D5.3 INFRASTRUCTURE AND TOOLS TRAINING MATERIAL

30/07/2020

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D5.3 INFRASTRUCTURE AND TOOLS TRAINING MATERIAL

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AUTHORS	Alfonso Pietropaolo (ENG)
REVIEWERS	Najmehsadat Mousavinezhad - Abderrahmane Khiat (Fraunhofer)
ABSTRACT	INFRASTRUCTURE AND TOOLS TRAINING MATERIAL
KEYWORDS	FIWARE, Redmine, Knowledge base

Document Revision History

Version	Date	Description of change	List of contributor(s)
0.1	08/07/2020	First draft	ENG
0.2	20/07/2020	Comments from Fraunhofer	Najmehsadat Mousavinezhad - Abderrahmane Khiat
1.0	21/07/2020	Final version after suggestions and comments	Alfonso Pietropaolo (ENG)
1.1	27/0/2020	Final version checked by the coordinator	Sara Mateo (Zabala)

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Nature of the deliverable:	**OTHER**	
Dissemination Level		
PU	Public, fully open, e.g. web	✓
CL	Classified, information as referred to in Commission Decision 2001/844/EC	
CO	Confidential to DAPSI project and Commission Services	

** R: Document, report (excluding the periodic and final reports)*

DEM: Demonstrator, pilot, prototype, plan designs

DEC: Websites, patents filing, press & media actions, videos, etc.

OTHER: Software, technical diagram, etc.

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EXECUTIVE SUMMARY

This deliverable represents the first (of three) version of the **Infrastructure and Tools Training Material** documentation, provided by the DAPSI project to support all sub-grantees during the three iterations of the incubation process. As this deliverable comes at the very beginning of the first Open Call, it represents a plan for the coming months and not achievements led by the training.

The deliverable D5.3 Infrastructure and Tools Training Material describes the training material that revolves around the three main assets that support users in creating their solutions. The three main assets are **Application Infrastructure (FIWARE Lab)**; **Support Platform (Redmine)** and the **DAPSI Knowledge Base (based on WordPress and MySQL)**:

1. Application Infrastructure (FIWARE) enables the integration of components and provides the basis for the interoperability and replication (portability) of smart solutions;
2. Support Platform (Redmine) enables users to manage the project and track issues;
3. The Knowledge base will contain a collection of all training material, technical documentation and relevant publications on Data Portability field.

As the Application Infrastructure is based on FIWARE [1] and FIWARE Lab technology, some background info about the FIWARE ecosystem is essential to better understand contents later described:

FIWARE is a curated framework of open source platform components that can be assembled together and with other third-party platform components to build Smart Solutions faster, easier, and cheaper. A simple yet powerful API (FIWARE NGSI) enables the integration of components and provides the basis for the interoperability and replication (portability) of smart solutions. The main and only mandatory component of any "Powered by FIWARE" platform or solution is the FIWARE Context Broker Generic Enabler, bringing a cornerstone function in any smart solution. Built around the FIWARE Context Broker, a rich suite of complementary FIWARE Generic Enablers are available in the FIWARE catalogue[2], dealing with the following fields:

- Interfacing with the Internet of Things (IoT) Robots and third-party systems;
- Context Data/API management, publication, and monetization;
- Processing, analysis, and visualization of context information.

FIWARE Lab is a non-commercial sandbox environment where innovation and experimentation based on FIWARE technologies take place. Entrepreneurs and individuals can test the technology as well as their applications on FIWARE Lab, exploiting Open Data published by cities and other organizations. FIWARE Lab is deployed over a geographically distributed network of federated nodes leveraging on a wide range of experimental infrastructures. The DAPSI cloud infrastructure is one of those federated node, based on OpenStack[3] technologies and located precisely in an ENG's Data Center in Vicenza (Italy).

[1] https://www.fiware.org/
[2] https://www.fiware.org/developers/catalogue/
[3] https://www.openstack.org

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The training material associated with the Application layer will focus on how to create a FIWARE Lab account, how to use it and also how to configure containers based on Docker[4], so that open call winners can prepare the business logic associated with their products.

As regards the Support Tool, the training will focus on the usage of Redmine[5]. Redmine is a free and open source, web-based project management and issue tracking tool. It allows users to manage multiple projects and associated subprojects. It features per project wikis and forums, time tracking, and flexible, role-based access control. It includes a calendar and Gantt charts to aid visual representation of projects and their deadlines.

In particular, sub-grantees will be trained on how to manage their own project, open new issues, follow the Redmine workflow and close tickets accordingly.

The last item object of this document is the DAPSI Knowledge Base. The Knowledge base will contain a collection of all training material, technical documentation and relevant publications on Data Portability field. It is based on WordPress[6], a free and open-source content management system (CMS) written in PHP [1] and paired with a MySQL [2] or MariaDB [3] database. Features include a plugin architecture and a template system, referred to within WordPress as Themes. WordPress was originally created as a blog-publishing system but has evolved to support other types of web content including more traditional mailing lists and forums, media galleries, membership sites, learning management systems (LMS) and online stores.

Sub-grantees will be trained on how to use the Knowledge Base, how to search for documents, and how to contribute, collaborate, and populate it with comments, feedback, and relevant material.

As previously mentioned, at the moment of writing this deliverable the selection process of the first round of the DAPSI project is still on-going, therefore sub-grantees have not been yet selected. For this reason, the processes and tools described in this document may be subject to some changes according to users' and project needs.

It is also important to remark that architecture, setup and installation of the tools are not part of this Deliverable (that is focused only on the training material). More technical information and details are published within the D5.1 (Infrastructure Design) and D5.2 (Infrastructure Operation, support and update).

[4] https://www.docker.com
[5] https://www.redmine.org
[6] https://wordpress.org/

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ABBREVIATIONS

FIWARE GE	FIWARE Generic Enablers
IP	Internet Protocol
KMS	Knowledge Base Management System
VMs	Virtual Machines

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1 APPLICATION INFRASTRUCTURE TRAINING

The Application Infrastructure layer will rely on the FIWARE Lab node [4], based on OpenStack [5] Kilo, hosted at ENG's premises. The participants can use the Application Infrastructure, which is freely available at (https://cloud.lab.fiware.org) starting from the first phase of the project:

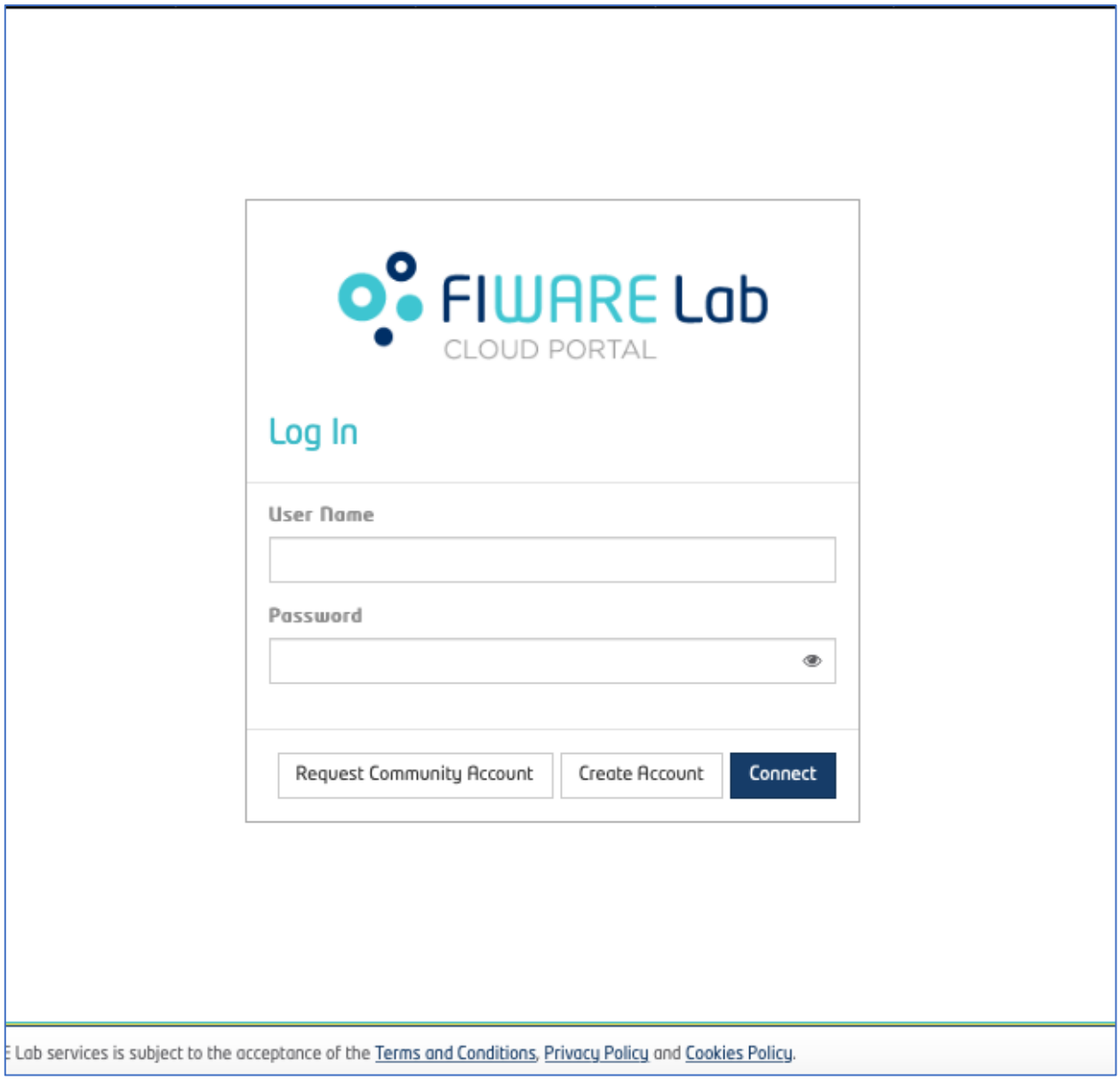

FIGURE 1: FIWARE LAB HOME PAGE

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The benefit of using FIWARE is a perfect combination of IaaS (FIWARE Lab) and SaaS (Generic Enabler) where users can physically deploy their application (for free) in a secure Cloud environment and take advantage of training and mentorship made available from the DAPSI team to support their ideas (*more technical info about the FIWARE architecture are available within the D5.1 Infrastructure Design [6]*). Anyhow, to maximize flexibility the use of the infrastructure is not mandatory and each participant can decide to use his/her own infrastructure.

The Infrastructure tries to meet the following requirements that will be the core of the training sessions and material:

- Virtual Machines provisioning. In order to host the developed applications and, if required, the application containers used to deploy them: a private network must be available to connect the internal services that interoperate to provide the final application;
- Public IP addresses. At least a public IP address for each sub-grantees must be provided in order to expose the deployed application on the internet: the possibility to have more than a single public IP address will depend on the availabilities of the infrastructure;
- Possibility to deploy different services supporting the final application. In particular, it could be necessary to deploy local databases, brokers and other services interoperating with the application container;
- Data and application security. Ensure privacy and security for the application developed by sub-grantees.

Moreover, in order to access FIWARE Lab services, an account is needed and two categories of free accounts are available:

- Trial Account, providing limited resources for two weeks;
- Community Account, whose initial duration is established in 9 months with the same quotas of the Trial Account.

However, duration and quotas can be extended and customized according to users' needs.

Taking into account the aforementioned requirements and functionality the first training session will be so composed:

Start time	Planned duration	Item description	Presenter
		DAPSI APPLICATION INFRASTRUCTURE	
XX:XX	2 min	Introduction to FIWARE (what it is, brief history etc...)	ENG
XX:XX	2 min	FIWARE Lab as an IaaS	ENG
XX:XX	2 min	How to create a new account	ENG

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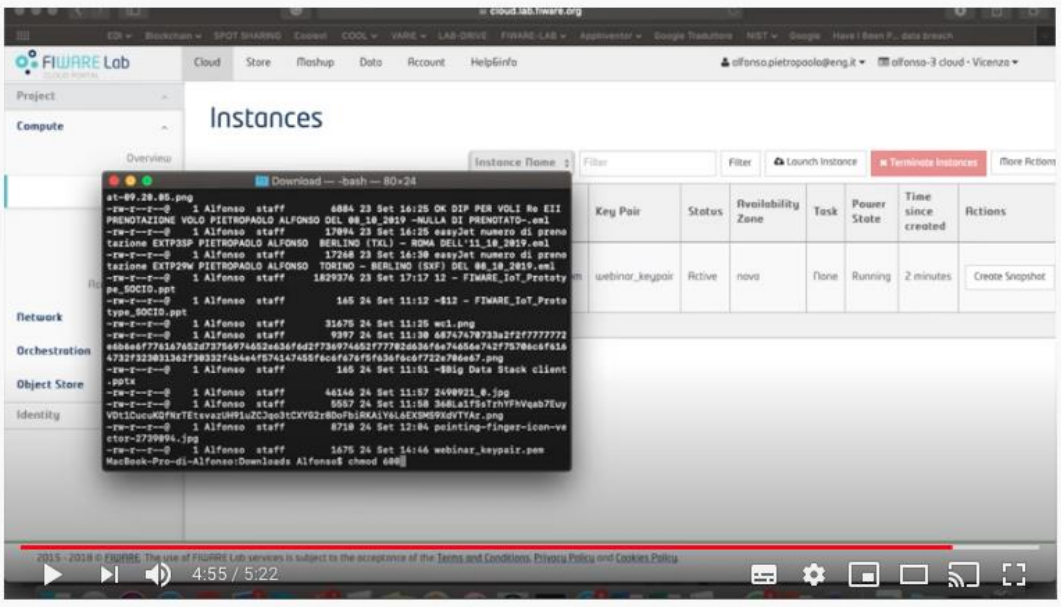
XX:XX	5 min	How to deal with security rules	ENG
XX:XX	5 min	How to create a new instance	ENG
XX:XX	5 min	How to configure IPs and keypair	ENG
XX:XX	5 min	How to connect to the VMs	ENG
XX:XX	2 min	Introduction to FIWARE Generic Enablers (will follow a dedicate webinar)	ENG
XX:XX	15 min	QA and feedbacks	
XX:XX		End of webinar	

TABLE 1: APPLICATION INFRASTRUCTURE WEBINAR

Along with the recording of the above webinar, also a different recorded YouTube video will be disseminated as a ready-to-use 5 min video for all participants:



FIWARE Lab webinar

FIGURE 2 FIWARE LAB 5 MIN VIDEO

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Another session focused on hands-on practical examples of FIWARE Generic Enablers [7] and their implementation in developing new DAPSI applications will run later in the project, approximately at the beginning of the second phase:

Start time	Planned duration	Item description	Presenter
USAGE OF FIWARE GE TO BOOST DAPSI APPLICATIONS			
XX:XX	2 min	Introduction to FIWARE (what it is, brief history etc...)	ENG
XX:XX	2 min	Overview of FIWARE GEs catalogue	ENG
XX:XX	5 min	Architecture of a "powered by FIWARE solution"	ENG
XX:XX	10 min	Real examples of smart solutions	ENG
XX:XX	15 min	How to code a new application	ENG
XX:XX	15 min	QA and feedbacks	ENG
XX:XX	End of webinar		

TABLE 2: FIWARE GENERIC ENABLERS WEBINAR

Also in this case, along with the recording of the above webinar, also a set of slides, practical examples and exercises will be provided to all participants in order to help them also "off-line".

All material mentioned so far will also be supported by providing links to the official documentation (as for instance FIWARE official documentation, NGSI specification [8], and FIWARE Lab terms and condition):

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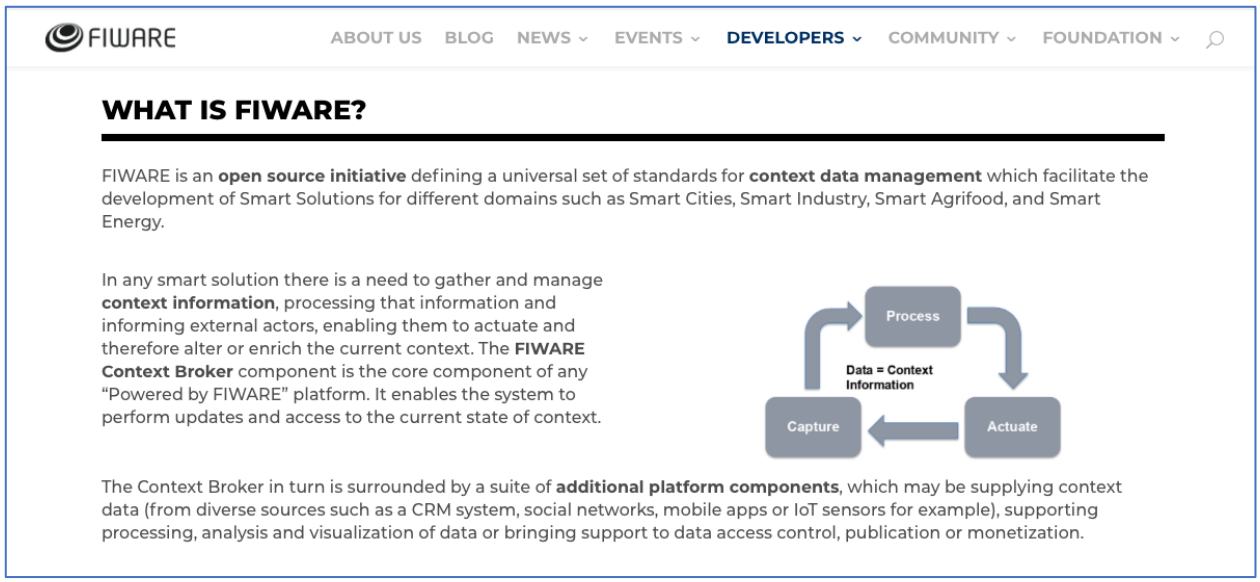

FIGURE 3: FIWARE OFFICIAL WEB SITE

FIGURE 4: FIWARE NGSI SPECIFICATION

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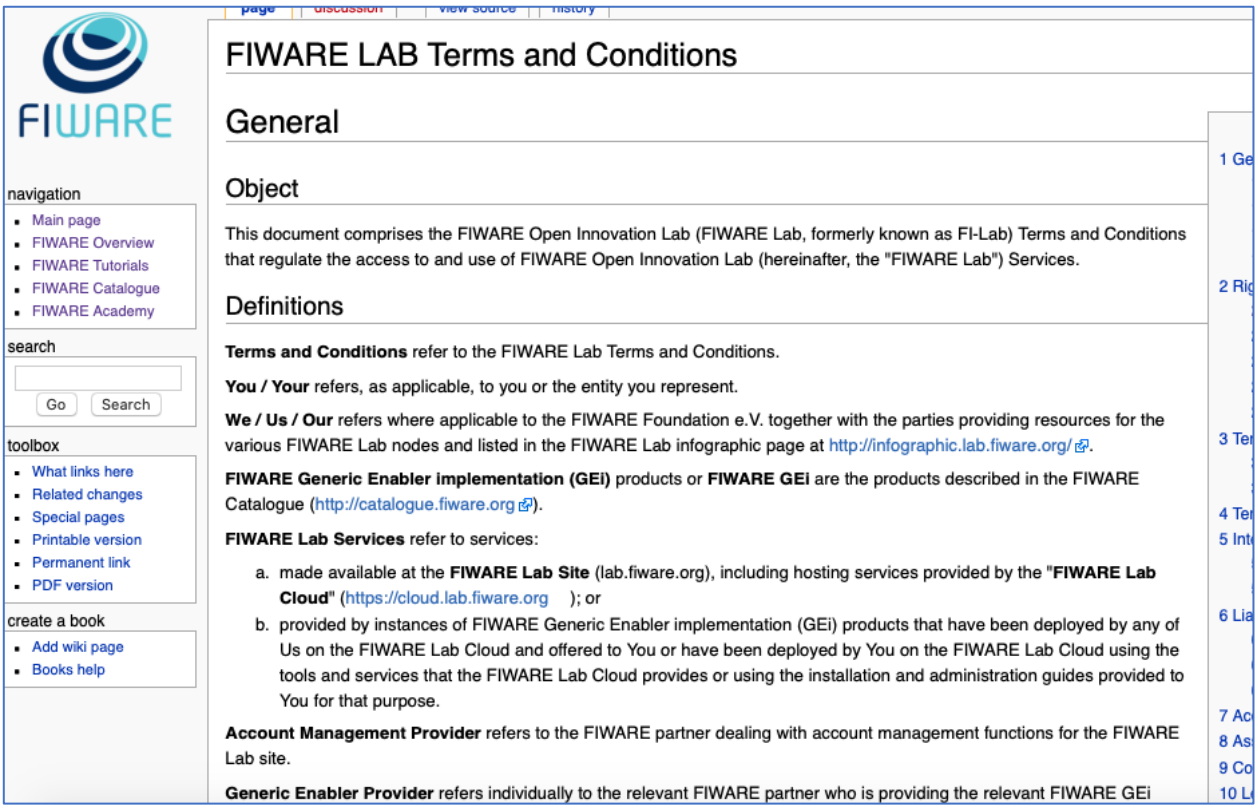

FIGURE 5: FIWARE LAB TERMS AND CONDITIONS

A collection of custom training materials and official documentation taken from the different sources will also be collected in a specific section of the DAPSI KMS (available at https://docs.dapsi.ngi.eu/)

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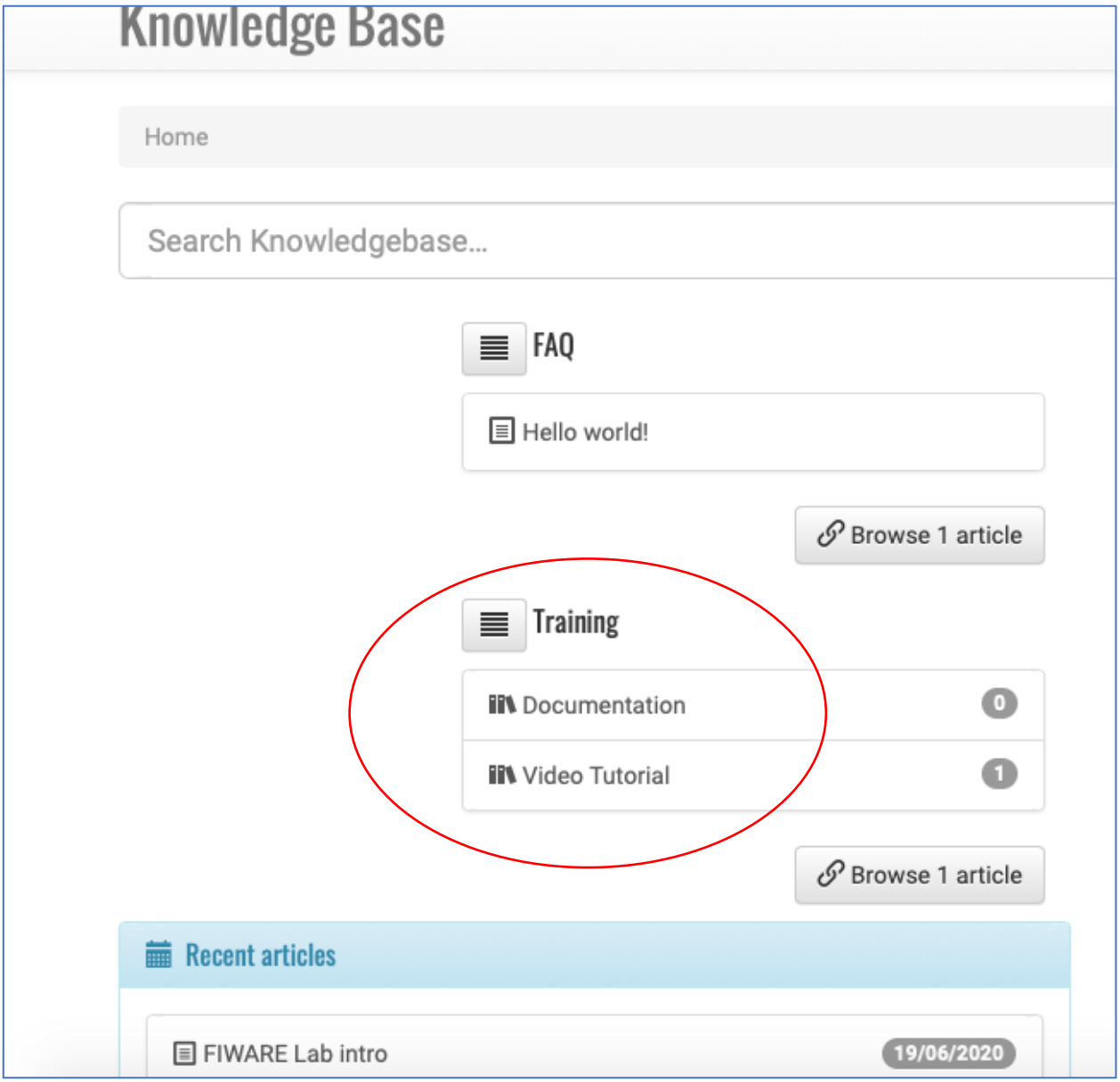

FIGURE 6: DAPSI KMS TRAINING SECTION

At the end of each iteration of the project, an assessment will be performed to ensure that the provided material was adequate in order to collect recommendations for the subsequent iterations.

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2 SUPPORT TOOL TRAINING

Starting from the first phase of the project, each approved participant carries out a project to design and develop the proposed solution. DAPSI provides a unique tool to manage each project and to quickly interact with DAPSI's technical team.

The tool is based on a customized version of Redmine [9] and it is available at (https://support.dapsi.ngi.eu). Redmine has been chosen among other tools mainly because it is one of the most popular projects management systems. It is platform and database independent and that makes it easier to recover in case of a fault. It is completely free in most of the basic and advanced features and the support team already uses it in other projects with success. *More technical info about Redmine and its role within the DAPSI project will be available in the D5.2 - Infrastructure Operation, support and update [10].*

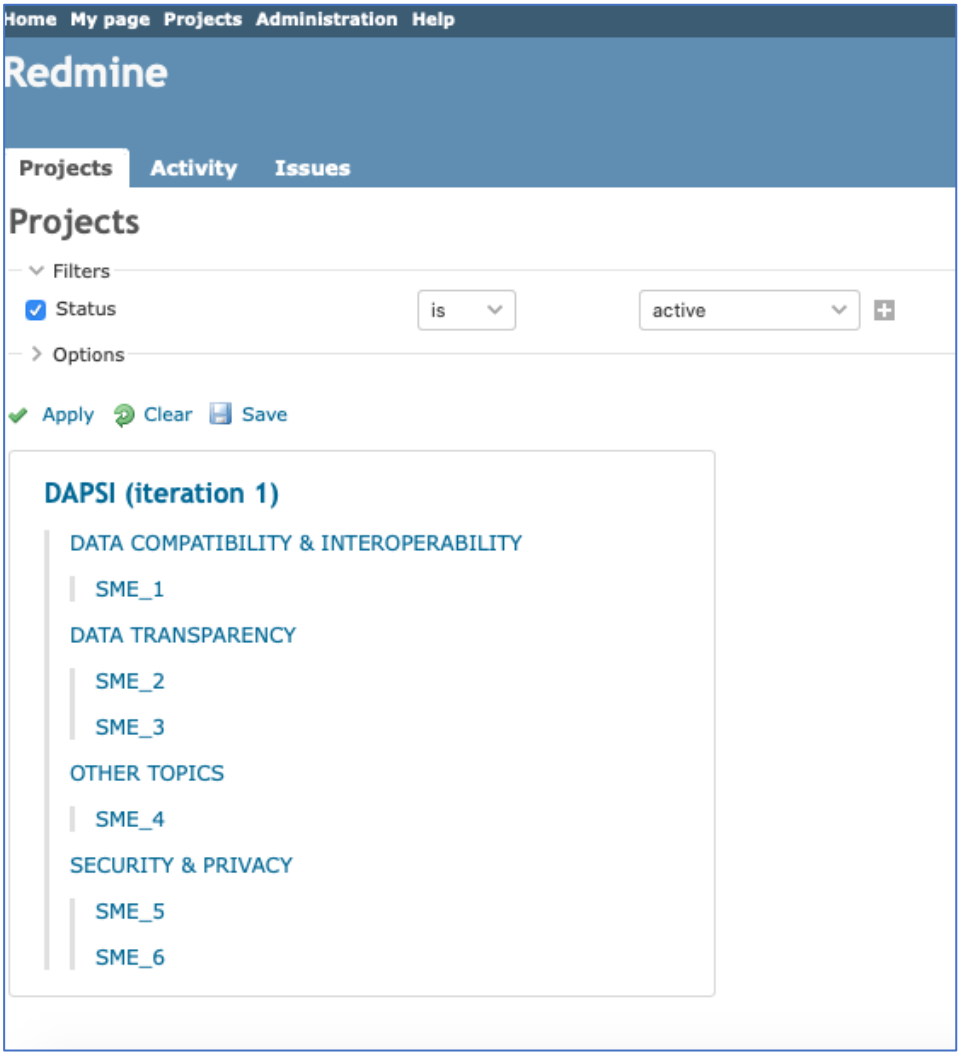

FIGURE 7: DAPSI SUPPORT TOOL

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As for the Application Infrastructure, also for the support tool it is foreseen a webinar and off-line documentation to support users in the creation and managing of support requests. The off-line documentation will be stored within the DAPSI KMS, while the webinar will touch the following topics:

Start time	Planned duration	Item description	Presenter
		USAGE OF THE DAPSI SUPPORT TOOL	
XX:XX	2 min	Introduction to Redmine	ENG
XX:XX	2 min	How Redmine is customized for the DAPSI project	ENG
XX:XX	2 min	How to request an account	ENG
XX:XX	2 min	How to managing own project	ENG
XX:XX	10 min	How to open, update, close issues	ENG
XX:XX	15 min	QA and feedbacks	ENG
XX:XX		End of webinar	

TABLE 3: REDMINE WEBINAR

The functionalities provided by the tools are the following:

- Project management, including time tracking
- Issue tracker, to raise tickets addressed to:
    - the members of the same project
    - DAPSI technical team, to report issues concerning the provided services, such as the infrastructure or the KMS

The tool supports a featured, very comprehensive user management system that assures isolation between the projects and enables them to report issues to the stakeholders involved in each activity. More in detail the users are organized in hierarchical groups related to the associated project and to the selected challenge and they can only see their own project (see picture below):

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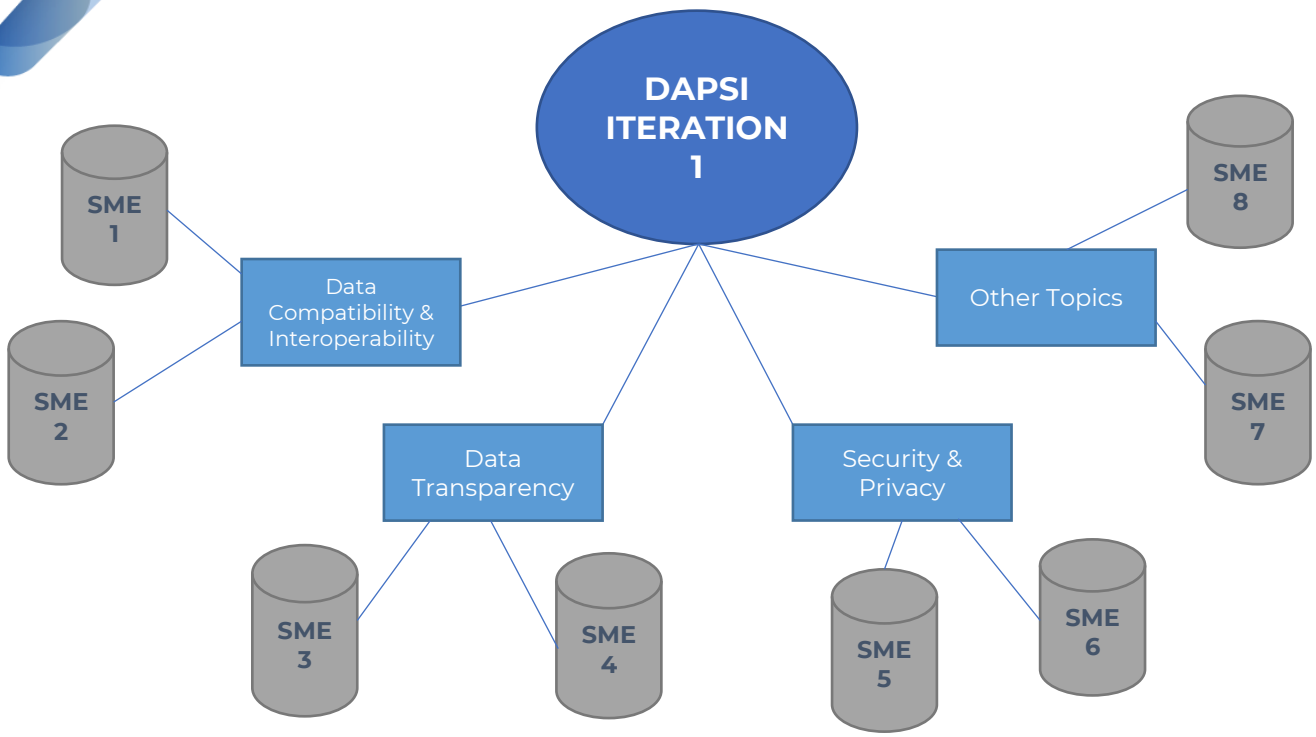

FIGURE 8: DAPSI SUPPORT TOOL ARCH. SCHEMA

Beside the custom training material, also an extract of the official Redmine documentation (https://www.redmine.org/projects/redmine/wiki/Guide) will be published on the DAPSI KMS:

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FIGURE 9: REDMINE OFFICIAL DOCUMENTATION

Other aspects on which sub-grantees will be trained are Privacy Policy and Terms and Conditions. In fact, the Redmine instance is installed and configured in a virtual server located in a secure Data Center owned by Engineering. For this reason, sensible data such as email and username will be stored according to GDPR and Engineering Policies for the entire duration of each iteration. The full statements are still under definition and will be published before welcome new users.

An extract is reported hereunder:

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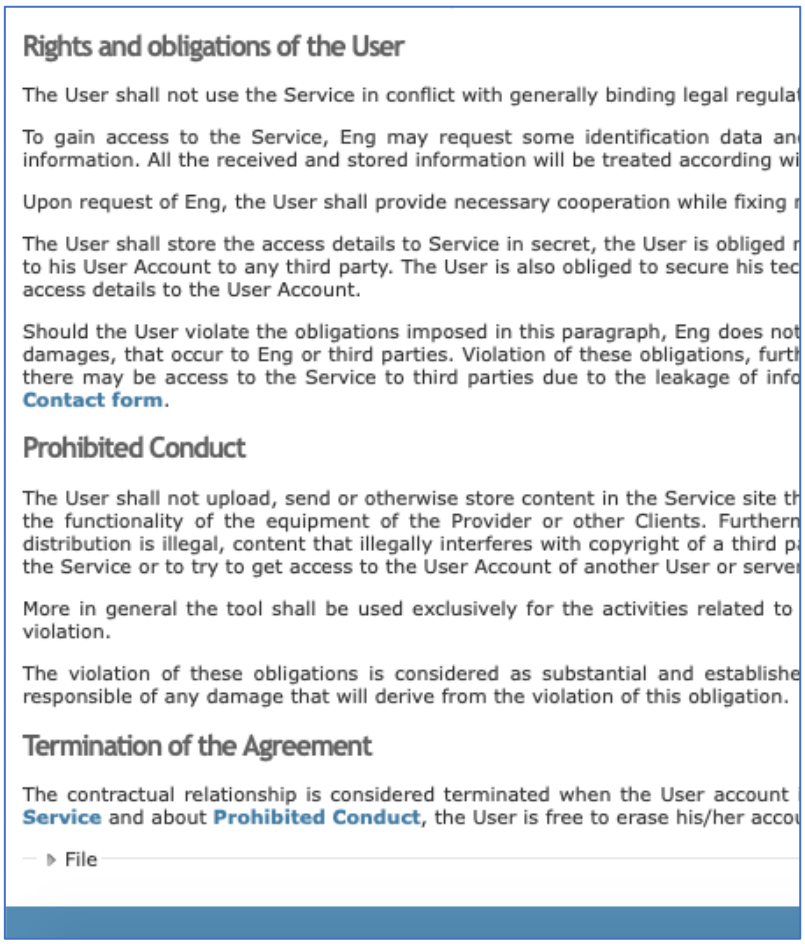

Rights and obligations of the User

The User shall not use the Service in conflict with generally binding legal regulat

To gain access to the Service, Eng may request some identification data an information. All the received and stored information will be treated according wi

Upon request of Eng, the User shall provide necessary cooperation while fixing

The User shall store the access details to Service in secret, the User is obliged to his User Account to any third party. The User is also obliged to secure his tec access details to the User Account.

Should the User violate the obligations imposed in this paragraph, Eng does not damages, that occur to Eng or third parties. Violation of these obligations, furth there may be access to the Service to third parties due to the leakage of info **Contact form**.

Prohibited Conduct

The User shall not upload, send or otherwise store content in the Service site th the functionality of the equipment of the Provider or other Clients. Furthern distribution is illegal, content that illegally interferes with copyright of a third p the Service or to try to get access to the User Account of another User or serve

More in general the tool shall be used exclusively for the activities related to violation.

The violation of these obligations is considered as substantial and establishe responsible of any damage that will derive from the violation of this obligation.

Termination of the Agreement

The contractual relationship is considered terminated when the User account **Service** and about **Prohibited Conduct**, the User is free to erase his/her accou

File

FIGURE 10: ENG PRIVACY POLICY AND TERMS AND CONDITIONS

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3 KNOWLEDGE BASE TRAINING

As highlighted in the previous chapters, a Knowledge Base will be part of DAPSI's assets to collect and store relevant information, QA, publications, training, and documentation about the tools used during the project, and more in general about the Data Portability Field.

Users will be trained on how to contribute to the population of such Knowledge Base and how to collaborate with each other using a sort of "Blog" mechanism to comment on the different topics.

The Knowledge Base is available at this link https://docs.dapsi.ngi.eu it based on WordPress which represents the best option in terms of flexibility and customization. It is very easy to use and permit the integration with third-party tools (such as Redmine) with a customized plugin (*more technical info will be available within the D5.2 Infrastructure Operation, support and update*) [10]. It will be populated according to the progress of the project. As already mentioned at the moment of writing this document we do not have the definitive list of participants as the selection process is still in progress with the preparation of the sub grant agreement and for this reason, also **the Knowledge Base is still under construction and will be customized and populated following an agile methodology** (not a rigid structure from the beginning, but ongoing changes and improvements based on feedbacks and project's needs).

The following picture represents the "look and feel" of the KMS in June 2020:

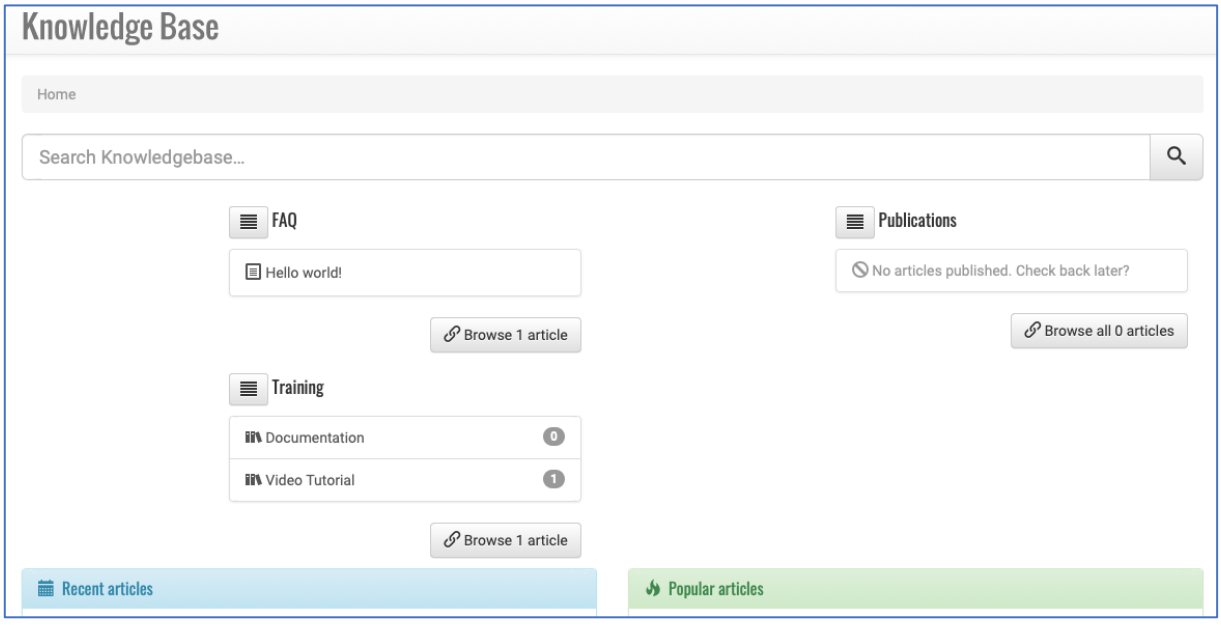

FIGURE 11: DAPSI KMS

A webinar training session (see table below) about the utility and use of such a tool will be performed and also a set of off-line documentation will be released to simplify users' understanding.

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Start time	Planned duration	Item description	Presenter
		USAGE OF THE DAPSI KMS	
XX:XX	2 min	What is a KMS	ENG
XX:XX	5 min	How to use the DAPSI KMS	ENG
XX:XX	5 min	How to contribute to the population of the KMS	ENG
XX:XX	15 min	QA and feedbacks	ENG
XX:XX		End of webinar	

TABLE 4: DAPSI KMS WEBINAR

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4 CONCLUSIONS

As also highlighted in the different sections of this document, this Deliverable comes at the beginning of the first Open Call of DAPSI when the selection process is still ongoing and no user has already joined the project. For this reason, we have to consider this Deliverable as a plan for future actions, tools, and contents. Indeed, most of the documentation is still incomplete at the moment of writing this document and none of the aforementioned training sessions have been actually performed.

The training sessions and material will follow a consolidate Agile approach already applied in different scenarios and projects:

A preliminary survey will be disseminated among Open Call winners to figure out the level of knowledge in the different fields (eg. FIWARE, Redmine, WordPress...) and, according to the answers the sessions will be customized following users' needs.

Moreover, a final survey will test whether the training was appropriate or not, and specific action will be taken for the next iterations accordingly.

The following picture represents an example of a survey that will be disseminated at the end of each iteration:

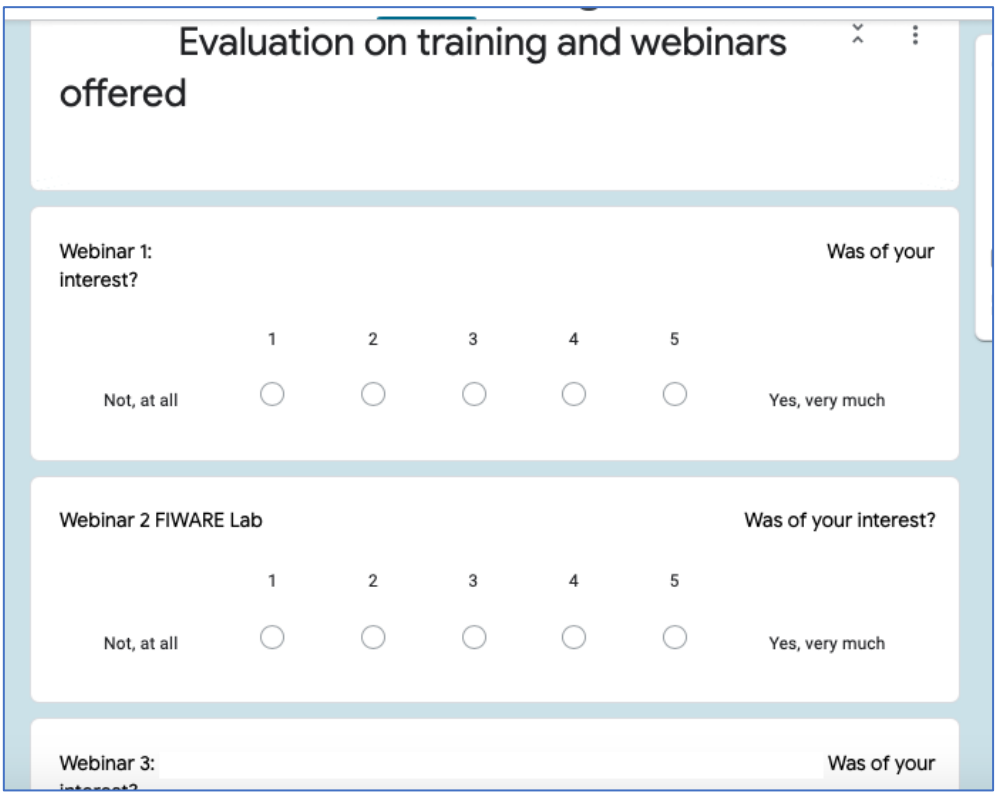

FIGURE 12: TRAINING FINAL SURVEY

In the following versions of this Deliverable foreseen at M18 and M24 of the project, accomplished results and contents added in the different tools will be shown.

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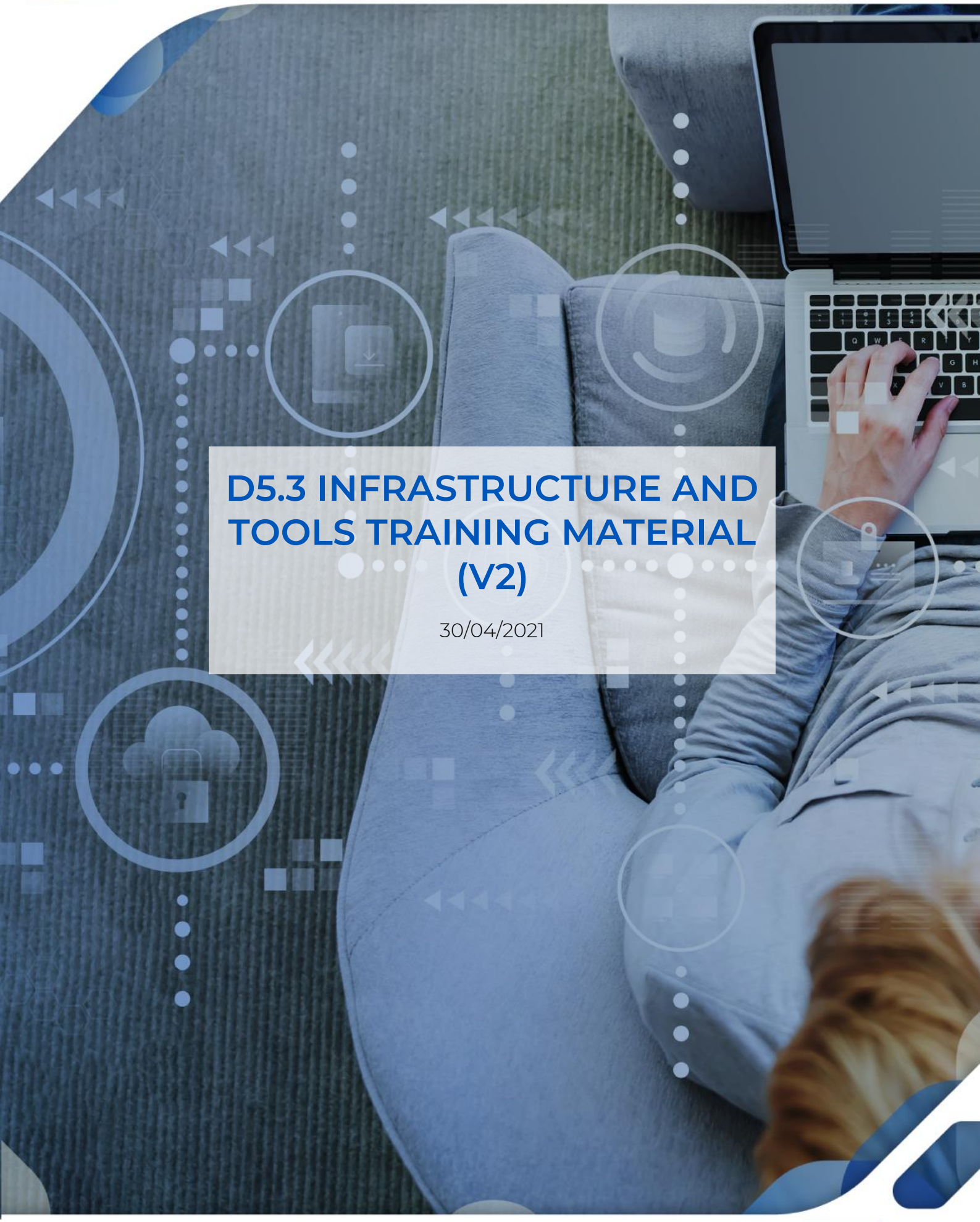

D5.3 INFRASTRUCTURE AND TOOLS TRAINING MATERIAL (V2)

30/04/2021

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Grant Agreement No.: 871498
Call: H2020-ICT-2018-2020

Topic: ICT-24-2018-2019
Type of action: RIA

D5.3 INFRASTRUCTURE AND TOOLS TRAINING MATERIAL (V2)

Revision: v.1.0

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AUTHORS	Alfonso Pietropaolo (ENG)
REVIEWERS	Najmehsadat Mousavinezhad (Fraunhofer)
ABSTRACT	INFRASTRUCTURE AND TOOLS TRAINING MATERIAL VERSION 2
KEYWORDS	FIWARE, Training, Tutorial, Redmine, Knowledge base

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0.1	07/04/2021	First draft	Alfonso Pietropaolo (ENG)
0.2	26/04/2021	Review and comments	Najmehsadat Mousavinezhad (Fraunhofer)
1.0	27/04/2021	Final Version	Alfonso Pietropaolo (ENG)
1.1	28/04/2021	Final version by the coordinator	Sara Mateo (Zabala)

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** R: Document, report (excluding the periodic and final reports)*

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DEC: Websites, patents filing, press & media actions, videos, etc.

OTHER: Software, technical diagram, etc.

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EXECUTIVE SUMMARY

This deliverable represents an update of the first release of **D5.3 Infrastructure and Tools Training Material** submitted in July 2020.

It does not cover the overview of tools and infrastructures available to the users (already covered within the first release of this document) but it rather focuses on the training sessions and material actually offered to all DAPSI participants.

The whole set of trainings and material offered so far is hereunder reported in Table 1:

ITEM	TYPE	DESCRIPTION	LINK
#1	WEBINAR	FIWARE Lab (Application Infrastructure)	SLIDE ATTENDEES
#2	WEBINAR	REDMINE (live demo)	ATTENDEES
#3	WEBINAR	FIWARE GEs & Data Models	SLIDE ATTENDEES
#4	VIDEO-TUTORIAL	FIWARE Lab quick how-to video	YOUTUBE
#5	TUTORIAL	Docker Install on Ubuntu 18.04	DOC
#6	TUTORIAL	FIWARE Orion How-To	DOC
#7	VIDEO-TUTORIAL	Creating Advanced Dashboard using Wirecloud	DOC
#8	VIDEO-TUTORIAL	Turning Organizations into Smart Organizations	DOC

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#9	ARTICLE	Commission proposes measures to boost data sharing and support European data spaces	DOC
#10	ARTICLE	Mark Zuckerberg's Reckoning: 'This Is a Major Trust Issue'	DOC
#11	BOOK	Managing Information Risks	DOC
#12	RESEARCH PUBLICATION	Making data portability more effective for the digital economy	DOC
#13	RESEARCH PUBLICATION	Crisis Collaborations: Challenges for Safe Data Sharing with Differential Privacy	DOC
#14	RESEARCH PUBLICATION	Establishing a Strong Baseline for Privacy Policy Classification	DOC

TABLE 1 – OC1, LIST OF TRAINING ACTIVITIES

As one of the main goals of *Work Package 5* is to train users about the usage of tools available within the project, many sessions were focused on **FIWARE Lab**[1], **FIWARE Generic Enablers**[2], and **Redmine**[3]. In particular, the first part of the program (October 2020) was dedicated to train all startups on the usage of the Cloud Infrastructure (FIWARE Lab). They were so able to freely create and manage virtual machines to develop their products. Moreover, a live demo of the DAPSI ticketing support tool (based on Redmine) was presented in order to train them on how to ask for technical support through the tool. The second part of the program was instead focused on the usage of FIWARE Generic Enablers and **FIWARE Data Models**[4] (December 2020) to help startups'

[1] https://cloud.lab.fiware.org/
[2] https://www.fiware.org/developers/catalogue/
[3] https://www.redmine.org
[4] https://www.fiware.org/developers/data-models/

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representative in boosting their product innovation by using a set of Open-Source technologies that are becoming a reference in the European context, and nowadays are supported by big companies such as Atos, Engineering, NEC, Red Hat, Telefonica, TRIGYN Technologies, and more…

Besides the aforementioned pieces of training, other materials have also been disseminated among participants and published within the DAPSI Knowledge Base Management System[5]. Indeed, useful video tutorials, articles, books, and research publications are freely available to everyone to support the growth of the Data Portability Field.

Each item of Table 1, will be then detailed in the following chapters (1 to 6).

Along with the training sessions, also two surveys (see conclusions chapter 5) have been disseminated to test the level of knowledge of each startup, before and after the sessions.

It is important to remark that architecture, setup and installation of the tools are not part of this Deliverable (that is focused only on the training material). More technical information and details are published within the *D5.1 (Infrastructure Design)* [1] and *D5.2 (Infrastructure Operation, support and update)* [2]. **It doesn't cover as well the usage of the technologies offered during the training sessions** that will be part of the *D5.2 (Infrastructure Operation, support and update)* [2] (June 2021).

Note also that as the draft of this deliverable comes during the running second phase of the first open call, it could not contain all training materials.

[5] https://docs.dapsi.ngi.eu/

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ABBREVIATIONS

FIWARE GE	FIWARE Generic Enablers
IP	Internet Protocol
KMS	Knowledge Base Management System
VMs	Virtual Machines

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1 WEBINAR – FIWARE LAB (APPLICATION INFRASTRUCTURE)

The webinar "*FIWARE Lab (Application Infrastructure)*" aimed to instruct all sub-grantees to a proper use of the Application Infrastructure based on FIWARE [3] and OpenStack [4] technologies.

It is freely available at https://cloud.lab.fiware.org and tries to meet the following requirements that have been the core of the training session and material:

- Virtual Machines provisioning. In order to host the developed applications and, if required, the application containers used to deploy them: a private network must be available to connect the internal services that interoperate to provide the final application;
- Public IP addresses. At least one public IP address for each sub-grantee must be provided in order to expose the deployed application to the internet: the possibility to have more than a single public IP address will depend on the availability of the infrastructure;
- Possibility to deploy different services supporting the final application. In particular, it could be necessary to deploy local databases, brokers and other services interoperating with the application container;
- Data and application security. Ensure privacy and security for the application developed by sub- grantees.

The webinar took place on the 2nd of October 2020 and included also an introduction to the FIWARE ecosystem and FIWARE Generic Enablers (objects of the webinar *"FIWARE GEs & Data Models" see chapter 3*).

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Hereunder are reported some screenshots of the presentation (for the full presentation's file and link, see Table 1)

FIGURE 1 - WEBINAR FIWARE LAB (APPLICATION INFRASTRUCTURE)

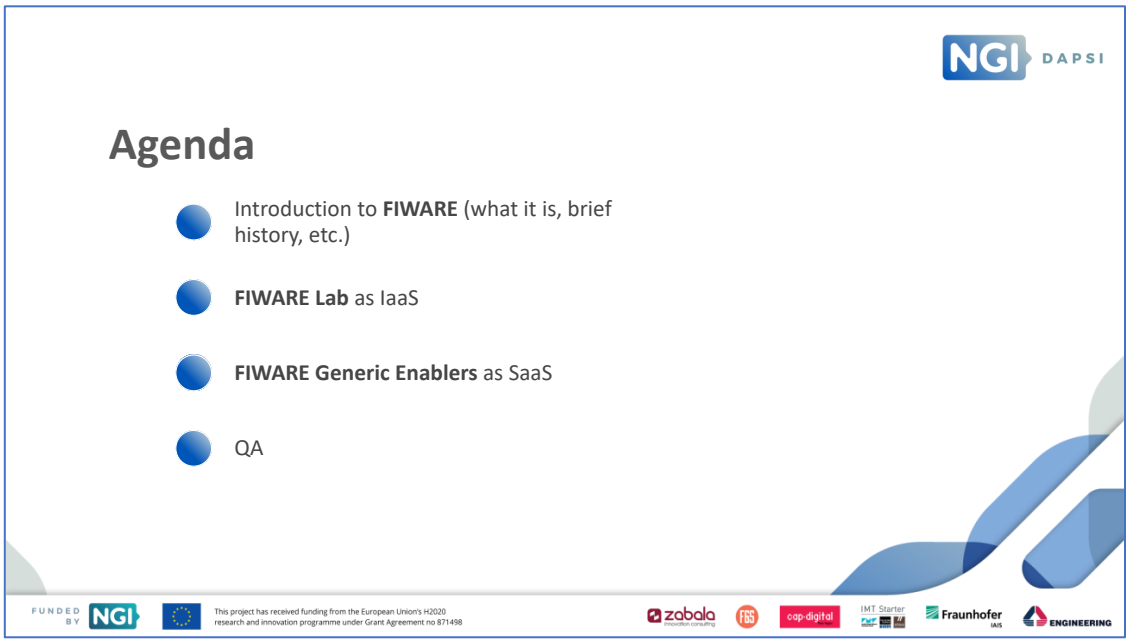

FIGURE 2 - WEBINAR FIWARE LAB (APPLICATION INFRASTRUCTURE) - AGENDA

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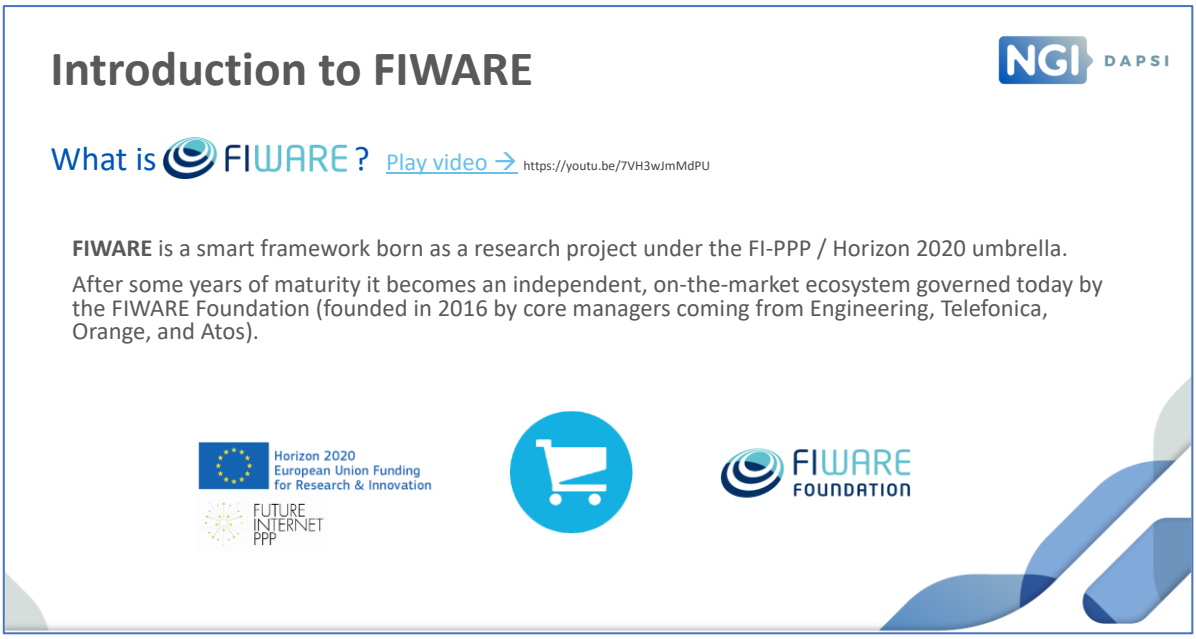

FIGURE 3 - WEBINAR FIWARE LAB (APPLICATION INFRASTRUCTURE) - INTRODUCTION

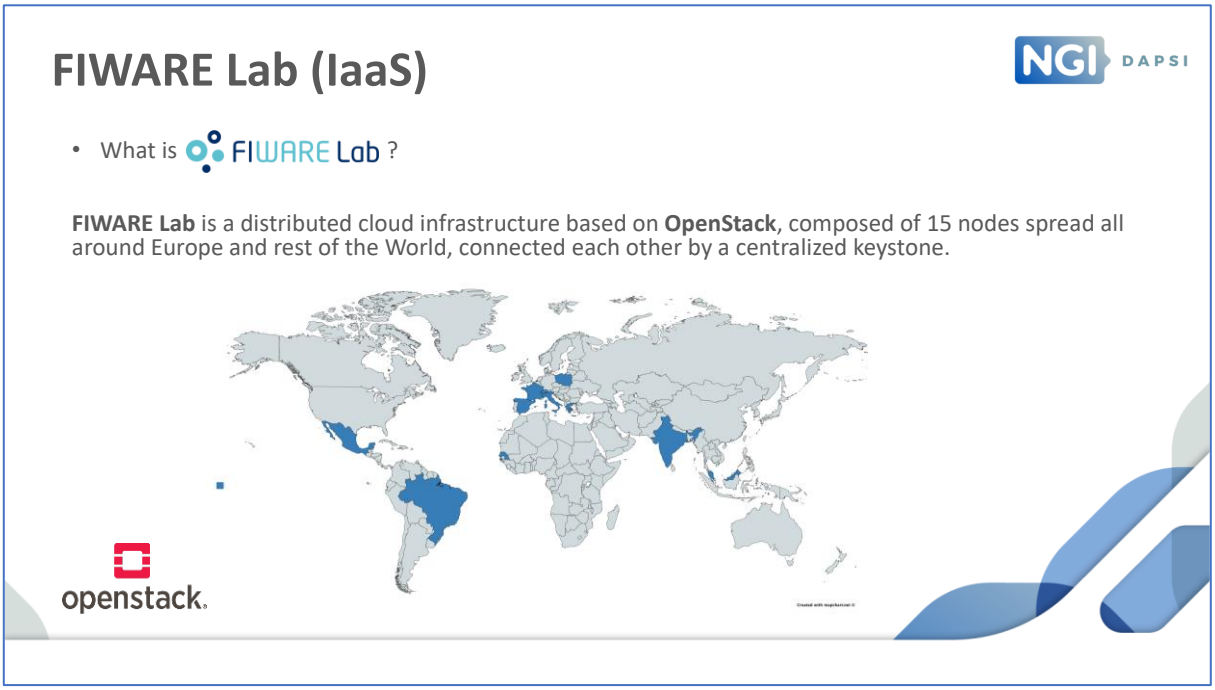

FIGURE 4 - WEBINAR FIWARE LAB (APPLICATION INFRASTRUCTURE) - FIWARE LAB

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Along with the slides, a live-demo of the usage of FIWARE Lab was conducted in order to present how a MV from scratch is created on how to deal with keypairs, security group, security rules and ssh connections:

FIGURE 5 - WEBINAR FIWARE LAB (APPLICATION INFRASTRUCTURE) - LIVE DEMO

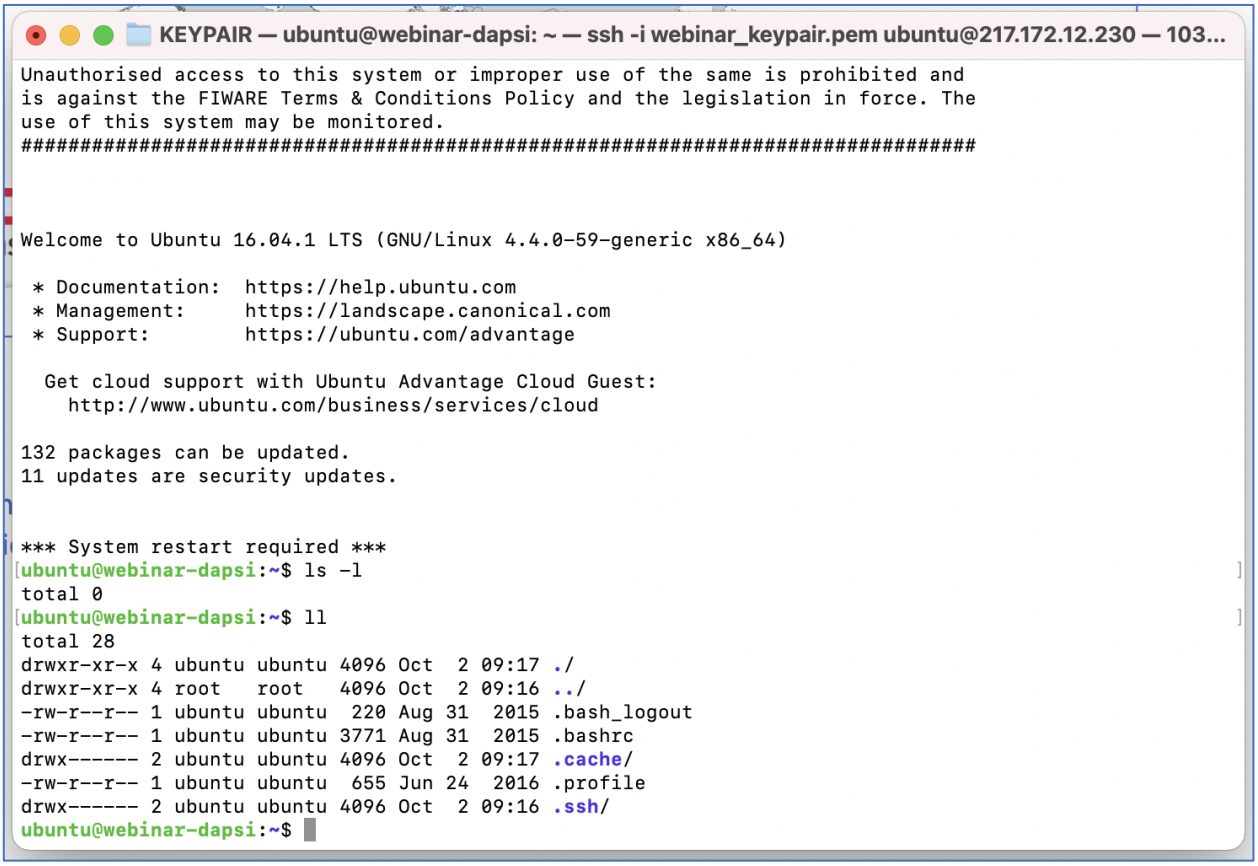

FIGURE 6 - WEBINAR FIWARE LAB (APPLICATION INFRASTRUCTURE) - SSH CONNECTION

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A total of 10 from 8 projects joined and logged.

The figure below (figure 7) shows the log of the participants at the webinar:

FIGURE 7 - WEBINAR FIWARE LAB (APPLICATION INFRASTRUCTURE) - PARTICIPANTS LIST

Note that for those who were not present, a quick tutorial video has been disseminated within the Knowledge Base and it is available at this link[6].

[6] https://docs.dapsi.ngi.eu/2020/06/19/fiware-lab-intro/

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2 WEBINAR – SUPPORT TOOL (REDMINE)

The webinar "*Support Tool (Redmine)*" was initially supposed to be held in a dedicated session, but then in agreement with the users, it has been held right after the end of the webinar about FIWARE Lab (chapter 1), as the two topics are heavily connected.

A customized version of Redmine [5] is available at https://support.dapsi.ngi.eu and it has been chosen to support users during the whole project duration for any issue concerning the Application Infrastructure and related tools. The webinar focused on a live-demo of its usage and in particular on how to navigate among the different menus, how to create, assign, update and close issues.

The functionalities provided by the tool are the following:

- Project management, including time tracking
- Issue tracker, to raise tickets addressed to:
    - Members of the same project
    - DAPSI technical team, to report issues concerning the provided services, such as the infrastructure or the KMS (knowledge base management system)

All users are organized in hierarchical groups related to the associated project and to the selected challenge and they can only see their own project (see picture below):

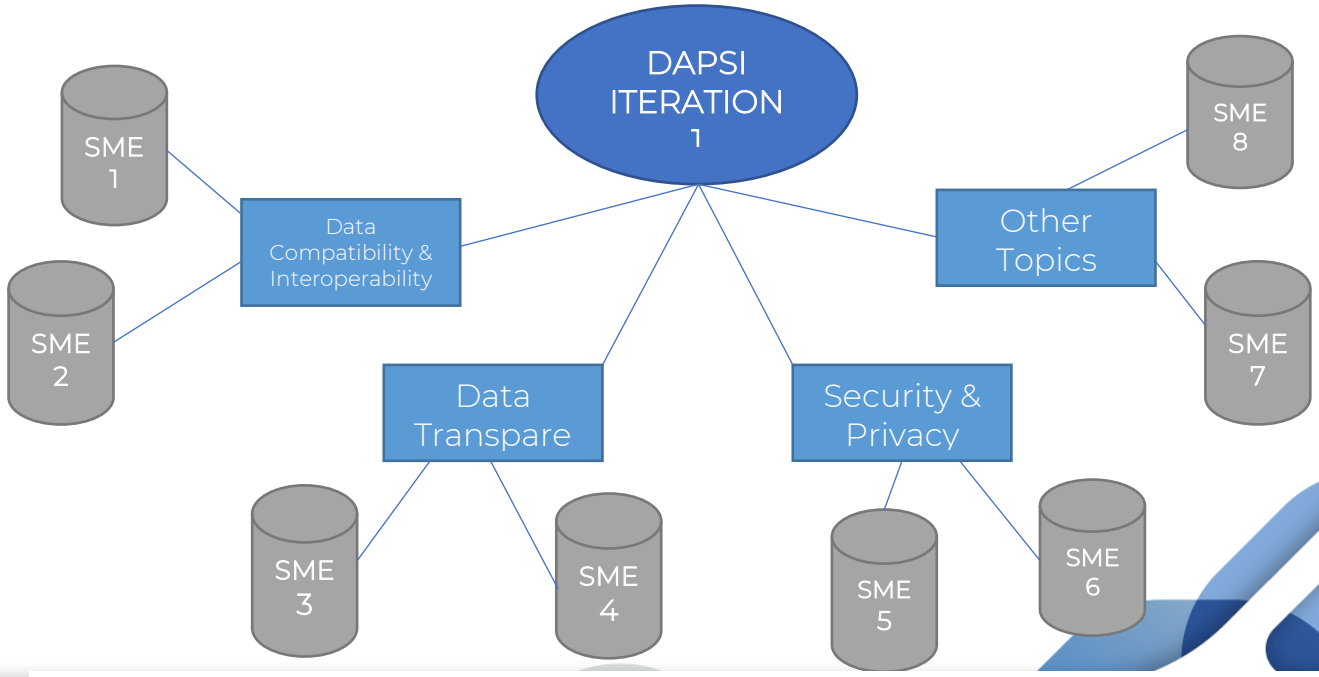

FIGURE 8 - WEBINAR SUPPORT TOOL (REDMINE) - REDMINE ARCHITECTURE

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Hereunder are reported some screenshots of the live-demo and also some screenshots of the documentation published within the DAPSI Knowledge Base (https://docs.dapsi.ngi.eu/) to support users in case of need:

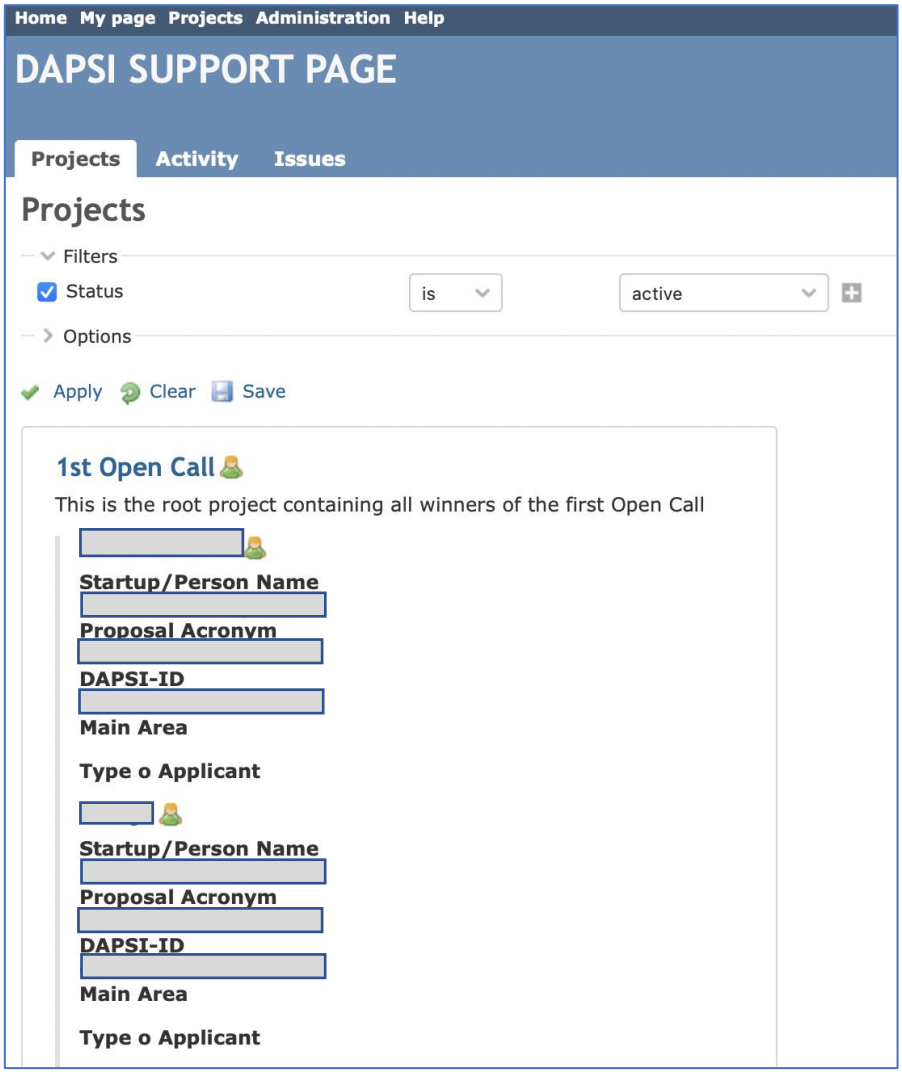

FIGURE 9 - WEBINAR SUPPORT TOOL (REDMINE) - PROJECT LIST

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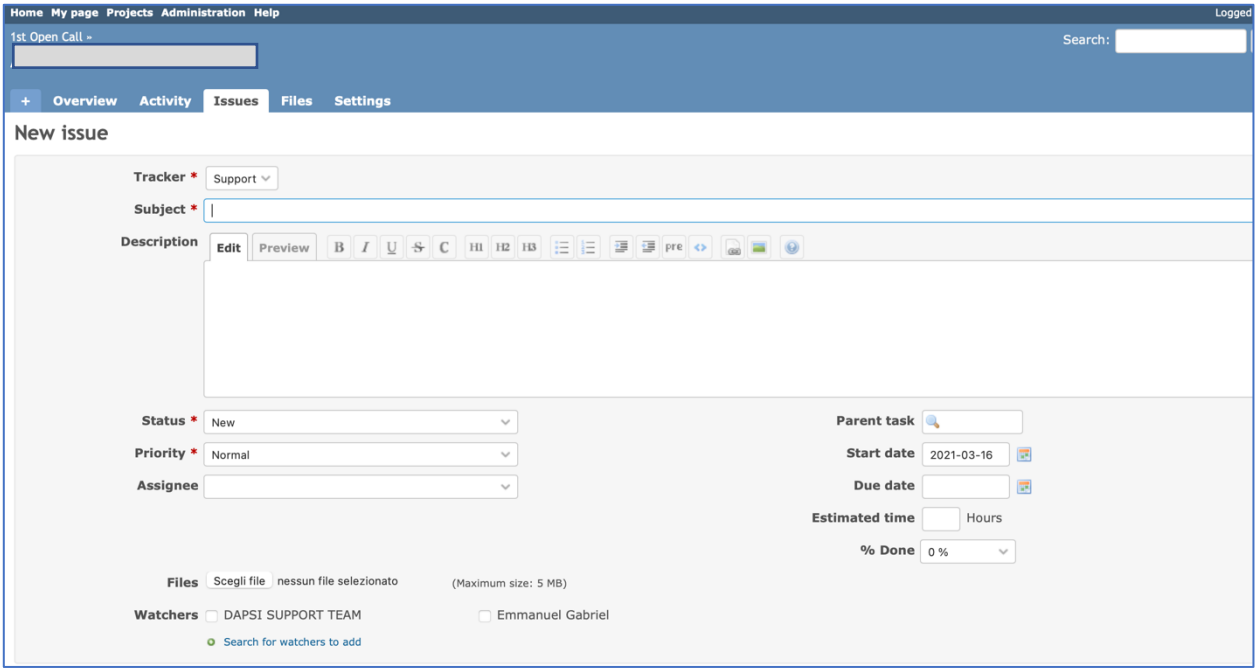

FIGURE 10 - WEBINAR SUPPORT TOOL (REDMINE) - NEW ISSUE VIEW

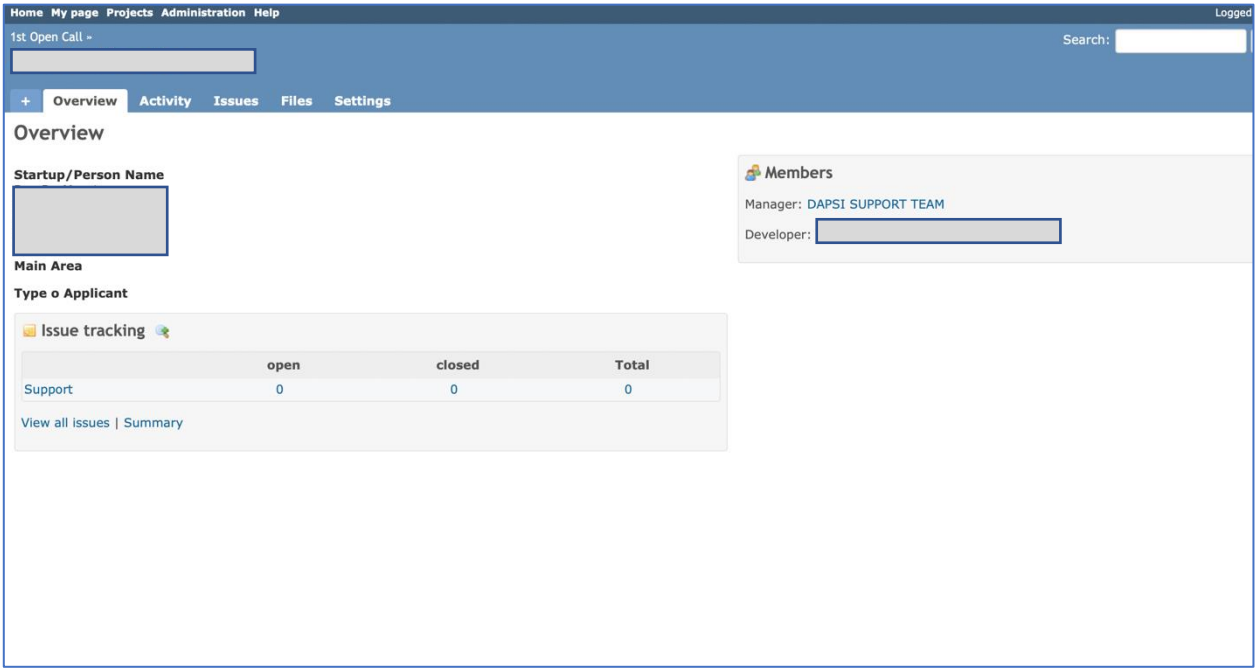

FIGURE 11 - WEBINAR SUPPORT TOOL (REDMINE) - OVERVIEW

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FIGURE 12: REDMINE OFFICIAL DOCUMENTATION

Another aspect on which sub-grantees have been trained are Privacy Policy and Terms and Conditions. In fact, the Redmine instance is installed and configured in a virtual server located in a secure Data Center owned by Engineering. For this reason, sensible data such as email and username will be stored according to GDPR and Engineering Policies for the entire duration of each Open Call.

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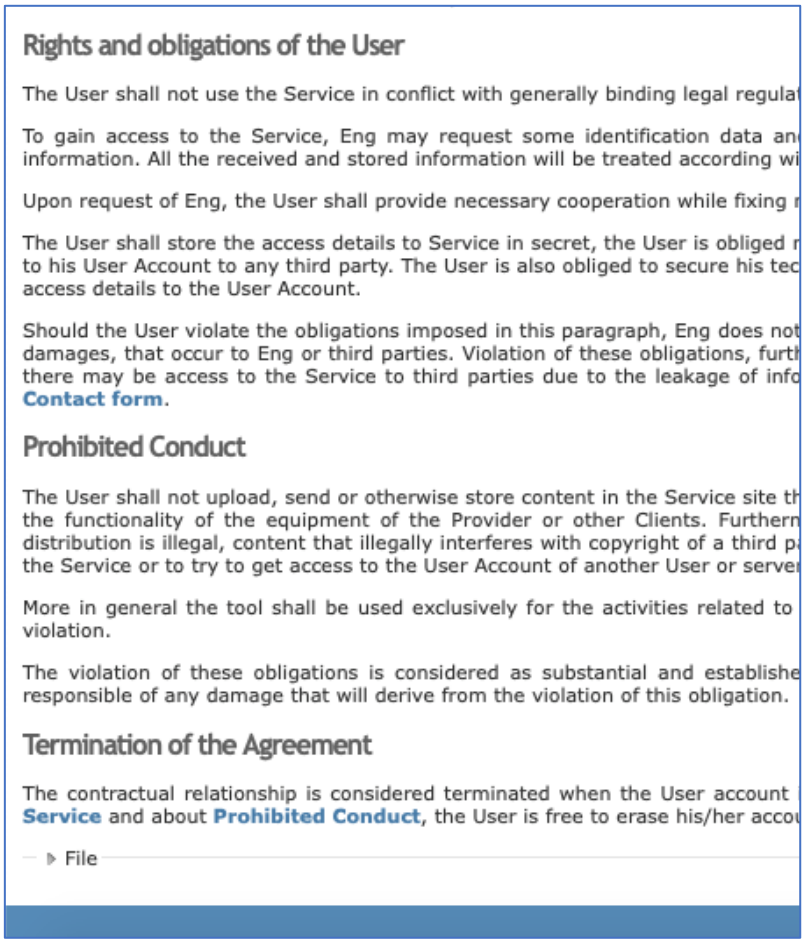
An extract of the ENG privacy statement is hereunder reported (figure 12). The full documents are stored within the DAPSI KMS at these links[7].



Rights and obligations of the User

The User shall not use the Service in conflict with generally binding legal regulat

To gain access to the Service, Eng may request some identification data an information. All the received and stored information will be treated according wi

Upon request of Eng, the User shall provide necessary cooperation while fixing

The User shall store the access details to Service in secret, the User is obliged to his User Account to any third party. The User is also obliged to secure his tec access details to the User Account.

Should the User violate the obligations imposed in this paragraph, Eng does not damages, that occur to Eng or third parties. Violation of these obligations, furth there may be access to the Service to third parties due to the leakage of info **Contact form**.

Prohibited Conduct

The User shall not upload, send or otherwise store content in the Service site th the functionality of the equipment of the Provider or other Clients. Furthern distribution is illegal, content that illegally interferes with copyright of a third p the Service or to try to get access to the User Account of another User or serve

More in general the tool shall be used exclusively for the activities related to violation.

The violation of these obligations is considered as substantial and establishe responsible of any damage that will derive from the violation of this obligation.

Termination of the Agreement

The contractual relationship is considered terminated when the User account **Service** and about **Prohibited Conduct**, the User is free to erase his/her accou

File

FIGURE 13 - WEBINAR SUPPORT TOOL (REDMINE) - REDEMINE PRIVACY POLICY

[7] https://docs.dapsi.ngi.eu/2020/07/29/redmine-terms-and-conditions/
https://docs.dapsi.ngi.eu/2020/07/28/redmine-privacy-policy/

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3 WEBINAR - FIWARE GE & DATA MODELS

The webinar *"FIWARE GE & Data Models"* aimed to introduce all participants to the FIWARE ecosystem and in particular to train startups' representatives to develop smart applications by using FIWARE Generic Enablers and FIWARE Data Models. The focus was on Context Broker Generic Enabler, the core and mandatory component of any "Powered by FIWARE" platform or solution. It enables to manage context information in a highly decentralized and large-scale manner. FIWARE smart Data Models have been harmonized to enable data portability for different domains. Available here[8], they are intended to be used wherever you want but with compliance to FIWARE NGSI version 2 and NGSI-LD.

Hereunder are reported some slides shown during the webinar. (For the full presentation's file and link, see Table 1).

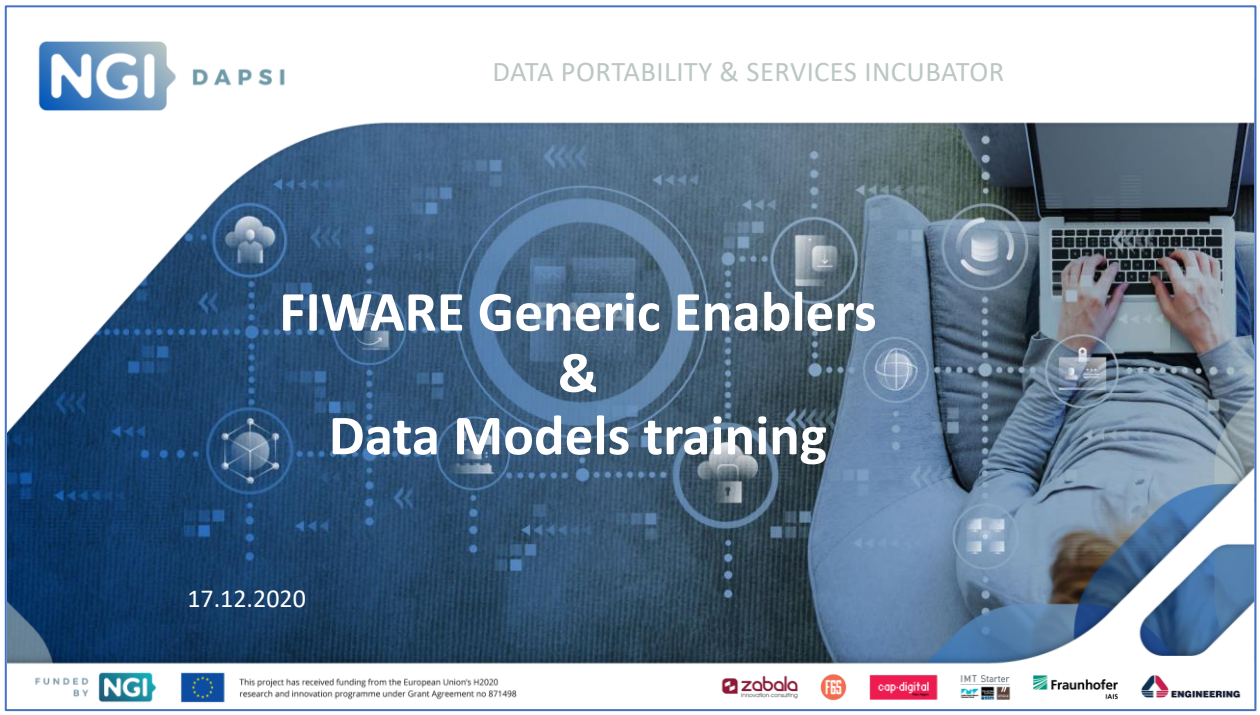

FIGURE 14 - WEBINAR - FIWARE GE & DATA MODELS

[8] https://github.com/smart-data-models/

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zabala innovation consulting
FGS
cap-digital
IMT Starter
Fraunhofer IAIS
ENGINEERING

FIGURE 15 - WEBINAR - FIWARE GE & DATA MODELS - AGENDA

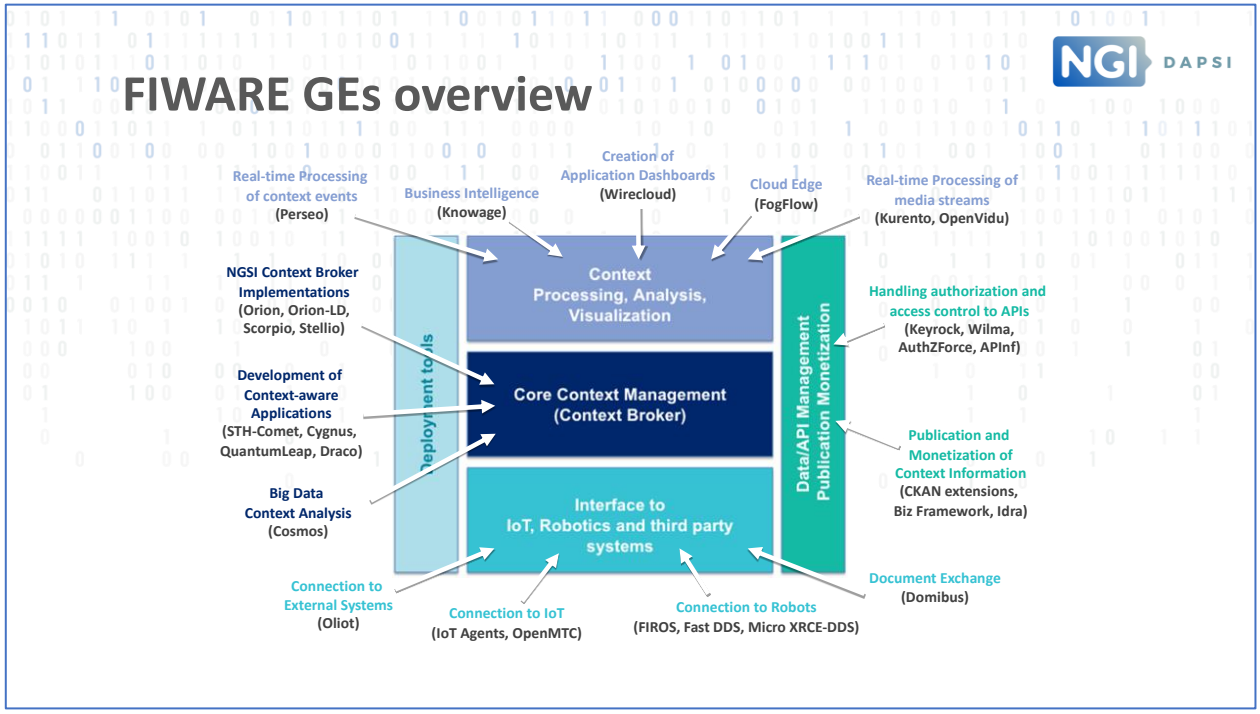

FIGURE 16 - WEBINAR - FIWARE GE & DATA MODELS - OVERVIEW OF FIWARE GES

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zabala innovation consulting
FGS
cap-digital
IMT Starter
Fraunhofer IAIS
ENGINEERING

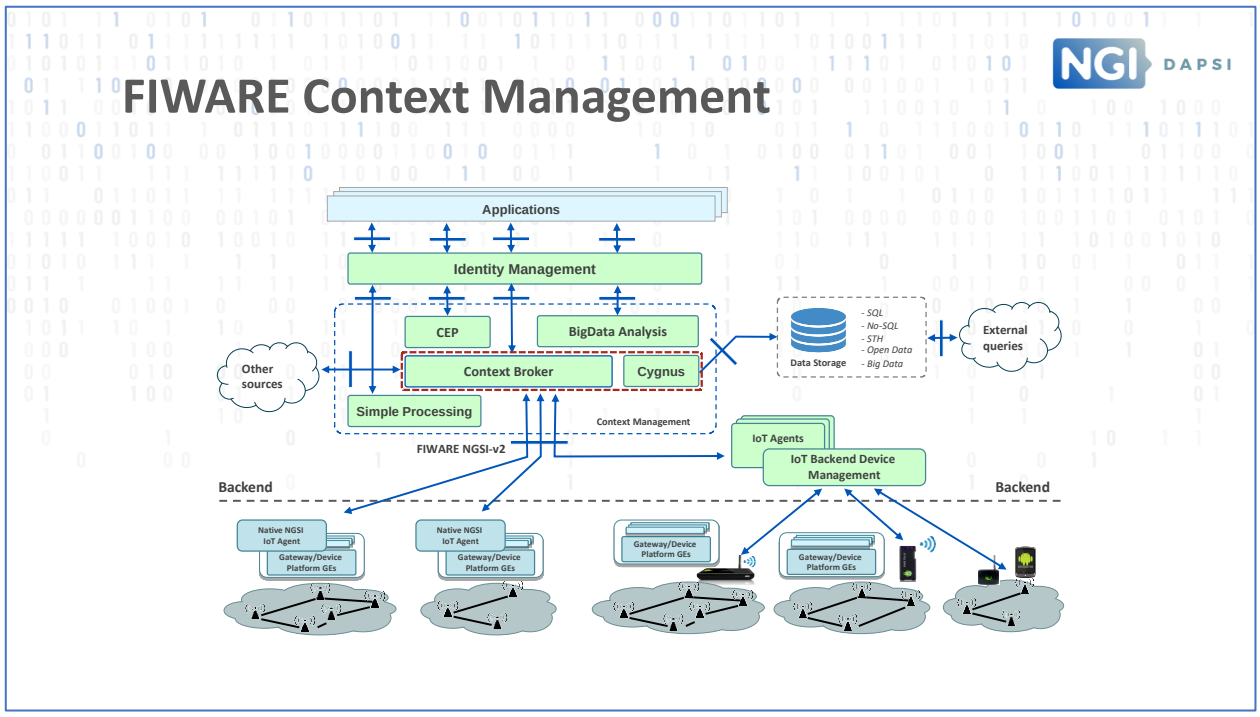

FIGURE 17 - WEBINAR - FIWARE GE & DATA MODELS - FIWARE CONTEXT MANAGEMENT

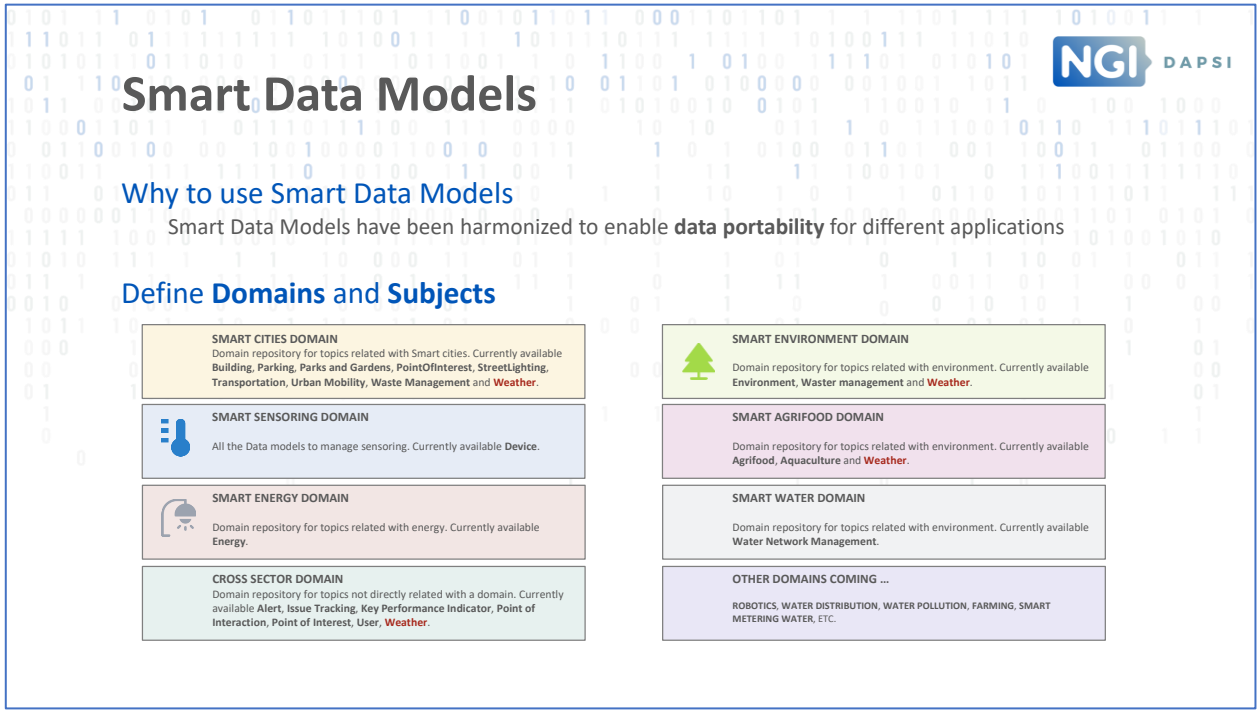

FIGURE 18 - WEBINAR - FIWARE GE & DATA MODELS - FIWARE SMART DATA MODELS

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4 TUTORIAL - HOW TO INSTALL DOCKER

The first tutorial published on the DAPSI KMS was "Docker install on Ubuntu 18.04" and it was created after some questions raised by DAPSI users during the webinar "*FIWARE Lab (see chapter 1*)". The goal of the tutorial was to facilitate and secure the creation of services and applications on the virtual machines built on FIWARE Lab.

Docker is an application that simplifies the process of managing application processes in containers. Containers let applications run in resource-isolated processes. They're similar to virtual machines, but containers are more portable, more resource-friendly, and more dependent on the host operating system.

The isolation and security allow users to run many containers simultaneously on a given host. Containers are lightweight and contain everything needed to run the application, so users do not need to rely on what is currently installed on the host.

Docker streamlines the development lifecycle by allowing developers to work in standardized environments using local containers which contain their applications and services. Containers are great for continuous integration and continuous delivery (CI/CD) workflows.

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Hereunder (see figure 18) is reported a screenshot of the full code available at https://docs.dapsi.ngi.eu/2021/03/15/docker-install-on-ubuntu-18-04/

Docker install on Ubuntu 18.04

```
apt update
sudo apt -y install apt-transport-https ca-certificates curl software-
properties-common
curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo apt-key
add -
sudo add-apt-repository "deb [arch=amd64]
https://download.docker.com/linux/ubuntu bionic stable"
sudo apt update
apt-cache policy docker-ce
sudo apt -y install docker-ce
sudo apt -y install docker-compose
sudo systemctl status docker
sudo usermod -aG docker ubuntu
sudo apt -y install gnupg2 pass
exit

sudo vi /etc/docker/daemon.json
{
  "mtu": 1350,
```

FIGURE 19 – TUTORIAL - DOCKER INSTALL ON UBUNTU 18.04

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5 TUTORIAL - HOW TO INSTALL FIWARE ORION

The second tutorial published on the DAPSI KMS was "how to install FIWARE ORION" and it was considered as a support of the WEBINAR *"FIWARE GEs and DATA MODELS" (see chapter 3)*.

FIWARE Orion is indeed the core of the FIWARE architecture and it is the only mandatory GE for any "Powered by FIWARE" application.

Orion Context Broker allows people to manage the entire lifecycle of context information including updates, queries, registrations and subscriptions. It is an NGSIv2 server implementation to manage context information and its availability. Using the Orion Context Broker, people are able to create context elements and manage them through updates and queries. In addition, they can subscribe to context information so when some condition occurs (e.g. the context elements have changed) they receive a notification.

The following figure represents a screenshot of the full documentation available at https://docs.dapsi.ngi.eu/2020/11/16/fiware-orion-how-to/.

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Run a container pulling an image from the cloud (recommended)

If you do not have or want to download the Orion repository, you can create a file called `docker-compose.yml` in a directory of your choice and fill it with the following content (uncomment the `--smallfiles` line if you host doesn't have too much free space)

```
mongo:
  image: mongo:2.6
  #command: --smallfiles

orion:
  image: fiware/orion
  links:
    - mongo
  ports:
    - "1026:1026"
  command: -dbhost mongo
```

Then run

FIGURE 20 - TUTORIAL HOW TO INSTALL FIWARE ORION

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6 EXTRA MATERIALS

As already highlighted in the previous chapters, a Knowledge Base is part of DAPSI's assets to collect and store relevant information about the tools and technologies used during the project, and more in general about the Data Portability Field. The material published within the KMS is freely available to everyone (not only to DAPSI users) in order to spread the word about the General Data Protection Regulation (GDPR) and all related topics and challenges covered in DAPSI. For this reason, a collection of Research Publications, Articles, Books, and Video Tutorials is constantly updated.

The following list contains all "extra materials" published so far (beginning of March 2021) and they are not considered as material created within the DAPSI project, but instead as a collection of useful documents to support our mission of boosting the Data Portability:

RESEARCH PUBLICATIONS

- Making data portability more effective for the digital economy [6]
- Crisis Collaborations: Challenges for Safe Data Sharing with Differential Privacy [7]
- Establishing a Strong Baseline for Privacy Policy Classification [8]

ARTICLES

- Commission proposes measures to boost data sharing and support European data spaces
- Mark Zuckerberg's Reckoning: 'This Is a Major Trust Issue'

BOOKS

- Managing Information Risks

VIDEO TUTORIAL

- Turning Organizations into Smart Organizations
- Creating Advanced Dashboards Using Wirecloud

Note that for security reasons, users are not allowed to publish themselves contents on the KMS. The procedure is to send materials to Engineering that filters, categorizes and publishes all contents.

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7 CONCLUSIONS

The training offered to the users is in line with what was planned during the first version of this deliverable and with what was planned during the draft of the different Work Packages and project activities. All major topics have been covered with dedicated webinars (**FIWARE Lab, Redmine, and FIWARE GEs**) and some tutorials and extra materials have been offered as additional contents.

The training has followed a consolidated Agile approach already applied in different scenarios and projects; indeed, a preliminary survey was disseminated among Open Call winners at the beginning of the first phase to test their knowledges about the technical topics.

As shown by the two pictures below (figure 20 and figure 21) at the beginning of the first Open Call, **almost the 100% of SMEs declared to have poor knowledges about FIWARE and FIWARE Lab giving a score of 1 in a scale 1-4**:

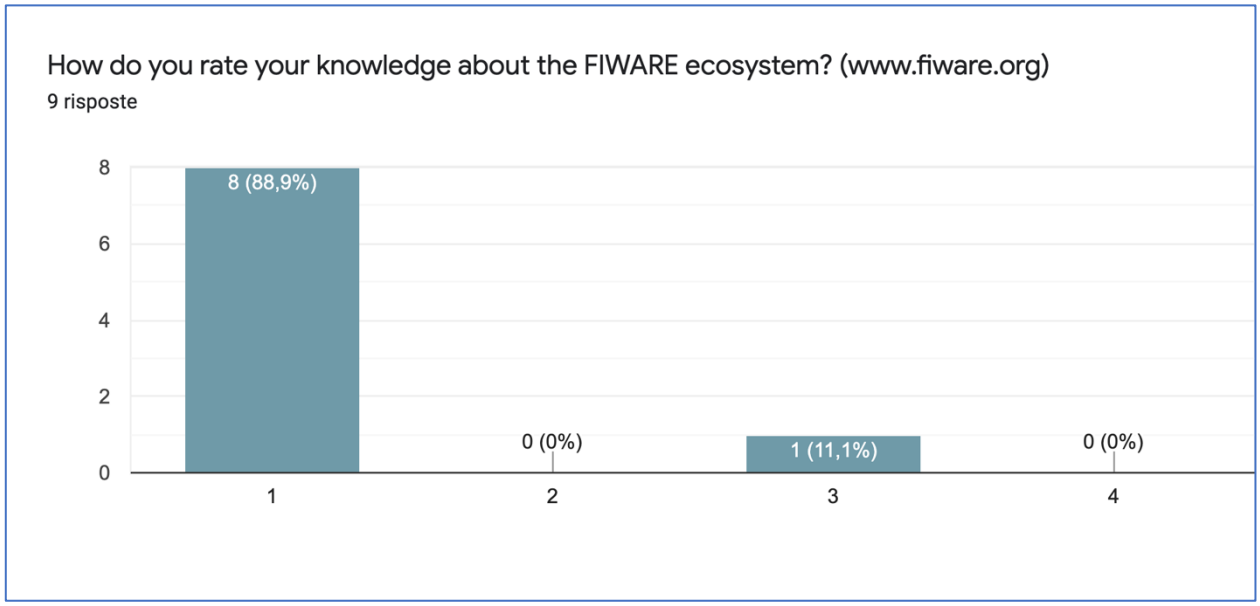

FIGURE 21 – PRELIMINARY SURVEY ABOUT FIWARE

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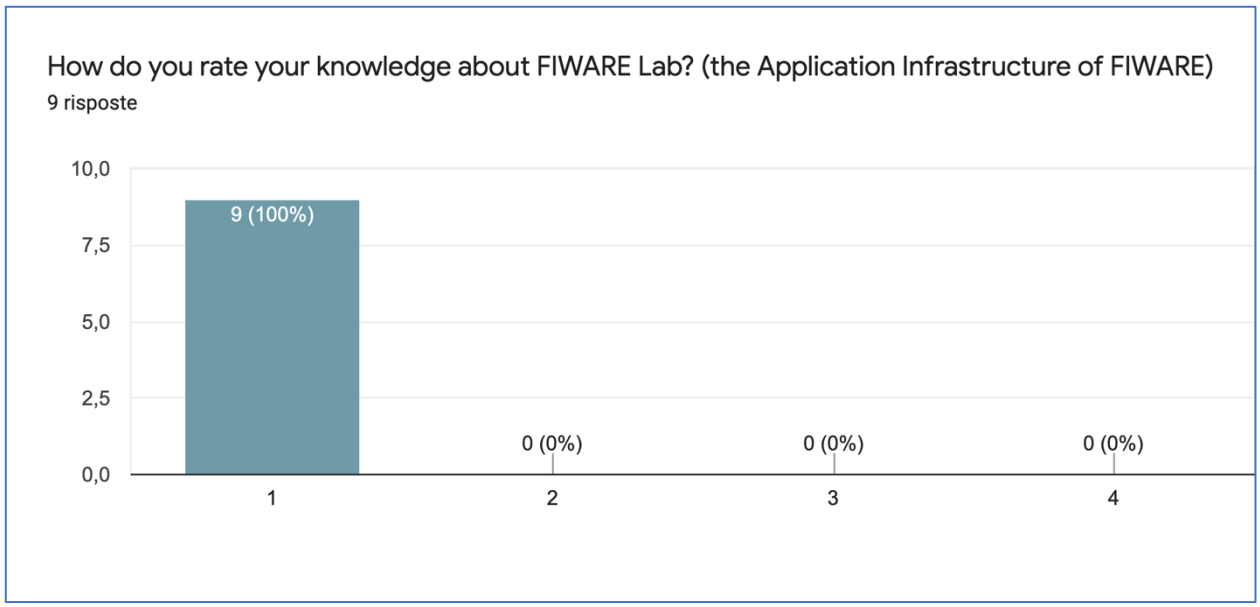

FIGURE 22 - PRELIMINARY SURVEY ABOUT FIWARE LAB

By contrast, after the webinar held on the 2nd of October 2020, only 20% of SMEs gave a score of 1 about their knowledge of FIWARE and FIWARE Lab (see figure 22 and figure 23):

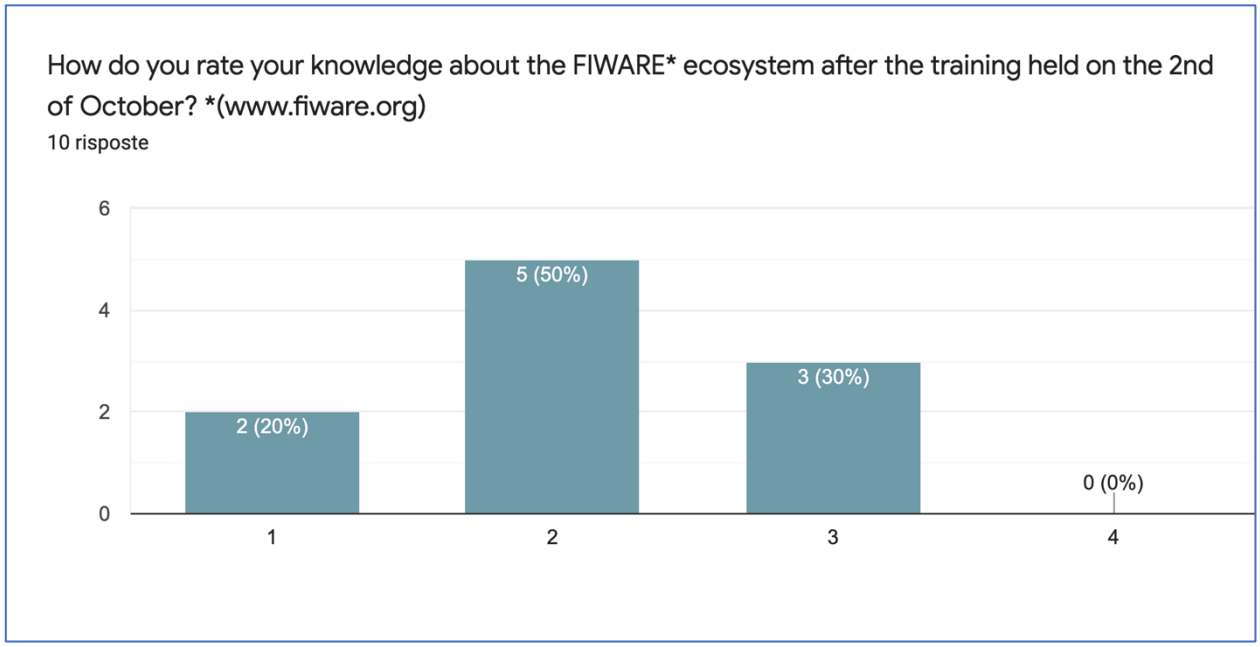

FIGURE 23 - AFTER TRAINING SURVEY ABOUT FIWARE

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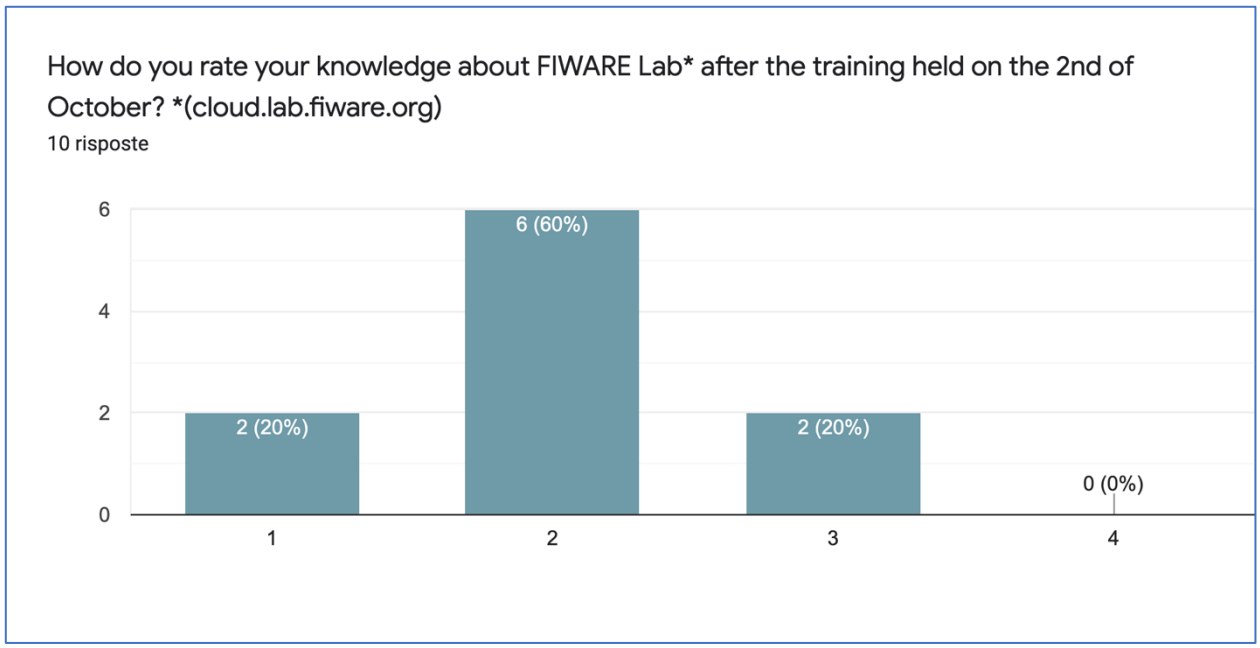

FIGURE 24 - AFTER TRAINING SURVEY ABOUT FIWARE LAB

Although the two graphs above show that 80% of participants have improved their knowledges about FIWARE and FIWARE Lab, in order to obtain a better result in terms of satisfaction and usage of such technologies, Engineering has offered as extra benefit, the chance to have 1 to 1 (on-demand) mentoring sessions with its experts. In spite of that none of the startups' representatives have joined the initiative.

The use of the Knowledge Base should be also fostered and encouraged to exploit all its potential in terms of knowledge sharing among projects.

As a lesson learnt from the first Open Call of course there is the need to improve outcomes in terms of technical knowledges and skills of all participants. One of the actions for the second Open Call will be to adopt a more interactive teaching method and hands-on workshops where people can experiment and try the technologies without limits.

Another aspect which should be prioritized for the next open call is to push participants contributing to the KMS. Indeed, since both the KMS and FIWARE are not mandatory, it will be fundamental to incentivize the usage of such tools by advertising and giving more visibility to those who are actively contributing.

Also, a final survey (see figure 24) disseminated by Zabala at the end of the first phase of the first open call, shows that the general feeling of the training

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offered is relatively good but it needs an improvement during the next open call.

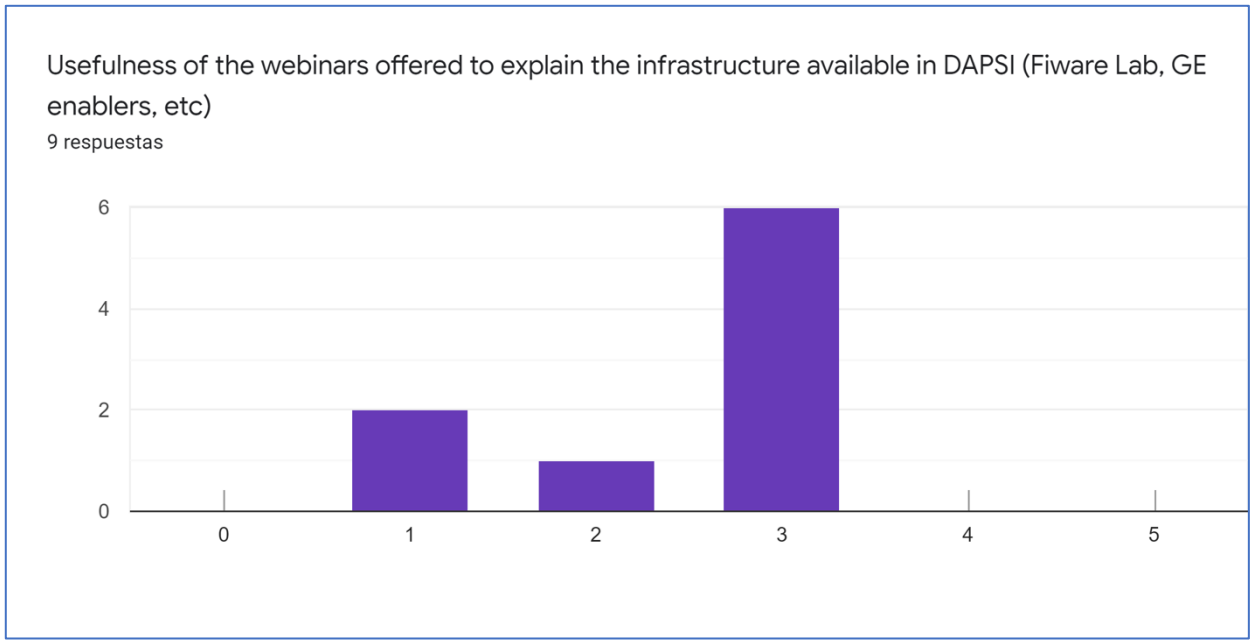

FIGURE 25 - FINAL SURVEY (END OF PHASE 1, CALL 1)

Note that as already anticipated in the Executive Summary, usage of such tools and technologies will be deeply discussed within the *D5.2 Infrastructure Operation, Support and Update* [2] (June 2021).

This deliverable aims to collect the training material offered to DAPSI users during the first and second phase of the first open call.

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