

Collaborative Open Market to Place Objects at your Service



D8.2.3.2

Training actions report

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Abstract

The COMPOSE project aims to perform research leading to the development of an IoT platform that will easily enable relevant stakeholders to be engaged. Stakeholders include (i) developers, who wish to develop applications based on real-world smart objects (ii) Smart objects providers and owners who wish their smart objects to be exposed and available to developers, and (iii) end-users who wish to make use of existing applications. The goal of the project is to create such a platform that will automatically take the burden off the identified stakeholders and enable each one to concentrate on their areas of expertise while leaving all systems related aspects for the COMPOSE platform to handle.

This deliverable provides a summary of the training activities and strategy carried out during the last year of the project. It complements the previous deliverable D8.2.3.1, which reported on the training activities carried out in the first two years. D8.1.3 additionally reports on dissemination events, some of which included some demos and showcases. In the current deliverable we focus however on the updates on training material for each component of the platform and the creation of the tutorials, as well as some dedicated community building experiences. Finally, we reflect on the work done during this period and summarise the results and outcome of the training activities within the project.

Document History

Version	Date	Comments
V0.1	19/10/2015	TOC for review
V0.2	29/10/2015	Full draft sent to reviewers
V0.3	30/10/2015	Addressed comments
V1.0	31/10/2015	Final version of the document submitted.

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1 Introduction

As ever more internet connected smart objects are being put into use, engulfing many aspects of life and society, while producing large amounts of data, not enough emphasis has been placed on the creation of useful applications making good use of all the available smart objects.

COMPOSE aims to tackle that aspect, and along the way unleash the full potential of the IoT by providing a platform that will make it easier for smart objects providers to offer their service on the one hand, while making it easy for individual developers and SMEs to create and deploy innovative applications based on the available smart objects.

Under these premises, COMPOSE defines a set of components that are glued together to provide developers with means to create their own IoT based applications by following simple steps that enable their solutions to solve some of the issues that are related to IoT applications out of the box.

As part of WP8, we developed during the last two years training and engagement activities in order to create a sufficient knowledge base and training material that developers could use to learn about the platform, capabilities and easily create their own application, boosting the adoption of COMPOSE in the community.

During the last period of the project, we continued improving the training material available on each component of the platform, as well as populating the Developer's portal, a unified access and dissemination point to the documentation of COMPOSE, with additional descriptions and tutorials available for any developer to start using COMPOSE.

1.1 Purpose

The purpose of this document is to report the training activities that were carried out by our consortium in the third and final year of the project.

1.2 Structure

The document opens with an introduction (Section 1).

Section 2 presents the training activities for the third year of the project, including specific community building activities.

Section 3 presents the training material produced during the third year of the project, including the tutorials added to the Developers' portal, as well as the updates on the individual components' accessible documentation.

Section 4 presents some conclusions on the work done.

2 Training ACTIVITIES

Training events during the previous phase of the project focused on presenting the platform at specific forums, with an emphasis on hackathons. The feedback provided in these events was mostly positive on the functionality side of the platform, with remarks on the lack of a more comprehensive documentation material, so we focused on creating that content and advertise it in the form of a COMPOSE Webinar, targeting the international IoT Community. Additional dissemination related events are described in deliverable D8.1.3.

2.1 Online COMPOSE Webinar

Once the platform was made publicly available we targeted an international community of IoT people through the Virtual IoT meetup group (<http://www.meetup.com/es/Virtual-IoT>).

This Meetup group has more than 570 members from many of the most active IoT companies in the world and it is coordinated by IoT Eclipse. The group is described as follows:

The Internet of Things is changing the technology industry. World-wide developers are creating new technology to make it easier to connect and integrate devices, sensors and actuators. This Virtual Open IoT Meetup is dedicated to discussing and discovering the technologies that will make it easier for developers to create IoT applications.

In this meetup group, we organised a webinar and promoted through all available social channels and inside the online community of IoT Meetup, with the title:

“Create Your IoT Services & Applications with COMPOSE Platform”
(http://www.meetup.com/Virtual-IoT/events/226102468/?a=co2_grp&gj=co2&rv=co2).

The Webinar introduces IoT from the point of view of what it takes to create an IoT application and provides a hands-on tutorial for developers to have a first approach to the platform and start creating their own IoT applications. The Webinar covers:

- Basic concepts of the COMPOSE platform,
- User registration
- Service Object Creation
- Data Processing Pipes Creation
- Push data to the platform
- Security aspects
- Creating and deploying COMPOSE cloud applications

It took place on October 29th, 2015. The virtual MeetUp was recorded and has been made available also through YouTube channel and other available dissemination channels after the event. (<https://www.youtube.com/watch?v=SrAvCHbgxCY>)

The slides prepared for the MeetUp are accessible as well from slideshare:
<http://www.slideshare.net/IkerLarizgoitia/20151029-compose-virtualiotmeetup-54537847>

Create Your IoT Services & Applications with COMPOSE Platform

Ayer · 9:00



This is a virtual Meetup occurring at 9 AM Pacific time. For help with your timezone calculation, refer to [this](#).

The meetup will be held on Google Hangouts and you can watch the live stream directly on YouTube.



COMPOSE platform enables new services that can integrate the Internet of Services with the Internet of Things. Connected devices are associated to services that can be combined and managed in a standardized way to build innovative new services. In this webinar we will learn about the platform, its main features and components, while we show how to configure and bootstrap a test application.

Speaker: **Iker Larizgoitia**

Figure 1: Meet Up Announcement

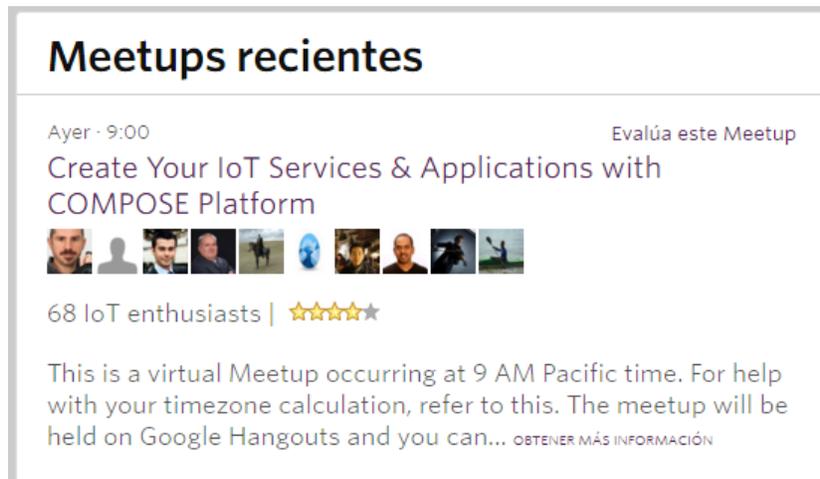


Figure 2: Summary of MeetUp Assistants

The webinar was attended by 68 people and counts with 102 views in the offline YouTube version at the writing time of this deliverable (some hours after the event). The experience was positive with additional feedback provided by attendees in terms of questions about scalability and functionality, but stating that it is a comprehensive platform that presents itself as an interesting alternative to building IoT applications, covering all the phases of the lifecycle.

3 Training CONTENTS

As the platform matured, in the last phase of the project, we put our efforts in providing a unique access point to the platform's documentation (<http://platform.compose-project.eu/>) that developers could access and learn about it with different types of tutorials, from basic features to some more advanced ones. Additionally, a live installation of COMPOSE was made available so that developers can also test it in a real deployment.

If we remember the value proposition of COMPOSE (as presented in the figure below), we can identify several components providing functionality for the three realms of Data, Services and Applications.

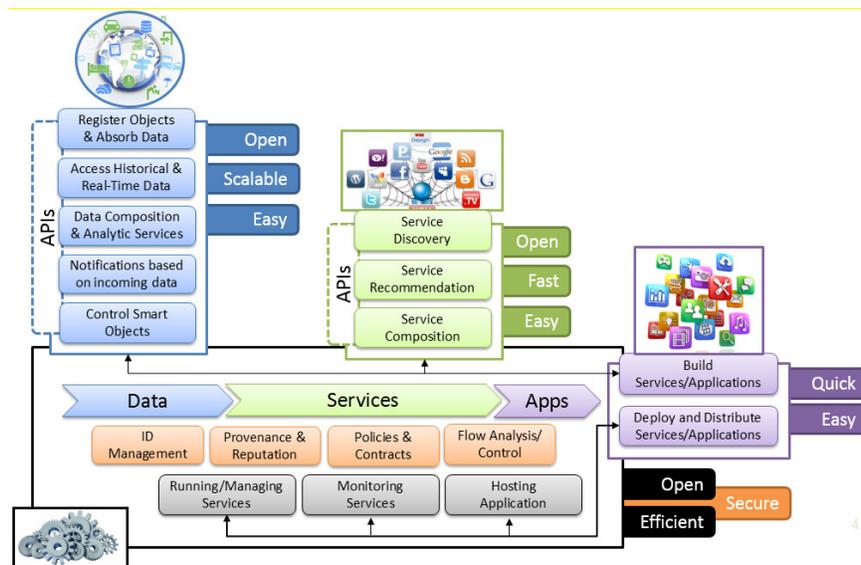


Figure 3: COMPOSE technical overview

The training material defined during the current reporting period of the project is divided in three categories:

- Source code & libraries, any material that provides executable source code and libraries to use COMPOSE components.
- COMPOSE tutorials: inside the Developers' portal defined under the dissemination activities (see deliverable D8.1.3.3) we added different material and tutorials that explain how to use COMPOSE from scratch to easily develop your own applications.
- Additional documentation: extended tutorials were also developed for the individual components of the platform.

Next we summarize this material based on the points defined below.

3.1 Source code & libraries

The following repositories are available for downloading COMPOSE related components open source files, libraries or preconfigured installation:

- **ServioTicy:**
 - Vagrant Box: <https://github.com/servioticy/servioticy-vagrant>
- **IServe:** <https://github.com/kmi/iserve>
- **COMPOSE GitHub:**
 - <https://github.com/compose-eu/>

COMPOSE platform components dedicated websites are the following:

- **IServe:** <http://iserve.kmi.open.ac.uk/>
- **COMPOSE Identity Manager (IDM):** <https://github.com/nopbyte>
- **COMPOSE Life Cycle (LCM):** <http://docs.composelifecycle.apiary.io/>
- **Compose SDK:** <http://docs.composesdk.apiary.io/>
- **Glue.things** <http://dev.gluethings.com>

3.2 Tutorials

Providing comprehensive tutorials for developers to start using the COMPOSE platform was one of the focus of this period. We integrated different tutorials in the Developers' portal (<http://platform.compose-project.eu/getting-started/tutorials/>), the main dissemination hub of COMPOSE. We defined two types of tutorials, Basic and End-to-End. While basic tutorials are a good starting point to basic functionality of the platform, the End-to-End tutorials show how to integrate all the pieces together to build your own IoT applications with COMPOSE.

3.2.1 Basic Tutorials

Currently, seven basic tutorials are available at the website:

1. **Registration and Authentication mechanism:** the reader is introduced to the platform by explaining how to register to Glue.things portal and how authentication is managed.
2. **Connect your device:** now that users are able to log into the system, it is time to teach them how to provide for each device they want to integrate in it a *definition*, i.e., a JSON file describing the device properties, with particular focus on its data-generation capabilities and the actuations device is enabled to. This definition has to be submitted to the COMPOSE platform, in order to have it creating a corresponding virtual device and being allowed to manage the incoming data from the device (i.e., how to receive, to store, to process, to retrieve data).
3. **Create your first “HELLO WORLD” app:** Glue.things encapsulates a NodeRED workflow editor (*Composer*) integrated with the device management system: through it, users can create their own applications leveraging on the data produced and shared by the connected devices. This tutorial just introduces the readers to the Composer, showing how to setup and configure a very simple first application.

4. **How to use compositions:** it is the follow-up of the previous tutorial, explaining how through Composer it is possible to aggregate data coming from connected sensors and even from other workflows.
5. **Create Your First App Using Data From Device:** as a completion of the previous two tutorials, this one shows how to implement a workflow application using data coming from connected sensors.
6. **How to use subscription:** the data-stream oriented approach used for encoding the connected devices implies a potentially large amount of data updates arriving at the system at any time, according to the device configuration. Any application interested in working with such data needs to have a way to be updated every time an update is delivered to the platform. Pub/sub support is provided by COMPOSE platform, and this tutorials explain how an application can subscribe to a device stream in order to receive in quasi real time a notification containing the recent update.
7. **How to use actuation:** actuations allow external users to trigger specific actions on a given device, e.g., sensor measurement, turn on/off leds and so on. The COMPOSE platform provides a way to manage actuations, in order to have users notified about the status of their actuation requests. This tutorial explains how users can adopt such a feature in their applications.
8. **COMPOSE Java SDK guide and M2M demo tutorial:** This tutorial will be composed of two different sections. The first one will be a description and a guide over the Java SDK for the COMPOSE APIs. The second one will be a tutorial to follow step by step the demo M2M for COMPOSE: A gateway using the COMPOSE Java SDK to register (to COMPOSE) automatically the sensors detected followed by the data uploading.

3.2.2 End to End tutorial: Developing an IoT application with COMPOSE: Smart Spaces use case tutorial

End-to-End Tutorials are meant for gluing the notions learned from basic tutorials and drive the developers through a whole application creation process. We created a simple sample application that covers all the components of COMPOSE and teaches how to make basic use of them and put all the pieces together to create a tangible end to end application.

The application presented in this tutorial is based on a Smart Spaces scenario, where products become an interaction point with consumers to create enhanced experiences. From the functional point of view, the application will allow users to:

- Log in into the COMPOSE platform and get access to the application.
- Search for products based on their semantic descriptions.
- Access product information, combining static and dynamic information.
- Access special offers based on their membership status.
- Use feedback on products.
- Visualise statistics on products.

Code associated to this tutorial is available at Github (<https://github.com/compose-eu/tutorials>)

Both Basic and End-to-End tutorials are open for integration: new tutorials are supposed to be released in the future, according to the need and requests coming from the platform users. Users are encouraged to submit their own tutorials, in order to enrich the COMPOSE Developer’s Portal documentation and to provide examples of solutions that can be useful for the whole platform application developers community.

3.3 Additional documentation

In addition to the integrated tutorials in the Developers' portal and the components already reported in the previous deliverable, we have added during this last year the following content in the individual components:

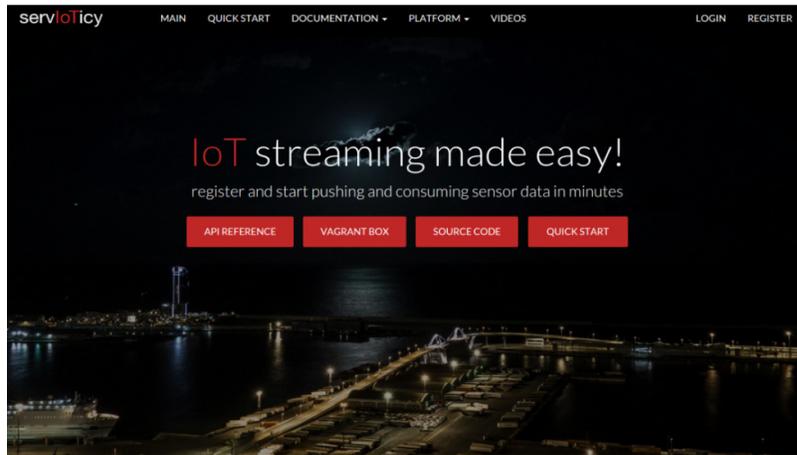


Figure 4: ServioTicy

Name	ServioTicy Vagrant	Source code & Libraries
Component	ServioTicy	
URL	https://github.com/servioticy/servioticy-vagrant	
Description	A vagrant virtual machine that contains a full easy to deploy installation of ServioTicy	

Name	ServioTicy Documentation	Tutorials & Documentation
Component	ServioTicy	
URL	http://www.servioticy.com/	
Description	The documentation of ServioTicy has been remodelled with a new, simple to use look and feel and additional content focusing on the different functionalities provided by the platform.	

Name	ServioTicy Quick Start Tutorial	Tutorials & Documentation
Component	ServioTicy	
URL	http://docs.servioticy.com/	
Description	A set of simple tutorials to get the concepts behind ServioTicy and start working with the basic functionality	

Reputation Manager

Name	Popularity API	Tutorials & Documentation
Component	Reputation Management	
URL	The APIs are available at http://docs.popularity.apiary.io/	
Description	This documentation includes the different aspects of the Reputation Management API.	

Name	Reputation Management Installation Guide	Tutorials & Documentation
Component	Reputation Management	
URL	https://github.com/compose-eu/popularity-api	
Description	This quick start tutorial describes how to install and run the Reputation Management component locally for testing purposes.	

Name	Reputation Management Interaction Tests	Tutorials & Documentation
Component	Reputation Management	
URL	https://github.com/nopbyte/popularity-api/tree/master/curl	
Description	This documentation includes a set of curl commands that show how to perform the most common activities and interactions with the Reputation Manager.	

Name	Policy Information Point API	Tutorials & Documentation
Component	Policy Information Point	
URL	The APIs are available at http://docs.composepip.apiary.io/	
Description	This documentation includes the different aspects of the Policy Information Point, which explains how to create and interact with the security policies	

Name	Policy Decision Point API	Tutorials & Documentation
Component	Policy Decision Point	
URL	The APIs are available at http://docs.composepdp.apiary.io/	
Description	This documentation includes the different aspects of the Policy Decision Point, which explains how to check policies and how to manage the lifecycle.	

Name	Contract Store API	Tutorials & Documentation
Component	Contract Store	
URL	The APIs are available at http://docs.composecs.apiary.io/#reference	
Description	This documentation defines how to interact with the Contract Store, in order to check, update and delete contracts for COMPOSE entities.	

Lifecycle Manager (LCM)

Name	COMPOSE SDK API	Tutorials & Documentation
Component	Lifecycle Manager	
URL	The APIs are available at http://docs.composesdk.apiary.io/	
Description	This documentation defines how to create COMPOSE services programmatically with this API.	

4 Conclusions and next steps

Feedback collected during the various events organised to raise awareness of COMPOSE in the past year of the project led us to focus our efforts on providing comprehensive tutorials that demonstrate the end to end capabilities of the platform.

With the creation as a dissemination effort of the Developers' portal, we could finally integrate all this material in a single access point for developers to the platform. Several tutorials have been added and in conjunction with the live full-fledged instance of the platform that was made available to the developers, the playground is set for the community to continue exploring and using COMPOSE in a more integrated way.

As the project finished we made an effort as well to present all this material to relevant stakeholders and communities, as well as enabling the necessary channels for the material to evolve once the project has officially finished.