016), 22-24 August 2016, Vienna, Austria
- Gyrard, A., Bonnet, C., Boudaoud, K., and Serrano, M., “*LOV4IoT: A second life for ontology-based domain knowledge to build Semantic Web of Things applications*”: In: 4th International Conference on Future Internet of Things and Cloud (FiCloud 2016), 22-24 August 2016, Vienna, Austria.
- G. Bajaj, R. Agarwal, G. Bouloukakis, P. Singh, N. Georgantas, V. Issarny, “Towards Building Real-Time, Convenient Route Recommendation System for Public Transit”, In: IEEE International Smart Cities Conference, Sep 2016, Trento, Italy 2016.
- Patel, P., Gyrard, A., Thakker, D., Sheth, A., and Serrano, M., “*SWoTSuite: A Toolkit for Prototyping Cross-domain Semantic Web of Things Applications*”. In: 15th International Semantic Web Conference (ISWC 2016) Demo Paper, October 17-21 2016, Kobe, Japan.
- V. Issarny, V. Mallet, K. Nguyen, P. Raverdy, F. Rebhi, R. Ventura, “*Do’s and Don’ts in Mobile Phone Sensing Middleware: Learning from a Large-Scale Experiment*”, In: ACM/IFIP/USENIX Middleware 2016, Dec 2016, Trento, Italy. 2016.
- R. Agarwal, D. Fernandez, T. Elsaleh, A.Gyrard, J. Lanza, L. Sanchez, N. Georgantas, V. Issarny, “*Unified IoT Ontology to Enable Interoperability and Federation of Testbeds*”, IEEE 3rd WF-IoT, Dec 2016, Reston Virginia, US 2016.
- A. Ahrabian, S. Kolozali, S. Enshaeifar, C. Cheong-Took and P. Barnaghi, “*STREAM DATA ANALYSIS AS A WEB SERVICE: A CASE STUDY USING IOT SENSOR DATA*”, In: ICASSP, 2017.

3.2 FIESTA Events (Workshops, Tutorials)

3.2.1 Tutorial @ ISWC 2016

Semantic Web meets Internet of Things (IoT) and Web of Things (WoT) 15th International Semantic Web Conference (ISWC 2016) Tutorial, October 17-21 2016, Kobe, Japan

FIESTA-IoT co-organised and delivered a tutorial entitled: “Semantic Web meets Internet of Things and Web of Things”.

Semantic Web technologies have been effectively used in various domains, particularly, to address the heterogeneity challenge to: Ease the interconnection of such data. Deduce new knowledge to build smart applications. Maintain interoperability at data processing, management and storage. The tutorial examined how such benefits apply to the emerging IoT domain. Amelie Gyrard from FIESTA-IoT was one of a team of presenters who covered topics including:

- The basics of Internet of Things and Web of Things (WoT) in order to enable the rapid development of semantics-based Web of Things applications.
- Demonstrate how semantic web technologies are employed for semantic annotation and reasoning on data to build interoperable IoT/WoT applications.
- Showcase of real-world use case scenarios which are designed using semantically enabled IoT frameworks including FIESTA-IoT.

Further information about the tutorial is available at:
<http://sensormeasurement.appspot.com/?p=ISWC2016Tutorial>



Figure 3: ISWC 2016 Tutorial

3.2.2 FIESTA-IoT Open Call 1 Workshop

On the 23th September, the Regional Development Agency of Cantabria (SODERCAN) with the cooperation of the University of Cantabria and Santander City Council, organized a workshop for the dissemination of the First Open Call of the project FIESTA IoT amongst potential companies, entrepreneurs and University Research departments (20 persons overall attended the workshop; 454 SMEs were informed about the workshop through invitation e-mail). The main workshop's target group has been Small and Medium Size companies and entrepreneurs in order to get a business scope and with the goal of involving those companies with experience in **the field of advanced and innovative developments in the Internet of Things** that leverage the Experimentation as a Service platform and the underlying IoT testbeds that are provided by the FIESTA-IoT Consortium.



Figure 4: FIESTA-IoT Open Call 1 Workshop

3.2.3 US-Europe Invited Workshop on Next-Generation Internet of Things

INRIA (Inria@SiliconValley) co-organised a US-Europe workshop on IoT with the University of Southern California. The event took place in Los Angeles, USA in April 2016. The goal of this invited workshop was to bring together a select group of researchers and practitioners from industry, academia and government labs from US and Europe working on various topics of relevance to the Internet of Things to understand and discuss the state of the art in this emerging domain and identify research challenges and new directions that could help shape the next generation of this technology.

Martin Serrano (NUIG) discussed FIESTA-IoT as part of a panel session entitled: "Applications, Data Analytics and Services".

3.3 Demonstrations

3.3.1 ISWC 2016

FIESTA-IoT hosted a demonstration at the 15th International Semantic Web Conference (ISWC 2016) demo session. The demonstration featured information about: Semantic Web of Things (SWoT), where applications focus on providing a wide-scale interoperability that allows the sharing of IoT devices across domains and the reusing of available knowledge on the web. However, the application development is difficult because developers have to do various tasks such as designing an application, annotating IoT data, interpreting data, and combining application domains. To address the above challenges, this paper demonstrates SWoTSuite, a toolkit for prototyping SWoT applications. It hides the use of semantic web technologies as much as possible to avoid the burden of designing SWoT applications that involves designing ontologies, annotating sensor data, and using reasoning mechanisms to enrich data. Taking inspiration from sharing and reuse approaches, SWoTSuite reuses data and vocabularies. It leverages existing technologies to build applications. We take a hello world naturopathy application as an example and demonstrate an application development process using SWoTSuite. The demo video is available at URL- <http://tinyurl.com/zs9flrt>



Figure 5: ISWC 2016 Demonstration

3.3.2 SIDO 2016

The FIESTA-IoT project participated at the Salon de l'Internet des Object (SIDdO), Lyon, April 2016 as part of the IoT Village. SIDO is an industrial centred event for IoT professionals, and is attended by large companies and SMEs highlighting their products and services in the IoT domain. There was significant activity at the event (50 sessions, 200 speakers, 200 exhibitors); and the event is open to the general public meaning that FIESTA-IoT was advertised to a large audience of both expert and non-experts in the field of IoT.



Figure 6: SIDO 2016

Via a project booth, FIESTA-IoT demonstrated the significant progress that it has made on the integration of heterogeneous, geographically distributed, and disparate IoT testbeds covering the domains of Smart Cities, Smart Buildings, Mobile sensors, and OneM2M technologies. The aim being to provide the necessary tools and experiment as a service technologies to support cross technology IoT experimentation.

FIESTA partners from INRIA and Com4Innov manned the booth – providing a demonstration of the noise sensor device and application developed at INRIA being utilised in the context of crowd sensing experiments for noise measurement in a city. The application and experiment attracted the attention of several visitors to observe how noise can be measured in a smart city.

3.3.3 ETSI IoT/M2M Workshop 2016

A number of FIESTA-IoT partners participated in the ETSI IoT/M2M Workshop 2016. This participation involved investigation of Semantic based interworking and self-adaptation in smart cities³. This culminated in the FIESTA project presenting a full demo illustrating the semantic integration and interoperability of 2 testbeds (Santander and KETI) and 1 experiment (NEC Smart City Magnifier) to create a next generation IoT smart system.

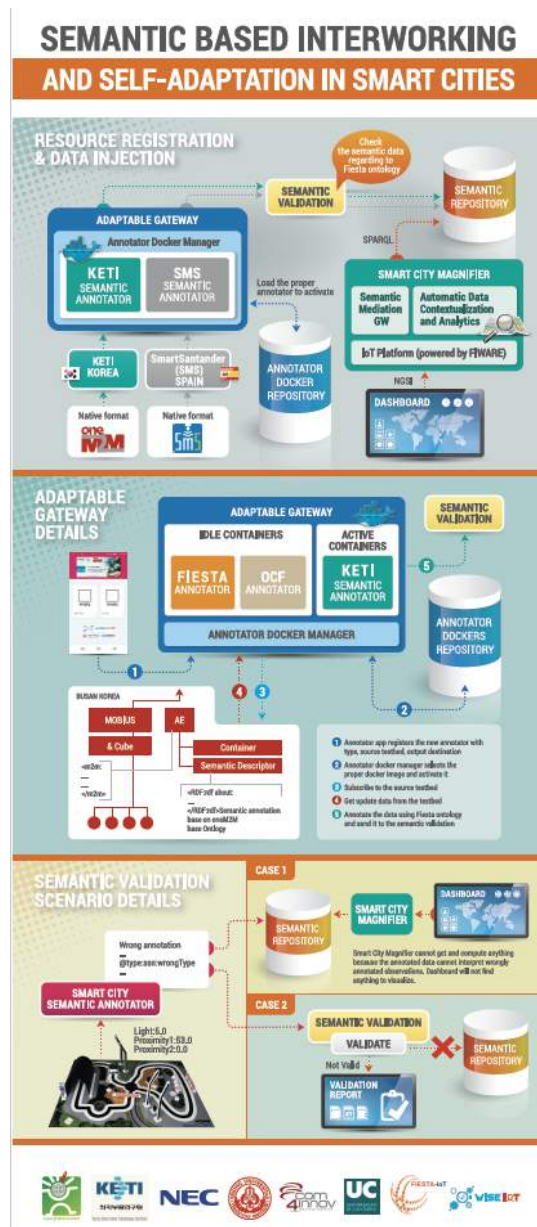


Figure 7: FIESTA-IoT Demonstration @ ETSI/OneM2M workshop 2016

³ <http://www.etsi.org/news-events/events/1086-2016-11-etsi-iot-m2m-workshop-2016-featuring-the-smart-world>

In the, FIESTA-IoT demonstrated the semantic capabilities introduced in the oneM2M release 2, where semantic capabilities are introduced in the context of globally deployed smart-cities. A minimum of two cities in different regions providing real data are integrated in the demo: City of Santander and city of Busan. The interworking operation is visible through a visually appealing city dashboard. The core demonstration presents a semantic validation approach: the demo shows semantic interworking via the successful use of trusted semantically annotated data validated against their reference ontology. And finally, the demo also showed the initial concepts of a morphing gateway, allowing dynamic transformation of semantic interworking at gateway level. A container transformed oneM2M semantic data into data annotated with FIESTA-IoT ontology to be dynamically loaded in the morphing gateway in the demo.

3.4 Representation at Relevant Events

13th European Semantic Web Conference (ESWC 2016), EU Project Networking Session

Amelie Gyrard and Martin Serrano from NUIG gave an overview presentation of the FIESTA-IoT project in a special networking session of the 13th European Semantic Web Conference. This consisted of attendees from current EU projects working in the field of Semantic Web Technologies.

The presented paper is available at: [PDF](#)

GDANKS Conference

GDANKS Conference Talks 2016⁴: Santander municipality was invited to give a talk in the Gdansk Talks 2016 conference, held in Stralsund (Germany) on April 27th and 28th. This year, the annually held International Conference on Security organized by the State Office of Criminal Investigation Mecklenburg – Vorpommern with the Pomeranian Governor's Office in Germany and Poland respectively has been titled "Mobile Data. Mobile Citizens and Police". Comprehensive and detailed information about Smart City Santander strategy and the innovation activities carried out as part the EU innovation funded projects (e.g. FIESTA-IoT, OrganiCity and NETfficient) where the Municipality takes part were given during the talk.

IoT Week 2016, Belgrade

NEC gave a presentation about FIESTA-IoT in the "IoT Research infrastructure and Testbed as a Service" workshop; The title of the presentation was: "FIESTA: Smart City Performance Modelling for Public Safety" and was presented by Flavio Cirillo

VITAL-IoT Meeting

Meeting with VITAL-IoT consortium. Santander was invited to maintain a meeting in Madrid on September 2016 with members of the consortium and other invited stakeholders. Networking activities and interactions with other attendants were made including FIESTA-IoT dissemination.

Spanish Smart Cities Network

⁴ <https://www.facebook.com/gdansk.talks>

Meeting of the Spanish Smart Cities Network⁵. Santander municipality, as a member of this network participated in a regular meeting in Barcelona on November 2016. Networking activities and interactions with other attendants were made taking advantage to carry out FIESTA-IoT dissemination.

Smart City Expo 2016

Santander municipality attended to Smart City Expo⁶ in Barcelona (Spain) on November 2016 taking advantage of another project meeting in that dates. Networking activities and interactions with other attendants were made taking advantage to carry out FIESTA-IoT dissemination.

Green Cities 2017⁷

Santander municipality attended to Green Cities in Malaga (Spain) on October 2016. Networking activities and interactions with other attendants were made taking advantage to carry out FIESTA-IoT dissemination.

INNPULSO Networking Meeting 2016

Santander municipality attended in March 2016 to a meeting in Valencia of Spanish INNPULSO network⁸, a Spanish network of cities awarded by its innovation and science level of activity.

Mobile World Congress 2016

Com4Innov provided FIESTA-IoT dissemination at the Com4Innov booth at the Mobile World Congress⁹ held in Barcelona in February 2016.

Working Group IoT Pole SCS

In March 2016, Com4Innov provided a presentation about the FIESTA-IoT testbeds to the Working Group IoT Pole SCS¹⁰. In April 2016 Com4Innov provided a presentation about the FIESTA-IoT testbeds to the Working Group IoT Security. In May 2016, COM4Innov provided a presentation to the Plenary Group IoT Pole SCS about the FIESTA-IoT platform. In October 2016, Com4Innov provided a presentation about the FIESTA-IoT testbeds to the Working Group IoT Security

MtoM 2016

Com4Innov provided FIESTA-IoT dissemination at the Com4Innov booth at the MtoM event¹¹ held in Paris in March 2016.

EUREKA Innovation Event 2016

⁵ <http://www.redciudadesinteligentes.es>

⁶ <http://www.smartcityexpo.com/en>

⁷ <http://greencities.malaga.eu>

⁸ <http://redinnpulso.es>

⁹ <https://www.mobileworldcongress.com/>

¹⁰ <https://www.pole-scs.org/>

¹¹ <http://www.embedded-mtom.com>

Com4Innov gave a presentation about FIESTA-IoT at the Eureka Innovation Event held in Stockholm in April 2016.

Docapost 2016

Com4Innov gave a presentation about FIESTA-IoT at the Docapost¹² Event held in Sophia, France in May 2016.

TM Forum Innovative City 2016

Com4Innov gave a presentation about FIESTA-IoT at the TM Forum Innovative City¹³ Event held in Nice, France in June 2016.

Inauguration TechnoPole Henri Fabre 2016

Com4Innov held a booth with dissemination materials about FIESTA-IoT provided at the Inauguration TechnoPole Henri Fabre¹⁴ Event held in France in November 2016.

Industry 4.0 Day 2016

Com4Innov gave a presentation about FIESTA-IoT at the Industry 4.0 Day TEAM Henri Fabre Event¹⁵ held in Nice, France in June 2016.

TRUSTECH 2016

Com4Innov gave a presentation about FIESTA-IoT at the TRUSTECH Event¹⁶ held in Cannes, France in December 2016.

WISE-IoT EU Project Meeting 2016

WISE-IoT EU Project Meeting: showing a full demo comprising testbeds (SmartSantander) and 1 experiment (NEC Smart City Magnifier) and introducing the FIESTA-IoT ontology as the basis for interoperability in this EU-Korea project.

Presentation @ University of York 2016

Internet of Things and Data Analytics for Smart Cities and eHealth, University of York, November, 2016.

- Slides: <http://www.slideshare.net/PayamBarnaghi/internet-of-things-and-data-analytics-for-smart-cities-and-ehealth>

3.5 Analysis of Progress against Project KPIs

Table 2 describes the project KPIs concerning communication and dissemination. The target value in column 2 states the overall project indicator that should be

¹² <http://www.docapost.com/>

¹³ <http://www.tmforumlive.org/>

¹⁴ <http://inauguration.projet-henri-fabre.com>

¹⁵ <http://projet-henri-fabre.com>

¹⁶ <https://www.trustech-event.fr>

reached. Column 3 then discusses how the Y2 activities meet the KPIs. It can be seen that good progress has been made in all KPIs.

Table 2: Progress in Y2 against dissemination KPIs

Dissemination Activity	Target Value	Y1	Y2
Participation in Net Futures (formerly FIA) Meetings	Each year	1	0
Journal Publications (International Referred Journals)	8	1	3
Publications and Presentations in International Conferences (Reviewed Papers)	12	4	11
FIESTA Newsletter Issues	4	0	1
Participations in Public Exhibitions and Demonstrations	3	2	3
FIESTA Workshops and/or Conferences	2	0	1
Flash studies (white papers about experiments)	2	0	0
Participation in major IoT / smart cities events relating to experimentation and testbeds outside Europe (USA, Asia)	4	1	1
Leaflets	2	1	1

4 OUTLOOK

In the upcoming period, the FIESTA project will continue to follow its dissemination plan as described previously in this document. Specifically, in year 3 we will focus on the following key activities; planned activities are already organised (or anticipated), whereas targeted activities are identified opportunities for the consortium.

4.1 Planned Activities

EVENT + Location	Activity
WWW 2017	Tutorial
NetFutures 2017	Demo and Booth
IoT Week 2017	Demo and Booth
SIDO 2017	Demo
ETSI/OneM2M workshop 2017	Demo
Korea IoT Week 2017	Dissemination
European Data Forum 2017	Demo
CEBIT 2017	Demo/Presentation
INNPULSO meeting	Dissemination
RECI	Dissemination
Working Group IoT security Pole SCS	Presentation on Testbed FIESTA-IOT
MWC 2017 Barcelona	Com4Innov Booth
MtoM Paris	Com4Innov Booth
SAFE DAY n°2 Aix-Provence	Presentation on Testbed FIESTA-IOT
TM Forum Innovative City NICE	Presentation on Testbed FIESTA-IOT
Aeronautic Forum Le Bourget	SAFECLUSTER Presentation on Testbed FIESTA-IOT
TRUSTECH Cannes	Presentation on Testbed FIESTA-IOT

4.2 Progress to Project Goals

Table 4 describes the project KPIs concerning planned progress in year 3 against communication and dissemination goals.

Table 3: Planned Progress in Y2 against dissemination KPIs

Dissemination Activity	Target Value	Y3 Plan
Participation in Net Futures (formerly FIA) Meetings	Participation in All Meetings	1
Journal Publications (International Referred Journals)	8	4
Publications and Presentations in International Conferences (Reviewed Papers)	12	~10
FIESTA Newsletter Issues	4	2
Participations in Public Exhibitions and Demonstrations	3	At least 3: Net Futures, IoT week and Big Data event.
FIESTA Workshops and/or Conferences	2	1
Flash studies (white papers about experiments)	2	After 1 st experiment open call, we plan a flash study of these activities
Participation in major IoT / smart cities events relating to experimentation and testbeds outside Europe (USA, Asia)	4	
Leaflets	2	1

4.3 Planned Publications

Planned Joint Publications:

- EUCNC 2016 paper submitted: “A Reference Architecture for Federating IoT Infrastructures Supporting Semantic Interoperability”, Francois Carrez, Tarek Elsaleh, David Gómez, Luis Sánchez, Jorge Lanza, Paul Grace
- TridentCom 2017

Other partner planned paper submissions:

- survey paper at IEEE Communications & Survey
- IoT Special Issue at Semantic Web Journal
- RuleML conference <http://2017.ruleml-rr.org/>
- WWW 2017 – demo and research papers
- Ubicomp 2017
- Journal of Web Semantics

5 PROMOTIONAL MATERIAL AND CHANNELS

In this section we describe the maintenance of the promotional material:

- Web site content.
- Posters, Flyers and Leaflets.
- Common FIESTA presentation slides.

The maintenance of the communication channels:

- FIESTA-IoT Project web site.
- FIESTA-IoT Twitter feed.

The creation of new channels in Y2 of the project:

- FIESTA-IoT Youtube Channel.
- FIESTA-IoT Slideshare Channel.

5.1 Web Site

The web site was maintained with frequent updates to reflect the ongoing activities of the project. In particular, the focus of the web site content centred on the material for the Open Calls.

The results of the web site statistics (collected via Google analytics) are shown in Figure 8. Here it can be seen that usage of the web page is good with a large number of users having viewed information about FIESTA-IoT.

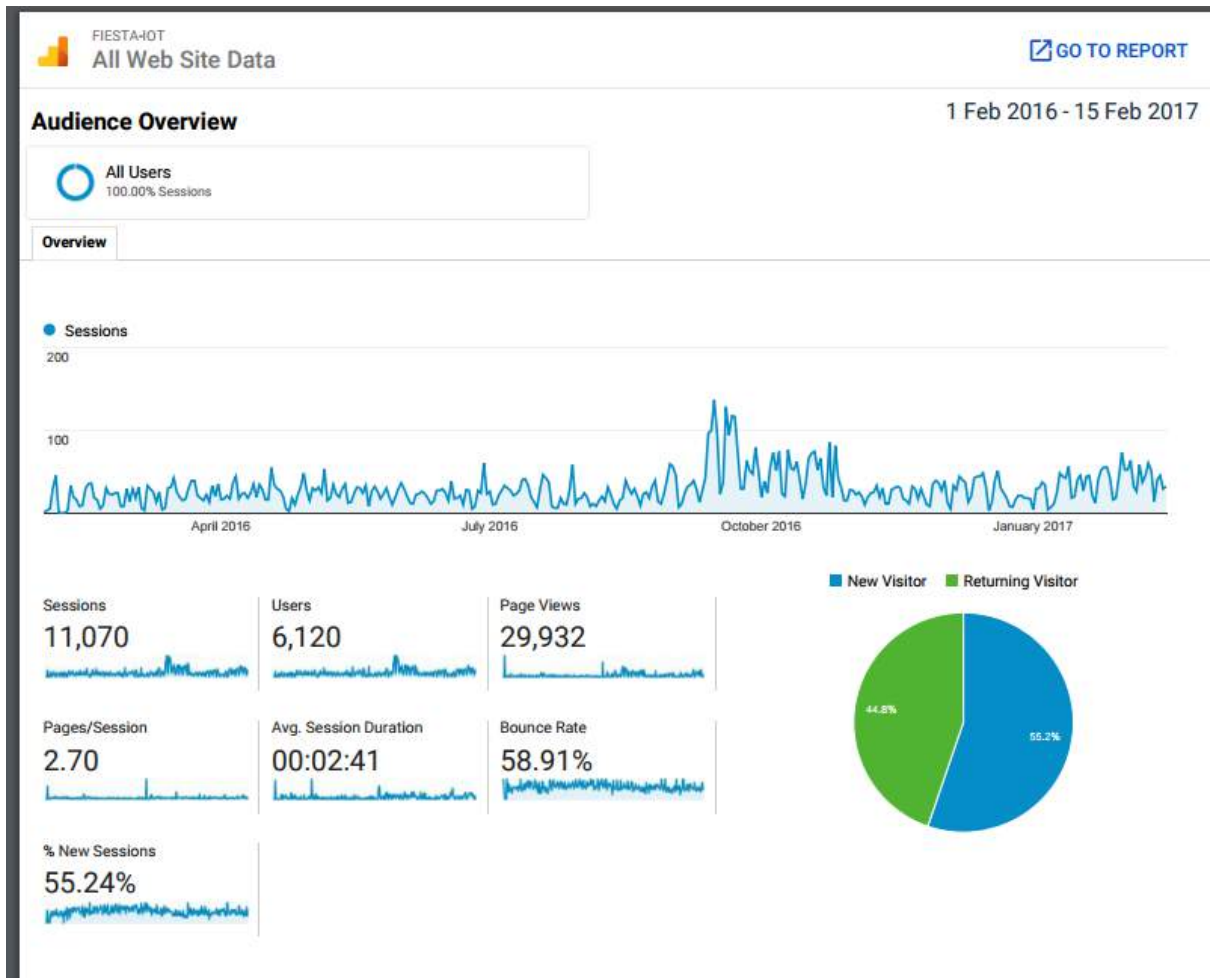



Figure 8: FIESTA-IoT Web Page Results

In the second year of the project, the web pages and content will be changed to reflect the new FIESTA advances and available FIESTA tools and services. One important addition will be the FIESTA market confidence programme and certification.

5.2 Posters, Leaflet and Flyers

Promotion material for the second year was developed to advertise the open call offerings. In particular, leaflets to be disseminated at events attended by project partners were created. Figure 9 shows the flyer for the 1st Open Call; and Figure 10 shows the flyer for the 2nd Open Call.



Federated Interoperable Semantic IoT/cloud Testbeds and Applications

Open Call 1

1st FIESTA-IoT Competitive Call for Experiments and Extensions

The FIESTA-IoT Project herewith announces its first Open Call for Experimenters and Extensions, targeting advance and innovative developments in the Internet of Things over the Experimentation as a Service platform and the underlying IoT testbeds that supports the FIESTA-IoT Consortium.

Overall, the project's experimental infrastructure will provide experimenters in the IoT domain with the following unique capabilities:

- Access to and sharing of IoT datasets in a testbed-agnostic way. FIESTA-IoT will provide researchers with tools for accessing IoT data resources (Including Linked sensor data sets) independently of their source IoT platform/testbed.
- Execution of experiments across multiple IoT testbeds, based on a single API for submitting the experiment and a single set of credentials for the researcher.
- Portability of IoT experiments across different testbeds, through the provision of interoperable standards-based IoT/cloud interfaces over diverse IoT experimental facilities.

1st Open Call for Experiments and Extensions

This call is split in two categories of experiments:

- **Scientific excellence** targeting experiments validating novel technologies around the IoT concept and its integration with Cloud and Big Data paradigms that clearly advance the current state-of-the-art.
- **Innovation by SME and/or Entrepreneurs** targeting experiments validating IoT-based solutions that have a large potential for commercial exploitation in existing or new products or services.

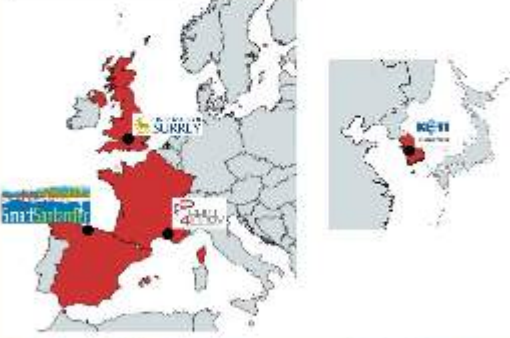
These experiments should be of a short duration (**maximum 6 months**). Per proposal a budget can be made available **up to a maximum of 50 k€ per experiment**.

This call solicits for the following extensions:

- **Integration of new IoT testbeds.** These testbeds must be compliant with the semantic models and interfaces defined by the FIESTA-IoT project in order to include them into the federation. In order to enlarge the critical mass of the existing experimentation support capacity offered by the 4 existing FIESTA-IoT testbeds, as well as to probe the interoperability solutions developed within the project, we are seeking for new testbeds that can provide datasets and data-streams on the domains of interest of the existing ones (see section 3). However, testbeds offering extra scenarios (smart agriculture, underwater, etc.) will be also considered for inclusion.

Integration of the new testbeds should be accomplished in **maximum 6 months**. Per proposal a budget can be made available **up to a maximum of 50 k€ per extension**.

Available IoT Testbeds



Testbed	Short description	Deployed devices
SmartSantander	Large-scale Smart City deployment.	Thousands of fixed and mobile sensors (environment, traffic, crowdsensing, etc.)
University of Surrey (SmartICS)	Smart Environment, based on an indoor sensor nodes deployment.	Hundreds of indoor sensors
Com4innov	Datasets taken from a real mobile network operator. Smart Environment indoor and outdoor devices.	Hundreds of 4G/5G SIM cards Tens of indoor sensors
KETI	Indoor and outdoor building Smart Environment deployment.	Hundreds of indoor sensors Tens of outdoor sensors

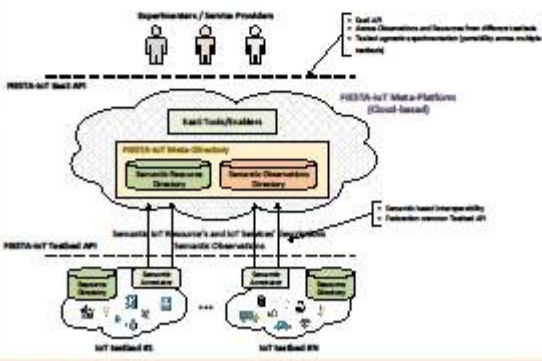
Submission deadline: 26th October 2016, at 17:00 Brussels local time


Call	Category / Identifier	Call budget	Max. budget per exp. or ext.	Maximum no. of exp./ext. to be funded
Experiments	Scientific Excellence	€ 150 000	€ 50 000	3
	FIESTA-IoT-OC3-EXP-ERIC			
	Innovation by SME	€ 150 000	€ 50 000	3
Extensions	FIESTA-IoT-OC1-EXP-SME	€ 150 000	€ 50 000	3
	FIESTA-IoT-OC1-EXT	€ 150 000	€ 50 000	3
Total funding of this call		€ 450 000, of which € 300 000 are for Experimenters and € 150 000 are for Extensions		

More information available through <http://fiesta-iot.eu/opencall/>

FIESTA-IoT Platform Overview

- **Experimentation-as-a-Service (EaaS) paradigm** for IoT experiments: Instead of deploying yet another physical IoT infrastructure, it will enable experimenters to use a single EaaS application program interface (API) for executing experiments over multiple existing IoT testbeds. Experimenters will be therefore able to learn the EaaS API once, and accordingly use it to access data and Resources from any of the underlying testbeds.
- Testbeds participating in the federation will have to implement the common standardized semantics and interfaces that are being defined within the FIESTA-IoT project. This will enable the FIESTA-IoT meta-platform to access their data, resources' descriptions and other low-level capabilities.
- FIESTA-IoT meta-platform will be a directory service where resources from multiple testbeds will be registered. In the same way, the observations produced by them will be also stored. This directory will enable the dynamic discovery and use of resources (e.g., sensors, services, etc.) from all the interconnected testbeds.
- Use of semantic technologies to support the interoperability between heterogeneous IoT platforms and testbeds. FIESTA-IoT ontology has been defined to rule the semantic annotation of the core concepts used within the FIESTA-IoT Meta-Platform.





The research leading to these results has received funding from the European Horizon 2020 Programme under grant agreement n°643943 (FIESTA-IoT project).





Figure 9: FIESTA-IoT Open Call 1 Flyer



Federated Interoperable Semantic IoT/cloud Testbeds and Applications

Open Call 2

2nd FIESTA-IoT Competitive Call for Extensions

The FIESTA-IoT Project herewith announces its second Open Call for Extensions, targeting advance and innovative developments in the Internet of Things over the Experimentation as a Service platform and the underlying IoT testbeds that supports the FIESTA-IoT Consortium.

Overall, the project's experimental infrastructure will provide testbed providers in the IoT domain with the following unique features:

- **Access to and sharing of IoT datasets in a testbed-agnostic way.** FIESTA-IoT will provide researchers with tools for accessing IoT data resources (including Linked sensor data sets) independently of their source IoT platform/testbed.
- **Boost the sharing, reuse and repurposing of IoT facilities at an EU and global scale.** FIESTA-IoT will showcase and validate this concept in the scope of enterprise applications/experiments, smart city applications/experiments and more.
- **A global market confidence programme for extending the pool of interoperable facilities and testbeds** that will comply with the project interoperability model.

2nd Open Call for Extensions

The second Open Call is focused on the seek for new IoT infrastructures that want to federate within the FIESTA-IoT platform

Call for extensions: In order to enlarge the critical mass of the existing experimentation support capacity offered by the 4 existing FIESTA-IoT testbeds, and the 3 additional ones that are being selected in 1st Open Call, as well as to probe the interoperability solutions developed within the project, we are seeking new testbeds that can provide datasets and data-streams on the domains of interest of the existing ones. However, testbeds offering extra scenarios (smart agriculture, smart factory, underwater, smart grid, etc.) will be also considered for inclusion.

Integration of new IoT testbeds. These testbeds must be compliant with the semantic models and interfaces defined by the FIESTA-IoT project in order to include them into the federation.

Integration of the new testbeds should be accomplished in **maximum 6 months**. Per proposal a budget can be made available **up to a maximum of 50 k€ per extension**.

Available IoT Testbeds

Testbed	Short description	Deployed devices
SmartSantander	Large-scale Smart City deployment.	Thousands of fixed and mobile sensors (environment, traffic, crowdsensing, etc.)
University of Surrey (SmartICS)	Smart Environment, based on an indoor sensor nodes deployment.	Hundreds of indoor sensors
Com4Innov	Datasets taken from a real mobile network operator. Smart Environment indoor and outdoor devices.	Hundreds of 4G/5G SIM cards Tens of indoor sensors
KETI	Indoor and outdoor building Smart Environment deployment.	Hundreds of indoor sensors Tens of outdoor sensors

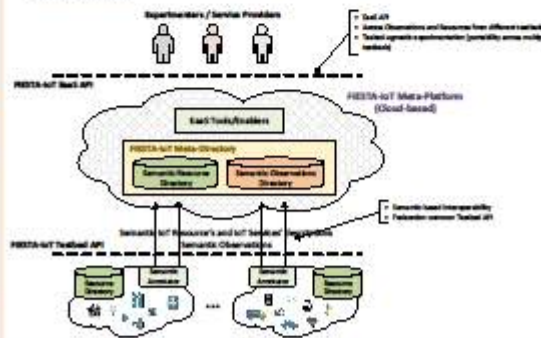
Submission deadline: 28th February 2017, at 17:00 Brussels local time


Call	Category / Identifier	Call budget	Max. budget per exp. or ext.	Minimum no. of exp./ext. to be funded
Extensions	FIESTA-IoT-OC2-EXT	€ 150 000	€ 50 000	3
Total funding of this call				€ 150 000

More information available through <http://fiesta-iot.eu/opencall/>

FIESTA-IoT Platform Overview

- **Experimentation-as-a-Service (EaaS) paradigm for IoT experiments:** Instead of deploying yet another physical IoT infrastructure, it will enable experimenters to use a single EaaS application program interface (API) for executing experiments over multiple existing IoT testbeds. Experimenters will be therefore able to learn the EaaS API once, and accordingly use it to access data and Resources from any of the underlying testbeds.
- Testbeds participating in the federation will have to implement the common standardized semantics and interfaces that are being defined within the FIESTA-IoT project. This will enable the FIESTA-IoT meta-platform to access their data, resources' and services' descriptions and other low-level capabilities.
- FIESTA-IoT meta-platform will be a directory service where resources from multiple testbeds will be registered. In the same way, the observations produced by them will be also stored. This directory will enable the dynamic discovery and use of resources (e.g., sensors, services, etc.) from all the interconnected testbeds.
- Use of semantic technologies to support the interoperability between heterogeneous IoT platforms and testbeds. FIESTA-IoT ontology has been defined to rule the semantic annotation of the core concepts used within the FIESTA-IoT Meta-Platform.





The research leading to these results has received funding from the European Horizon 2020 Programme under grant agreement n°643943 (FIESTA-IoT project).

Figure 10: FIESTA-IoT Open Call 2 Flyer

5.3 Web 2.0

Social media and Web 2.0 technologies form an important channel for disseminating information to a wider audience.

There are multiple avenues available:

- In the second year of the project, we have maintained the **Twitter** account (https://twitter.com/fiesta_iot). At present, the account has >500 followers (a visualisation of the twitter feed is shown in Figure 11). This is greater than a doubling of followers from Y1 (previously 202 reported February 2016).
- Project presentations are now disseminated to a slide share channel:
 - <https://www.slideshare.net/fiestaiot>
- Project demonstrations are now disseminated via the FIESTA-IoT youtube channel:
 - https://www.youtube.com/channel/UCPMObIIYoYh_QILxukcrzew



Figure 11: FIESTA-IoT Twitter Feed