FIESTA: Federated Interoperable Semantic IoT/cloud Testbeds and Applications

At A Glance: FIESTA

FIESTA works towards providing a blueprint experimental infrastructure, tools, techniques, processes and best practices enabling IoT testbed/platforms operators to interconnect their facilities in an interoperable way.

FIESTA-IoT
www.fiesta-iot.eu

Project Coordinator

Dr. Martin Serrano
Insight Centre for Data Analytics
National University of Ireland Galway
Tel: +353 91495130
Fax: +353 91495541
Email:martin.serrano@insight-centre.org
Project website: http://fiesta-iot.eu/

Partners: National University of Ireland - NUIG / Coordinator (Ireland), University of Southampton IT Innovation - ITINNOV (United Kingdom), Institut National Recherche en Informatique & Automatique - INRIA, (France), University of Surrey - UNIS (United Kingdom), Unparallel Innovation, Lda - UNINNOVA (Portugal), Easy Global Market - EGM (France), NEC Europe Ltd. NEC (United Kingdom), University of Cantabria UNICAN (Spain), Association Plate-forme Telecom - Com4innov (France), Research and Education Laboratory in Information Technologies - Athens Information Technology - AIT (Greece), Sociedad para el desarrollo de Cantabria – SODERCAN (Spain), Ayuntamiento de Santander – SDR (Spain), Korea Electronics Technology Institute KETI, (Korea)

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Main Objectives

The FIESTA project works on integrating IoT platforms, testbeds and associated silo applications. FIESTA will open up new opportunities in the development and deployment of experiments that exploit data and capabilities from multiple testbeds. The FIESTA infrastructure will enable experimenters to use a single EaaS API (i.e. the FIESTA-IoT EaaS API) for executing experiments over multiple IoT federated testbeds in a testbed agnostic way i.e. like accessing a single large scale virtualized testbed. The main goal of the FIESTA project is to open new horizons in the development and deployment of IoT applications and experiments at a EU (and global) scale, based on the interconnection and interoperability of diverse IoT platforms and testbeds. FIESTA project's experimental infrastructure will provide European experimenters in the IoT domain with the unique capability for accessing to and sharing IoT datasets in a testbed-agnostic way. 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 and the portability of IoT experiments across different testbeds and the provision of interoperable standards-based IoT/cloud interfaces over diverseIoT experimental facilities

"FIESTA Project empowers Experimentation-as-a-Service (EaaS) paradigm for sharing and reusing data"

Challenges and Technical Approach

FIESTA project is associated with the the need to aggregate and ensure the the interoperability of data streams steaming from different IoT platforms forms or testbeds as well as the forms need to provide tools and techniques for building applications that horizon-integrate silo platforms and applica-tions horizontally integrate silo platforms

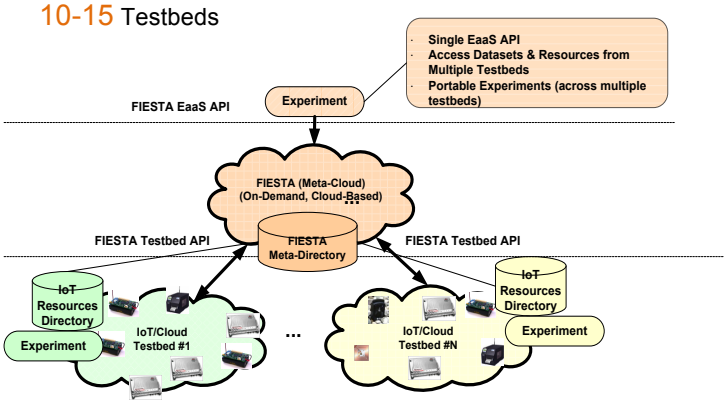
"FIESTA project works for researchers and experimenters to share and reuse data from diverse IoT testbeds in a seamless and flexible way"

State of the Art

Compared to other similar approaches FIESTA stands out by investigating federation and defining service orchestration and security by design and also reusing and repurposing existing sensors and IoT systems without requiring extensive changes in the deployed infrastructure.

14 Partners,
EU-ICT FIESTA 36 Months
2 Open Calls
Experiments 10-20 Participants
10-15 Testbeds

"FIESTA brings Experimentation as a Service close to users by means of Orchestration and Federation APIs"



Key objectives

The main goal of the FIESTA project is to open new horizons in the development and deployment of IoT applications and experiments at the EU and beyond boundaries (global scale), based on the interconnection and interoperability of diverse IoT platforms and testbeds.

The FIESTA project's experimental infrastructure will provide to the European experimenters in the IoT domain with the following unique capabilities:

- Access to and sharing of IoT datasets in a testbed-agnostic way. FIESTA aims to provide to researchers with tools for accessing IoT data resources (including Linked sensor data sets) independently of their source IoT platform/testbed.
- Enable 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.

Best Practices

Beyond the validation of FIESTA infrastructure on the basis of practical experiments and the integration of additional IoT testbeds, the project works on specifying concrete best practices for the federation of testbeds (addressed to testbed owners/administrators) wishing to become part of the virtualized meta-cloud infrastructure of the project. Similar best practices will be also produced for European researchers and enterprises (including SMEs) wishing to design and execute experiments over the FIESTA-IoT EaaS infrastructure. These best practices will be disseminated as widely as possible, as part of the project's efforts to achieve EU-wide/global outreach. The attraction and engagement of researchers and enterprises in the use of the FIESTA EaaS infrastructure will be another vehicle for the sustainability and wider use of the project's results.

Expected Impact

FIESTA-IoT project will issue, manage and exploit to get involved third-parties in the project.

- To ensure the design and integration (within FIESTA-IoT) of more innovative experiments, through the involvement of additional partners in the project (including SMEs). The additional experiments will focus on demonstrating the added-value functionalities of the FIESTA experimental infrastructure.
- To expand the FIESTA-IoT experimental infrastructure on the basis of additional testbeds. In this case the new partners will undertake to contribute additional testbeds and to demonstrate their blending and interoperability with other testbeds (already adapted to FIESTA-IoT). As part of this blending, the owners of these testbeds will also engage with the project's global market confidence programme, which will provide them with the means to auditing the interoperability and openness of their platforms.

The involvement of third-parties will therefore play an instrumental role for the large scale validation of the FIESTA-IoT experimental infrastructure, but also for the take-up of the project's global market confidence programme on IoT interoperability. It will be also a critical step to the gradual evaluation of FIESTA-IoT towards an infrastructure/ecosystem for global IoT experimentation.

References

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[3] M. Serrano, M. Hauswirth, J. Soldatos, "Design Principles for Utility-Driven Services and Cloud-Based Computing! Odelling for the Internet of Things", International Journal of Web and Grid Services (to appear) 2014.