XIFI

eXperimental Infrastructures for the Future Internet

D7.4: XIFI Training and Knowledge Transfer - Analysis

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Abstract	This deliverable is an analysis of the overall performance of the XIFI Training and Knowledge Transfer tasks with respect to the stated objectives. It will provide a comprehensive review of the training programme and the success of the community training.
Keywords	Training sessions analysis, Community Building, Trainee Feedback, Training material, Training portal, R&R Programme

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PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to bodies determined by the XIFI project	
CO	Confidential to XIFI project and Commission Services	

EXECUTIVE SUMMARY

Deliverable D7.4 "XIFI Training and Knowledge Transfer – Analysis" is, as the title implies, an analysis of the overall performance of the XIFI training and knowledge transfer tasks with respect to the stated objectives.

D7.4 describes successful results of the compilation of the training material for each specific stakeholders group, the building of a community to engage trainees for the training sessions/webinars, the actual delivery of the training material via the training sessions/webinars, and creating the feedback mechanism for validation of the training events together with the provided training material.

It provides a comprehensive review of the training programme and the success of the community training, summarizing the following achievements:

- A community was created - in line with the work carried out at the project's level in the Community Building Working Group;

- Our outreach training activities aimed at Infrastructure owners and operators, Developers, SMEs, Phase III Accelerator Projects, End users and Sponsors (Public Authorities);

- The implementation of the Recognition & Reward Programme, Infrastructure developers & tool developers (incl. the OpenStack forum");

- The Recognition and Reward Programme had a very positive outcome: 13 Infrastructures nodes applied, and 6 of them achieved the Gold label;

- The training material – drafted at the beginning of the project – was produced and the training portal was publicised, and now attracts a large scale of trainees/users, and is linked to the Stack Overflow Q&A forum;

- 6 physical training sessions, 7 webinars, 3 awareness and training sessions for Public Authorities were successfully organized;

- When appropriate, the training events were coordinated and organized in collaboration with FIWARE, developing synergies in terms of common training, education approaches and ability to transfer knowledge on the XIFI Federation; and

- A feedback mechanism was created: this feedback from our engaged communities was a crucial aspect of the validation of our training material and for the organization of our training events.

In the remainder of this document, the main WP7 achievements are reported and analysed in detail, as well as the strengths/weakness of the work carried out during WP7's lifecycle together with some specific recommendations for future activities and lessons learnt.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

ABBREVIATIONS

BTH	Blekinge Institute of Technology
CESNET	Czech Education and Networking Center
CET	Central Europe Time
CNET	Create-Net
D7.4	Deliverable D7.4
DoW	Description of Work
DT	Deutsche Telekom
EC	European Commission
ECFI-2	2nd European Conference on the Future Internet
EU	European Union
FhG	Fraunhofer FOKUS
FIA	Future Internet Assembly
FI-PPP	Future Internet Public-Private Partnership
GE	Generic Enablers
GTM	Go To Meeting
iLAB	Imagines et Réseaux
IoT	Internet of Things
PDF	Portable Document Format
PSNC	Poznan Supercomputing and Networking Center
Q&A	Questions and Answers
RfP	Request for Proposal
R&R	Recognition and Reward
SE	Specific Enabler
SMEs	Small and medium enterprises
T7.1-2	Task T7.1-Task T7.2
TSSG	Telecommunications Software & Systems Group
TUB	Technische Universität Berlin
UPM	Universidad Politecnica de Madrid
TUB	Technische Universität Berlin
WP	Work Package
ZHAW	Zurich University of Applied Sciences

1 INTRODUCTION

The Training and Knowledge Transfer activities of the XIFI Project are carried out within work package 7 "Training and Knowledge Transfer". The aim of WP7 is to educate, inform and train the various stakeholder groups in how to use and interact with the XIFI Federation effectively, whilst understanding the varying needs, interests and abilities of each.

D7.4 is, as the title implies, an analysis of the overall performance of the XIFI training and knowledge transfer tasks with respect to the stated objectives. It provides a comprehensive review of the training programme and the success of the community training.

The XIFI project has successfully achieved the objectives of WP7, engaging different stakeholders thanks to the organisation of training sessions and webinars, the implementation of the training material and consequently the advertisement of the training portal and also thanks to additional programmes such as the Recognition & Reward programme targeted at Infrastructures/ FIWARE Lab nodes.

This document provides an in-depth analysis of the work done in WP7, with a focus on impact and stakeholder's engagement and the strengths/weaknesses of the activities carried out.

Seven sections compose D7.4 as follows:

- Section 2 "Report and analysis of WP7 community building and target stakeholders", where the measures implemented to create our community and engage different groups of stakeholders are reported and analysed;

- Section 3 "Report, analysis and evaluation of the training material and the training portal", where an evaluation of the material and the training portal is performed, underlining the strengths/weaknesses;

- Section 4 "Report and analysis of the Training sessions", where all the training events organized are fully reported, underlining - for each event - the target audience, the content, the dissemination, the number of participants and the results;

- Section 5 "Community Feedback", where our feedback's process and its outcomes are analysed, underlining the results of each training event and its effectiveness;

- Section 6 "Report and analysis of the Recognition and Reward Programme", where an analysis of the programme is performed;

- Section 7 "Training and Knowledge Transfer achievements: analysis of the performance against the stated objectives", where, as the title implies, an analysis of the achievements against the stated objectives of T7.1 and T7.2 is summarized;

- Section 8 "Recommendations and Lessons learnt", where the "lessons learnt" from the activities carried out during WP7's lifecycle and detailed in this document are summarized; in addition to this, some recommendations for future activities are underlined.

2 REPORT AND ANALYSIS OF WP7 COMMUNITY BUILDING AND TARGET STAKEHOLDERS

2.1   Introduction

The target of the Community Building activity has been to set and develop the conditions to enable the continuation of the activities started beyond the official duration and the budget scope of the XIFI project by creating a community of involved stakeholders that go beyond the XIFI consortium partners. More specifically, the aim has been to provide and start operating the business ecosystem platform to extend the current XIFI community. These targets have been reached and the activities can be summarized as following:

1. During the 1st year XIFI concentrated on the Infrastructure owners and operators (Open Call): shared information about the XIFI federation in different events and workshops and the first technical publications and papers were written to bridge the various communities.

2. During the 2nd year XIFI started to train and support (and expand community coverage) the:

   - Infrastructure owners and operators;

   - Intermediaries (Phase 3 accelerator projects);

   - Developers (SMEs, Start-ups), although they are indirect to the XIFI project.

The main achievements can be summarized as follows:

- The participation to the training events and webinars has increased from earlier typical 10-15 participants to 60-70 participants with more effective interaction during the trainings.

- The amount of connected Infrastructure nodes rose from 5 (end of year 1) to 19.

- The developers (SMEs, Start-ups, and web entrepreneurs) using the FIWARE resources rose from 1591 (end of year 1) to 8138 (status 19.3. 2015)[2].

- The Stack Overflow started to be the main discussion forum for the FIWARE Lab and FIWARE Ops related questions and answers. To further encourage community interaction:

  - It was linked from the FIWARE Lab training portal and on the other direction the FIWARE Lab training portal has a collection of the latest [fiware]–tagged threads (rss feed).

  - The most frequently asked questions with their answers arriving to the Helpdesk-email (JIRA) have been transferred to the Stack OverFlow (example: http://stackoverflow.com/questions/27543127/deploy-vm-in-fiware-lab-nodes-with-neutron) with cross-links from the Helpdesk web to reduce the incoming questions to the Helpdesk.

- More technical articles and papers were published in the XIFI blog and during the XIFI extension period some of the XIFI partners are planning to submit technical articles to the Open Stack SuperUser forum[3] to inform and engage the Infrastructure owners and operators

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[2] "Users" data in the infographics at: http://infographic.lab.fi-ware.org/

[3] http://superuser.openstack.org/

together with the Open source developer community.

- New LinkedIn groups (cf. section 2.3) have been discovered that complement and further extend the community coverage towards developers, sponsors and investors.

2.2 Community Building Analysis

As mentioned in section 2.1, the Infrastructure owners and operators have been important since the beginning of the XIFI project – largely due to the five initial nodes in the federation - and this has continued through the federation expansion during year 2. The stakeholder and community engagement activities can be seen as organised on three main levels as depicted in the Figure 1: Stakeholder engagement levels:

- **Awareness** (inform) - stakeholders who seek information only;

- **Interest** (communicate) - stakeholders with a high willingness to engage or a high level of expertise but who have not yet participated in a dialogue; and

- **Action** (engage) - stakeholders with whom direct engagement and a dialogue is necessary.

These three activity levels belong to the "Customer acquisition" phase in the Community Building framework that was described in the D7.1.
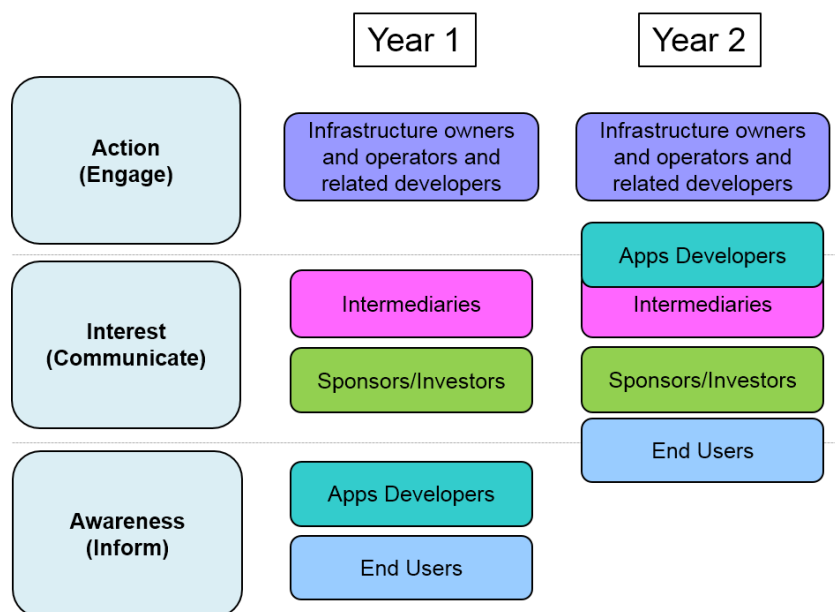
Figure 1: Stakeholder engagement levels

During year 1, the first XIFI nodes (5) were connected to the XIFI federation. The first workshops and panels were organized and the technical publications and papers were written to bridge the various communities. In year 2, a large number of community building activities were conducted, that

included more workshops and events[4] and more technical joint publications with the XIFI partners in the XIFI blog[5]. The face-to-face training events and webinars started to address new XIFI federation nodes; i.e. Infrastructure owners and operators followed by the Intermediaries (Phase 3 accelerator projects), Application (Apps) developers (SMEs, Start-ups) and to lesser degree End Users.

During year 2, WP7 played an important role in enriching the XIFI project by means of training activities towards Infrastructure owners, operators and Infrastructure developers, but also towards Intermediaries (Phase 3 accelerator projects) and Application/Apps Developers (SMEs, Startups, web entrepreneurs). As seen in the Figure 1: Stakeholder engagement, the Application/Apps Developers have actually "raised" from the "Awareness" level up to the "Action" level although the Application/Apps Developers are indirect stakeholders for the XIFI project: access via the FI-WARE project and via the FI-PPP phase 3 accelerator projects, which have a direct "customer relationship" and access to the Application/Apps Developers user data. The developer status change from the "Awareness" level to the "Action" level has happened due to fact that they are/will be the biggest user group of the FIWARE resources during the phase 3 of the FI-PPP programme and from the XIFI project point of view it has been important to inform and educate them to prepare the Phase 3 and thereby support the FIWARE sustainability.

The Table 1 shows the three levels of engagement: Awareness, Interest and Action, the main stakeholders and the XIFI influence on them (direct/indirect) including the most relevant engagement methods (=means):

XIFI Influence	Stakeholder	Most relevant engagement means	Engagement level
Direct	Infrastructure owners and operators	- Open Call - Training events - StackOverflow forum - Openstack - Dissemination events, Workshops - General dissemination	Action
Direct (training)	Sponsors & Investors	- Training events - Dissemination events, Workshops - General dissemination	Interest
Direct (training)	Intermediaries	- Training events - Dissemination events, Workshops - General dissemination - Workshops - General dissemination	Interest
Direct	Infrastructure & Infrastructure tools Developers	- Training events - StackOverflow forum - Openstack - Dissemination events, Workshops - Workshops - General dissemination	Action
Indirect	Developers (Applications)	- Dissemination events (support FI-WARE/hand-over to FI-CORE) - Training events (support FI-WARE/hand-over to FI-CORE)	Interest / Action

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[4] https://www.fi-xifi.eu/events/past-events.html

[5] https://blog.fi-xifi.eu/

XIFI Influence	Stakeholder	Most relevant engagement means	Engagement level
		- Workshops (support FI-WARE/hand-over to FI-CORE) - General dissemination	
XIFI Influence	**Stakeholder**	**Most relevant engagement means**	**Engagement level**
Indirect	**End Users**	- General dissemination - Dissemination events (support FI-WARE/hand-over to FI-CORE) - Workshops (support FI-WARE/hand-over to FI-CORE)	Awareness
Indirect	**Technology providers**	- General dissemination - Dissemination events - Workshops	Awareness
Indirect	**Others**	- General dissemination - Dissemination events, Workshops	Awareness

Table 1: Stakeholder engagement means

As mentioned above, the "Action" type of engagement has taken place with the Infrastructure owners and operators from the beginning of the project. During year 2, the Infrastructure & Infrastructure tools Developers, together with the Applications/Apps Developers have become other important target groups for the project as anticipated in the project.

The community network has grown especially during year 2, while the new Nodes were connected to the XIFI federation and new Application developers (indirect for the XIFI) started to test and use the XIFI federation. Although the LinkedIn groups are sometimes rather quiet and mainly used for information sharing purposes, there have lately been more and more "Likes" and "Comments", especially about the training and showcase videos published during year 2. That is why the LinkedIn group coverage was increased to pay more attention to the Application (Apps) developers, End Users and to non-public investors although those are actually indirect stakeholders to XIFI, but in wider terms important for the FI-PPP programme as a whole after the XIFI project. Due to the fact that there are much more Application/Apps developers than Infrastructure owners/operators, the biggest increase in the LinkedIn members can therefore be seen in the Table 2 in the addressed "Additional LinkedIn members" beyond the XIFI LinkedIn group during year 2.

The training webinars were very successful thanks to:

1) the direct Infrastructure owners and operators contacts in WP7 (e.g. the XiPi repository[6] mailing list with 242 Infrastructure owners/operators globally);

2) the Phase 3 accelerator projects' direct contacts in WP7;

3) the previous training events created "mouth-to-mouth" message and overall knowledge about the XIFI and FIWARE Lab possibilities; and

4) the tailored marketing campaigns organized by WP9 via different communication channels.

As a result, the training webinar participation increased from 10-15 participants earlier to over 70 participants latterly!

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[6] http://xipi.eu/

Table 2 below describes the status and measures in the end of year 1 and end of year 2 of the XIFI project. The community building related dissemination and communication activities are described in more detail in D9.4.

	End of year 1	End of year 2
XIFI LinkedIn members	76	161
Additional LinkedIn groups addressed	4	11
Additional LinkedIn members addressed	5 000	> 500 000
XIFI News/Newsletter database	206	475
R & R programme - Gold	0	6
R & R programme - Silver	0	3
R & R programme - Bronze	0	5
XiPi mailing list: Infrastructure owners/operators globally	230	242
XIFI Partners	23	38
FIWARE Lab nodes in the federation	5	19
FIWARE Lab users/developers	1 591	8138
Participants to F2F training events	0	160
Participants to training webinars	0	171
[fiware], [filab] and [fiware-orion] tagged Q&A threads in the Stack OverFlow	0	269
Training portal visitors	34	1 432

Table 2: Summary of the community building and stakeholder engagement

2.3   Stakeholders - Analysis

As depicted in Figure 2: XIFI Stakeholder relations, the XIFI project has had a *direct* relationship with the Infrastructure owners and operators and related Infrastructure and Infrastructure tools developers. The Intermediaries and Sponsors/Investors have been addressed more via information sharing and training type of activities, in similar way to *indirect* End users, Developers and to a lesser degree Technology Providers via FI-WARE (activities will continue by the FI-CORE project). Although the Application (Apps) developers and End Users belong to the *indirect* stakeholder category, the XIFI project has dedicated considerable efforts to embrace them by participating to several *indirect* stakeholder events and by organizing several training events and webinars to support the FI-WARE project (FI-CORE to continue) and in wider terms the whole FI-PPP community.
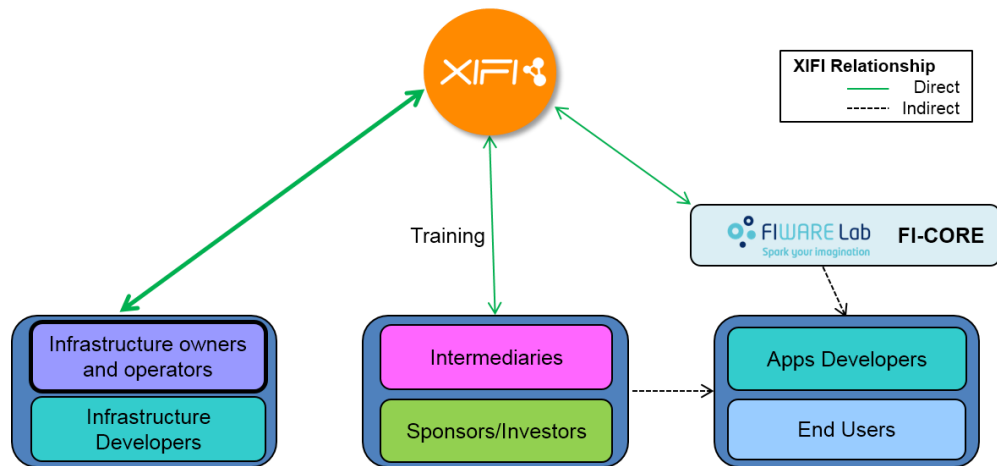
Figure 2: XIFI Stakeholder relations

Based on the findings in the XIFI project and to follow the reviewers' recommendations, the stakeholders definitions were updated to include two new types of stakeholders:

- The Infrastructure developers and Infrastructure tools developers; and
- Non-public Investors.

The stakeholders were described in details in the D7.1 and the updated definitions including new stakeholders are available on the XIFI web[7] and in Appendix A of this deliverable.

2.3.1 Stakeholder communities

Technically oriented people typically follow/use web, Stack OverFlow, Blog, Twitter and Emails while more business oriented people follow/use LinkedIn, Twitter and Emails. Although there are many members in the LinkedIn groups that do not participate actively and only passively follow discussions, the LinkedIn groups are effective promotion channels to complement web and Twitter, and cross-link the "real" content, such as technical articles, reports and videos. On the other hand the interactive discussion (Questions & Answers – Q&A) mainly takes place in the Stack Overflow forum and that is why this has been cross-linked to/from the FIWARE Lab training portal and Helpdesk web to make it easier to be found by Infrastructure owners & operators, and especially by application developers. The Figure 3: Stakeholders' communities shows an overview about the main stakeholders and communities behind each of them.

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[7] https://www.fi-xifi.eu/about-xifi/stakeholders.html
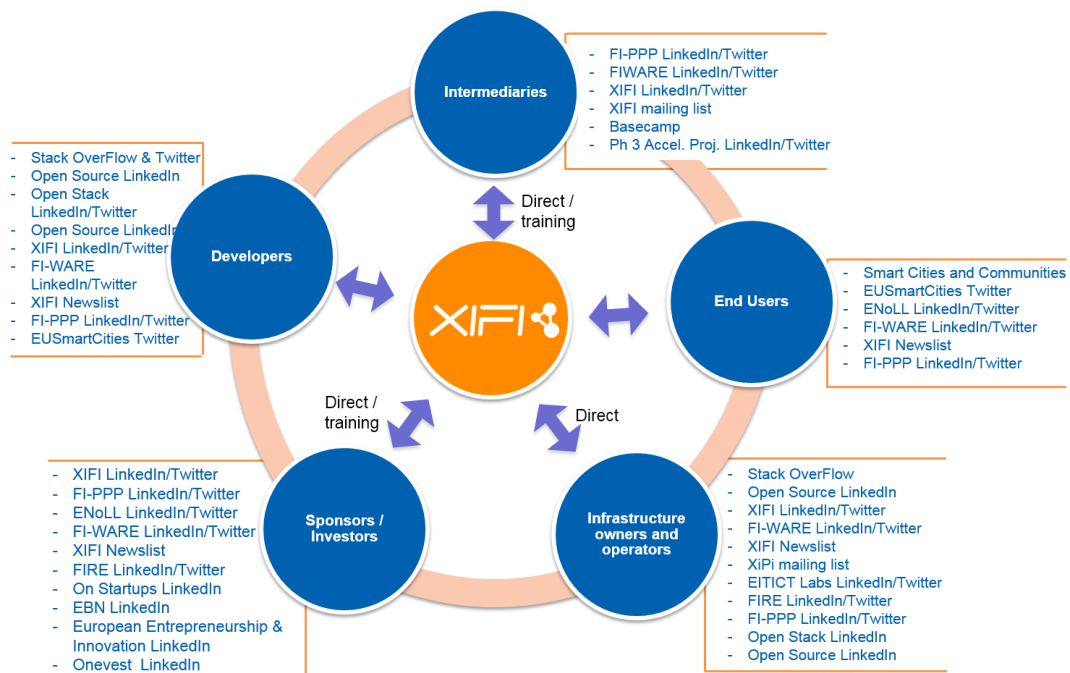
Figure 3: Stakeholders' communities

In the following, we describe the main community Portal behind the stakeholders - Stack Overflow, Openstack Forum and LinkedIn - their relation to the stakeholders and the main activities that have been taking place. The other main engagement means (cf. Table 1) have been/are described as follows:
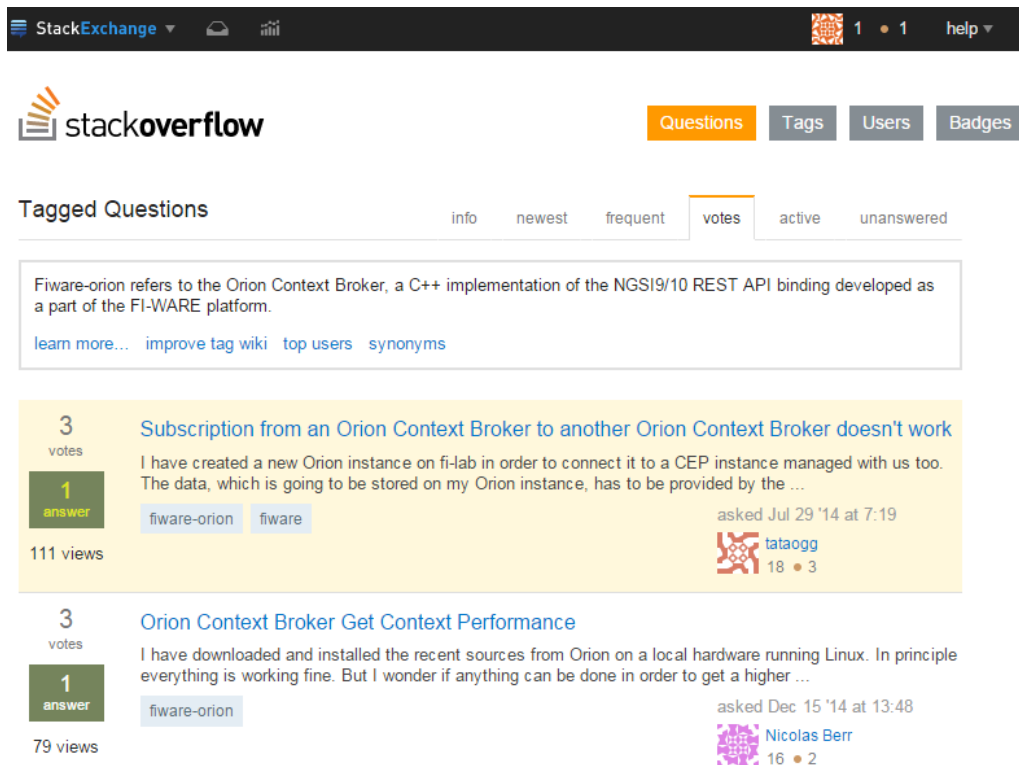
- Open Call: please see deliverables D11.2.2 and D9.3 for details.

- Training events: please see section 3 of this deliverable.

- General dissemination and communication activities, workshops, social media promotion, e.g., Twitter, etc.: please see D9.4

- Appendix B contains additional information about the Helpdesk/JIRA statistics

Stack OverFlow

Related stakeholders:

- Infrastructure owners and operators
- Infrastructure developers and Infrastructure tools developers
- Application (Apps) developers

The interactive technical discussion has mainly happened in the Stack OverFlow forum and that is why there was no reason to set-up a separate discussion forum parallel to it. The Stack OverFlow forum has been in place well before the XIFI project and will continue its' life after the XIFI project.

Figure 4: The latest [fiware] tagged question thread

To take full advantage of the activities in the Stack OverFlow the cross-links have been created on the FIWARE Lab training portal[8] and on the Helpdesk web[9] to connect and to encourage the FIWARE Lab training portal and the Helpdesk web visitors to access the Stack OverFlow.

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[8] http://edu.fiware.org/course/category.php?id=10

[9] http://www.fiware.org/contact-us/
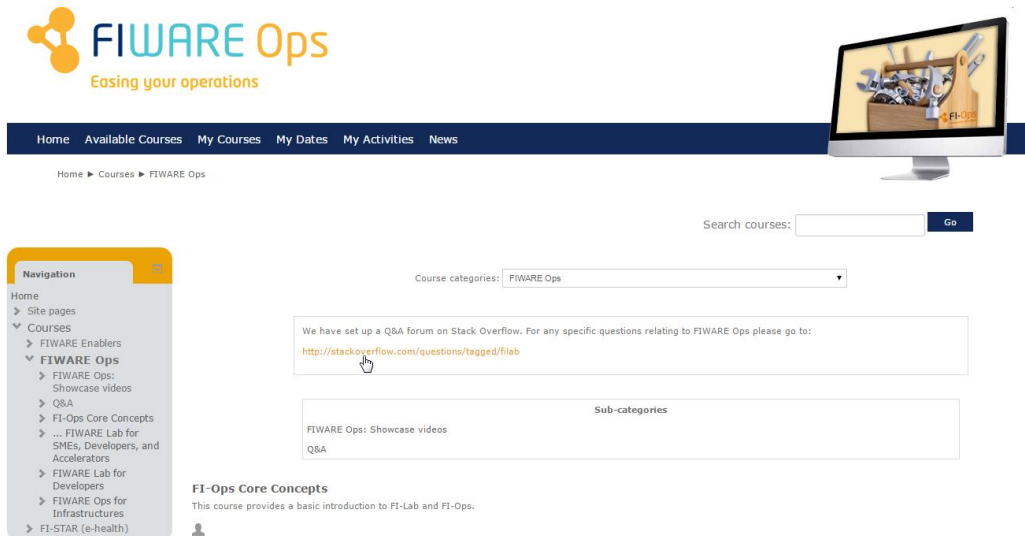
Figure 5: The Stack Overflow link on the FIWARE Ops training portal

The latest [fiware]–tagged threads are also collected (rss-feed) to the FIWARE Ops training portal[10] to make it easier to find the latest activity happening in the StackOverFlow. Additionally, to reduce the amount of questions arriving to the Helpdesk-email, the most frequently asked questions (with their answers) have been copied to the Stack OverFlow[11] by the technical experts in XIFI, in the former FI-WARE and in the current FICORE projects: thereby already using the community support beyond the XIFI project.
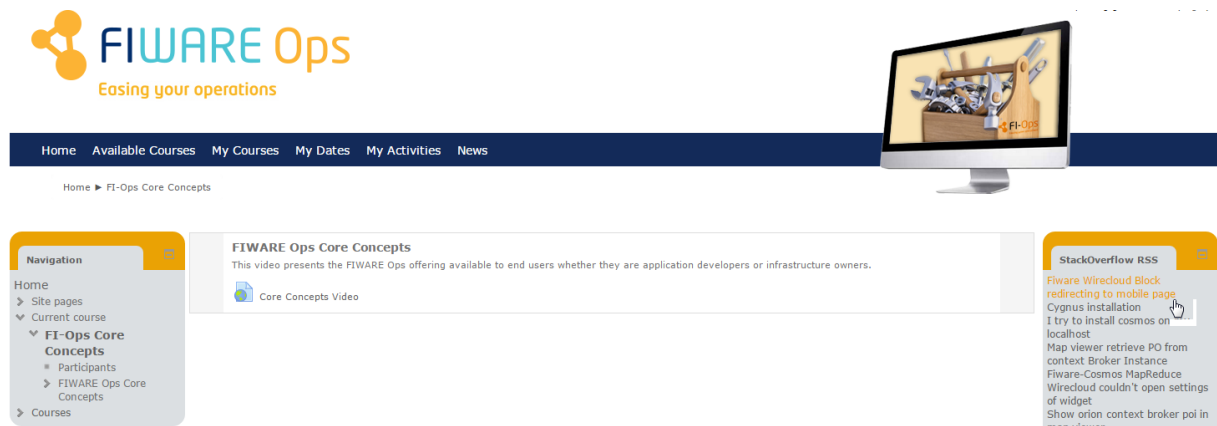
Figure 6: StackOverFlow rss-feed on the FIWARE Ops training portal

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[10] http://edu.fiware.org/course/view.php?id=77

[11] http://stackoverflow.com/questions/tagged/fiware

Example: http://stackoverflow.com/questions/27543127/deploy-vm-in-fiware-lab-nodes-with-neutron

During year 2 of the XIFI project there have been over 250 FIWARE Lab and/or FIWARE Ops related [fiware], [filab] and [fiware-orion] tagged Q&A threads, typically 1-2 new threads every day created (cf. Table 2).
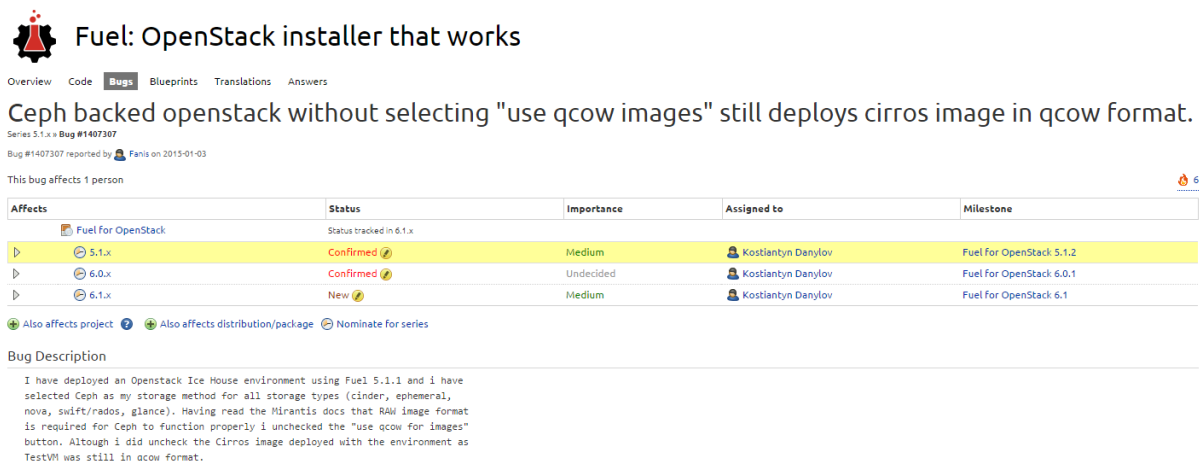
Openstack Forum

Related stakeholders:

- Infrastructure owners and operators
- Infrastructure developers and Infrastructure tools developers
- Application (Apps) developers

The Neuropublic node identified and opened bug reports for the Fuel for Openstack during the Icehouse installation. Both bugs were accepted from the Fuel community, one of them already fixed and the other one to be fixed in 5.1.2 release of Fuel. The reported bugs can be found in the following links:

- https://bugs.launchpad.net/fuel/+bug/1408935; and

- https://bugs.launchpad.net/fuel/5.1.x/+bug/1407307

Figure 7: Bug reports on the Fuel community

Openstack training[12]

One of the XIFI partner, namely CREATE-NET, organizes Open Stack training classes in a partnership with Mirantis[13], a US-based company leading the OpenStack solution market. The training activity is mostly an entry point for the service consultancy activity on OpenStack. Although it is more helping on individual partner exploitation it also contributes to the OpenStack community engagement and information sharing.

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[12] http://www.create-net.org/community/openstack-training

[13] https://www.mirantis.com/

Publications in the Openstack Super user blog[14]

To make the OpenStack forum more aware of the FIWARE/XIFI federation offering some of the XIFI partners are planning to submit technical articles to the Open Stack SuperUser forum to inform and engage the Infrastructure owners and operators together with the Open source developer community.

LinkedIn

Related stakeholders:

- Infrastructure owners and operators

- Infrastructure and Infrastructure tools developers

- Intermediaries

- Sponsors / Investors (Non-public Investors)

- End users

- Application (Apps) developers

- Technology Providers

LinkedIn groups have been mainly used for promotion and information sharing purposes although during year 2 more "Likes" and "Comments" started to pop-up mainly in the joined new SME, Startup and web entrepreneur oriented groups. During year 1 the main Linked groups were Infrastructure owners and operators related meaning the potential community coverage was below 5000 members in those groups. During year 2 the overall project focus moved towards Application/Apps Developers (SME, Startup and web entrepreneurs) and that is why the addressed potential community coverage rose two decades up to 500 000 members (cf. Table 1).

Beside the XIFI LinkedIn group[15], the following groups have been addressed for promotion and community engagement purposes with their reached stakeholders, in collaboration with WP9 activities. The detailed group profiles are in the Appendix C.

- EIT ICT Labs LinkedIn[16] – community reached: EIT ICT Labs testbeds - 943 members;

- FI-WARE LinkedIn Group[17] - FI-WARE general – 707 members;

- FIRE LinkedIn[18] – FIRE testbeds, NRENs, public authorities - 482 members;

- FI-PPP LinkedIn[19] – FI-PPP projects/general – 407 members;

- Open Stack LinkedIn[20] – Open Stack developers - 30,758 members;

- Open Source LinkedIn[21] - Open Source developers – 122,474 members; and

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[14] http://superuser.openstack.org/

[15] https://www.linkedin.com/groups/XIFI-5058775

[16] https://www.linkedin.com/groups?home=&gid=3357925&trk=anet_ug_hm

[17] https://www.linkedin.com/groups/FIWARE-4239932

[18] https://www.linkedin.com/groups/FIRE-3361373

[19] https://www.linkedin.com/groups?home=&gid=4175774&trk=anet_ug_hm

[20] https://www.linkedin.com/groups?home=&gid=3239106

[21] https://www.linkedin.com/groups?home=&gid=43875&trk=anet_ug_hm&goback=%2Eanb_1310437

- Living Labs LinkedIn[22] – Living Labs, Smart Cities, End Users, SMEs, Public authorities - 2,946 members.

To extend the coverage to new communities, namely SMEs, Startups and non-public investors, the following LinkedIn groups were found out during year 2 of the XIFI project and some XIFI partners joined to these groups being able to open discussion/promotion threads. The immediate results were seen with the "Likes" and "Comments" especially for the published Showcase videos which made a good starting point for these new communities which will be much more important after the XIFI project and will further be worked on by the FI-CORE and FI-PPP accelerator projects:

- On Startups[23] - The Community For Entrepreneurs - 448,222 members;
- EBN[24] - European Business & Innovation Centres (BIC) Network - 1,191 members;
- European Entrepreneurship & Innovation[25] @ Stanford | Silicon Valley – 14,995 members; and
- Onevest[26] - The Startup & Investor Network - 40,820 members.

2.3.1 Local prospective on communities

In part of the exploitation survey done in the WP10, the XIFI partners were asked their local/regional community engagement activities. The survey results show that the XIFI partners are actively working in the local/regional communities especially in order to help Developers (OpenStack, web entrepreneurs and SMEs), Sponsors and Investors (Public Authorities, Venture Capitalists), Intermediaries (EU-projects) and End Users to be aware of the FIWARE and the XIFI offering in order to develop new business opportunities in the area of the Future Internet. On the other hand the Telco partners responded in the survey that they don't have Communities around them but direct Customers of their Cloud Offering instead.

The main local/regional activities have happened in the area of organizing and participating in general dissemination events and workshops (cf. D9.4), and organizing training events (cf. section 4).

The main target stakeholders addressed have been:

- Developers
  - Distributed management system & web developers, IoT developers & Arduino/Raspberry Pi developers
  - FI-PPP Phase III projects, Open Stack local user groups, SMEs
- Sponsors and/or Investors
  - Public Authorities, Venture Capitalists
- End Users

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[22] https://www.linkedin.com/groups?home=&gid=1188387&trk=anet_ug_hm

[23] https://www.linkedin.com/groups?viewMembers=&gid=2877

[24] https://www.linkedin.com/groups?gid=2201839

[25] https://www.linkedin.com/groups?gid=1573967

[26] https://www.linkedin.com/groups?gid=7440316

- Academic & Research Institutions/laboratories, Associations

- Intermediaries

  - Incubators, Public Authorities, EU-projects, ICT Clusters for SMEs

- Technology providers

  - Equipment vendors

The list of the local/regional communities engaged by the XIFI partners are listed in the Appendix I.

2.4   Conclusions

The main *direct* stakeholder group for the XIFI project has been the Infrastructure owners and operators and their related Developers that benefit directly from the work and results of the XIFI project. Additionally, especially during year 2, the Application (Apps) Developers (and End Users) – although *indirect* for the XIFI project via the FI-WARE project – have become other targeted stakeholders, and receive benefits through access to the FIWARE Lab.

WP7 has successfully identified the targeted user communities - Stack Overflow, Openstack and LinkedIn - to engage the relevant priority stakeholders' groups into the training sessions and webinars, in a coordinated manner with the activities engaged in other WPs. Therefore in the end of the XIFI project, and in wider terms to support the whole FI-PPP programme, the XIFI project is in a position to hand-over to the FI-CORE project:

- The XIFI federated platform;

- The trained Infrastructure owners and developers community;

- The trained Intermediaries (Phase 3 projects); and

- The 1st group of trained Application developers.

3 REPORT, ANALYSIS AND EVALUATION OF THE TRAINING MATERIAL AND THE TRAINING PORTAL

3.1 Introduction

The work package has been active in the production of training materials tailored towards the targeted stakeholders:

- Infrastructure developers

- Infrastructure owners and operators

- Accelerator start-ups and SMEs wishing to exploit FIWARE Lab and Ops

As anticipated in Deliverable D7.2, the training materials for our target stakeholders includes by now presentation slide-sets, videos and webinars, and the work package has concentrated its efforts on producing material for the FIWARE Ops Training Portal from these assets.

3.2 Video Training Material: Report, Analysis and Evaluation

The work package has produced a number of training videos, from a number of sources, and the remainder of this section will present an analysis report from the XIFI YouTube TV channel for each of these videos. The final part of this section will attempt at an overall evaluation based on the analysis reports presented.

The following short glossary should help to parse the reports:

YouTube watch-page: YouTube's individual video page

External website: Top-level domains of webpages linking to the video on YouTube

Direct: Includes email, instant messaging clients and pasting URL into browser

YouTube suggested channel: Linked to from thumbnails

Embedded player: Video embedded on another website

3.2.1 "XIFI introducing FIWARE Lab" training video

This was the first of our training videos and was released to the XIFI YouTube TV channel and the Training Portal on the 21st May 2014. This video outlined the Core Concepts of the FIWARE Ops, and was designed for a general audience interested in the benefits provided by a federated infrastructure offering.

Figure 8: XIFI introducing FIWARE Lab training video

YouTube Analysis Report:

- Performance had a total of 820 views
- Estimated minutes watched 1,919

Following the release of the "XIFI introducing FIWARE Lab" video WP7 concentrated on producing a series of video presentations, using the recorded material from our workshop in Madrid in June 2014, which was a two-day training camp targeted towards our infrastructure owner and operator stakeholders. There were 9 videos in total and these were released over a period of two months in September and October 2014.

3.2.2 "Introduction to FIWARE Lab and FIWARE Ops" video

This training material was released to the XIFI Youtube channel and the Training Portal on the 3rd October 2014. This video was designed to provide an Introduction to the FIWARE Lab and FIWARE Ops, and was targeted towards an infrastructure owner and operator audience interested. It was the opening presentation provided by the XIFI project to operators trying to federate their Infrastructures with the FIWARE Lab.

Figure 9: Introduction to FIWARE Lab and FIWARE Ops video

YouTube Analysis Report:

- Performance had a total of 247 views
- Estimated minutes watched 1312

The reports for the remaining presentation videos from Madrid can be found in Appendix H: YouTube Reports for Training Videos and in Table 3.

In response to the feedback received from the two-day training camp in Madrid, WP7 decided that it was important to conduct a series of webinars, targeted towards infrastructure owners and operators, and more specifically towards our new nodes. These webinars were recorded and uploaded to both our YouTube TV channel and our Training Portal:

3.2.3 "FIWARE Lab Webinar" Video

This webinar recording was released to the XIFI TV channel and the Training Portal on the 16th October 2014. The webinar was designed to provide an Introduction to the FIWARE Lab and an overview of the federated architecture, and was targeted towards an infrastructure owner and operator audience interested.

Figure 10: FIWARE Lab Webinar video

YouTube Analysis Report:

- Performance had a total of 242 views
- Estimated minutes watched 1,103

3.2.4 "FIWARE Ops: ITBox Webinar" Video

This webinar recording was released to the XIFI YouTube TV channel and the Training Portal on the 19th September 2014. The webinar was designed to provide a detailed description of the Infrastructure ToolBox (ITBox), and was targeted towards an infrastructure owner and operator audience. In addition to the description of the ITBox and its functionality, a demo on how to configure the ITBox for new Infrastructures is presented, and the webinar finishes off with a Q&A session with the attendees.
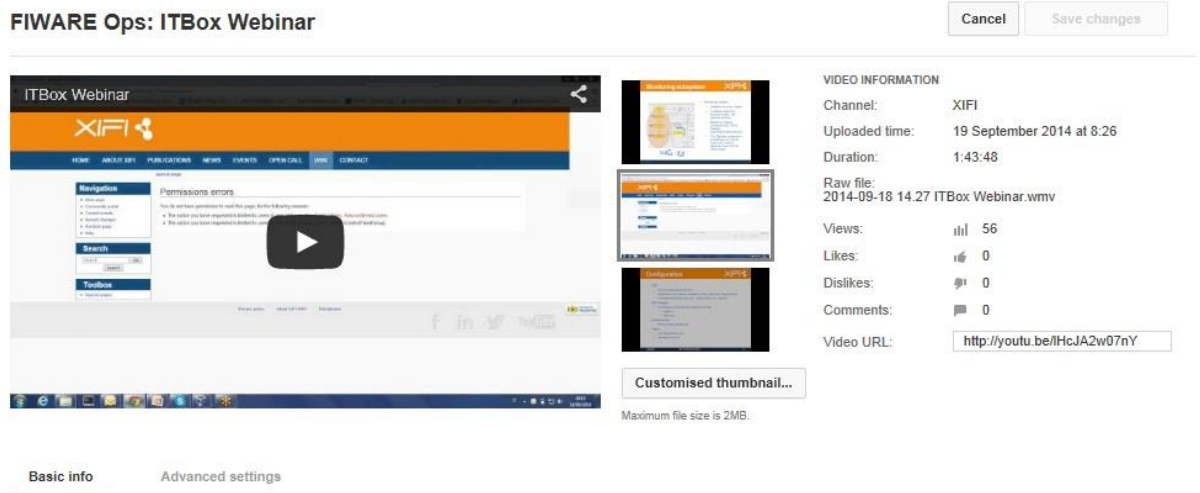
Figure 11: FIWARE Ops - ITBox Webinar video

YouTube Analysis Report:

- Performance had a total of 56 views
- Estimated minutes watched 468

3.2.5 "FIWARE Ops: Security Webinar" Video

This webinar recording was released to the XIFI YouTube TV channel and the Training Portal on the 19th September 2014. The webinar was designed to provide a detailed description of the FIWARE Ops security features, and was targeted towards an infrastructure owner and operator audience.
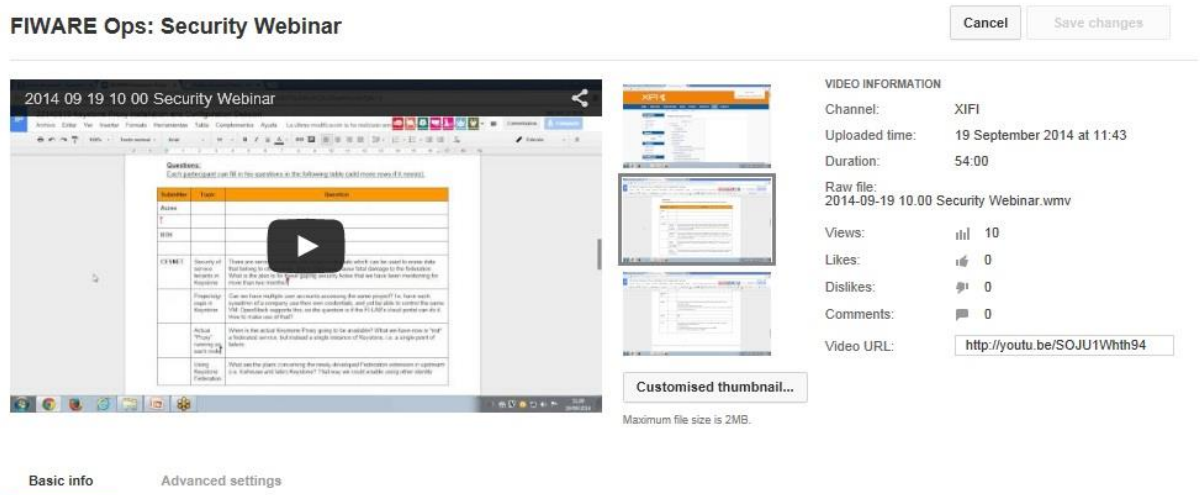
Figure 12: FIWARE Ops: Security Webinar video

YouTube Analysis Report:
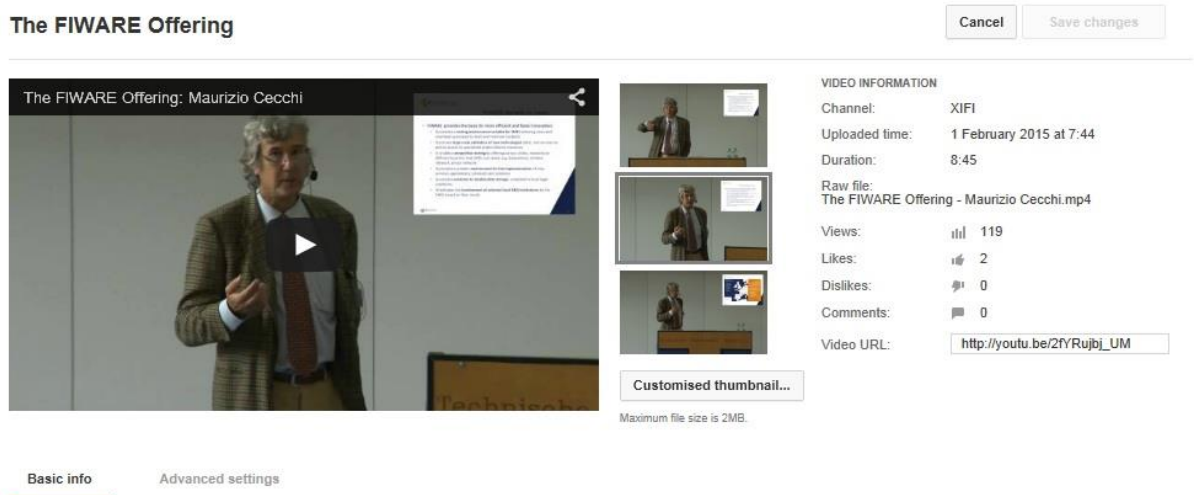
- Performance had a total of 10 views

- Estimated minutes watched 18

The next training asset generation campaign looked at the production of another series of video presentations from the workshop in Munich, which was a one day two-session training workshop targeted towards the Accelerator Start-ups and SMEs. There were 3 videos in total and we released these to the XIFI TV channel and the Training Portal in February 2015:

3.2.6 "The FIWARE Offering" Video

This training material was released to the XIFI YouTube TV channel and the Training Portal on the 1st February 2015, and was presented by Maurizio Cecchi (Coordinator) on behalf of the XIFI project. The video presentation provides an introduction to what is on offer from FIWARE. It was the opening presentation provided by the XIFI project to a group of SMEs & Accelerators wanting to deploy and test their business solution with the experimental infrastructures provided by FIWARE Lab.

Figure 13: The FIWARE Offering video

YouTube Analysis Report:

- Performance had a total of 119 views
- Estimated minutes watched 301

3.2.7 "eLearning Platform: Support to FIWARE Developers" Video

This training material was released to the XIFI YouTube TV channel and the Training Portal on the 1st February 2015. The video presentation provides an introduction to FIWARE, FIWARE Lab, and FIWARE Ops. It was the second presentation provided by the XIFI project to SMEs & Accelerators wanting to deploy and test their business solution with the experimental infrastructures provided by FIWARE Lab. The content covered a general overview of the eLearning platform, and the helpdesk and usage procedures.

Figure 14: The FIWARE Offering video

YouTube Analysis Report:

- Performance had a total of 133 views
- Estimated minutes watched 420

3.2.8 "FIWARE Ops Overview" video

This training material was released to the XIFI TV channel and the Training Portal on the 1st February 2015. It was the third presentation provided by the XIFI project to SMEs & Accelerators wanting to deploy and test their business solution with the experimental infrastructures provided by FIWARE Lab. The content covered in the video included the following:

- Monitoring services
- Inter-cloud networking
- Private node deployment
- Join the federation
- How you can attach a node to FIWARE Lab

Figure 15: FIWARE Ops Overview video

YouTube Analysis Report:

- Performance had a total of 84 views

- Estimated minutes watched 340

WP7 worked very closely with the Showcases work package (WP6) and the Sustainability work package (WP8) to produce training material that would act as a cross-over between the technology behind the federated infrastructures and the sustainability model that showcased the business value of the federation. There were 3 videos produced in total and we released these to the XIFI TV channel and the Training Portal in February 2015. These three videos are described in more detail in the next three subsections, namely 3.2.9, 3.2.10, and 3.2.11

3.2.9 "FIWARE Lab: HOW DO I GET THE BEST OUT OF WHAT'S AVAILABLE?" Video

This showcase training material was released to the XIFI TV channel and the Training Portal on the 3rd February 2015. The key purpose of the video was to present to Infrastructure Owners and Operators, the advantages behind joining the FIWARE Lab federation and of installing FIWARE Ops and the FIWARE Generic Enablers (GEs). This video covered all aspects of the cloud computing paradigm (IaaS, PaaS, SaaS), demonstrating how easy it is for an Infrastructure owner/operator to create a FIWARE Lab-compatible IaaS environment from the bare metal up, search, compare, register and advertise available PaaS or SaaS services (GEs/SEs) across the federation.

Figure 16: FIWARE Lab: How do I get the best out of what's available video

YouTube Analysis Report:

- Performance had a total of 102 views
- Estimated minutes watched 202

3.2.10 "FIWARE Lab: HOW DO I LET "CUSTOMERS" KNOW WHAT'S AVAILABLE?" Video

This showcase training material was released to the XIFI TV channel and the Training Portal on the 3rd February 2015. The key purpose of the video was to present to Infrastructure Owners and Operators, the advantages behind joining the FIWARE Lab federation and of installing FIWARE Ops and the FIWARE Generic Enablers (GEs). The video demonstrates the importance of optimising network performance. The showcase demonstrates how to monitor, manage performance, and capitalise on network performance.

Figure 17: FIWARE Lab - How do I let customers know what's available

YouTube Analysis Report:

- Performance had a total of 59 views
- Estimated minutes watched 142

3.2.11 "I AM A STARTUP, WHY SHOULD I USE FIWARE LAB?" Video

This showcase training material was released to the XIFI TV channel and the Training Portal on the 3rd February 2015. The key purpose of the video is to sell the benefit of being part of the FIWARE Lab ecosystem to a range of stakeholders, including the Infrastructure Owners/Operators, as well as Smart City innovators, that include the Public Authorities, SMEs/Developers and Accelerators. The showcase aims to demonstrate how a rich ecosystem offered by the combination of infrastructures (FIWARE Lab – the Federated Infrastructures) and an innovative platform (FIWARE) can effectively support the different needs of acceleration for an innovative idea.

Figure 18: I am a startup, why should I use I FIWARE Lab video

YouTube Analysis Report:

- Performance had a total of 231 views
- Estimated minutes watched 424

3.2.12   Evaluation and conclusions

The Table 3 below presents an overall summary from the analysis reports above:

#	Type	Views	Minutes	Playback locations	Traffic sources
3.2.1	H	820	1919	Embedded player = 54% YouTube = 46%	Embedded player = 54% Direct = 18% YouTube = 8% Other = 20%
3.2.2	H	247	1312	YouTube = 99% Embedded player = 1%	External website = 29% YouTube = 33% Direct = 15% Other = 24%
0	C	55	91	YouTube = 100%	Direct = 41% External website = 24% YouTube = 13% Other = 2%
0	C	65	196	YouTube = 98.5% Embedded player = 1.5%	External website = 51% Direct = 14% YouTube = 14% Other 21%
0	C	31	53	YouTube = 100%	External website = 26% YouTube = 23% Direct = 23% Other = 28%
0	C	35	182	YouTube = 97% Embedded player = 3%	External website = 26% YouTube = 23% Direct = 23% Other = 28%
0	C	41	64	YouTube = 100%	External website = 33% YouTube = 20% Direct = 28% Other = 19%
0	C	30	89	YouTube = 97% Embedded player = 3%	External website = 37% YouTube = 27% Direct = 13% Other = 23%
0	C	10	13	YouTube = 100%	External website = 50% YouTube = 20% Direct = 30%
0	C	34	70	YouTube = 100%	YouTube search = 27% External website = 22% YouTube channel page = 18% Other = 33%
0	C	33	93	YouTube = 100%	Direct = 53% External website = 43% YouTube = 4%
3.2.3	C	56	468	YouTube = 98% Embedded player = 2%	External website = 12% Embedded player = 2% Direct = 81% Other = 5%

#	Type	Views	Minutes	Playback locations	Traffic sources
3.2.4	C	10	18	YouTube = 100%	External website = 40% YouTube = 10% Direct = 50%
3.2.5	H	242	1103	YouTube = 98% Embedded player = 2%	External website = 24% YouTube = 65% Other = 21%
3.2.6	H	119	301	YouTube = 94% Embedded player = 6%	External website = 55% YouTube = 14% Direct = 15% Other = 16%
3.2.7	H	133	420	YouTube = 98% Embedded player = 2%	External website = 41% YouTube = 29% Direct = 19% Other = 11%
3.2.8	H	84	340	YouTube = 96% Embedded player = 4%	External website = 35% YouTube = 39% Direct =12% Other = 14%
3.2.9	C	102	202	YouTube = 95% Embedded player = 5%	External website = 10% YouTube = 46% Direct = 27% Other = 17%
3.2.10	C	59	142	YouTube = 98% Embedded player = 2%	External website = 25% YouTube = 40% Direct = 25% Other = 10%
3.2.11	H	231	424	YouTube = 92% Embedded player = 8%	External website = 27% YouTube = 31% Direct = 23% Other = 19%

Table 3: YouTube reports on the stats for the XIFI training videos

Type: A high-level video (H) or a XIFI component-level video (C)

Playback locations: Shows the page, site or device that the video was viewed on.

Traffic sources: Shows how the viewer found the video

The Training Portal report, analysis and evaluation will be further discussed in section 3.3, however it should be pointed out that the analysis reports above provide a breakdown of what browser mechanism was used to play back the videos by the viewer (i.e. the Playback location). Apart from video #1, the analysis clearly shows that YouTube is the most significant location for playing back the training videos. This has implications for the Training Portal as a tool used for Community Building and/or Knowledge transfer.

A second point to note is the fact that high-level videos are viewed much more often than component-level videos. The analysis here has been high-lighted in 'yellow' in the various reports above. This point sticks out in the various video groupings, for example in the Madrid training videos (#2-11) video #10 is a high-level video, but the video 'Views' and 'Minutes' statistics are significantly higher than the other videos in the group. All videos in this group have been disseminated by XIFI using the same dissemination tools (e.g. XIFI website, etc.), so there is no obvious reason behind the significance of anomaly. One interruption could be that since the playback location is largely derived

from YouTube searches and referrals that the viewer is specifically interested in high-level material pertaining to FIWARE Lab or FIWARE Ops, and searches for lower-level component information is limited.

3.3   Training Portal: Report, Analysis and Evaluation

In this section, we look at how effective the XIFI Training Portal was in terms of its knowledge transfer value. The training portal for XIFI is a subset of the overall FIWARE brand training portal, and as such, it comes under the general heading of FIWARE Ops (http://edu.fiware.org/course/category.php?id=10).

One significant metric that we are using here to analyse the stakeholder interaction with the FIWARE Ops Training Portal, is the amount of 'page views' recorded by Google Analytics for that section of the portal. The diagram in the Figure 19 below represents the 'page view' report for the overall FIWARE Ops landing page:
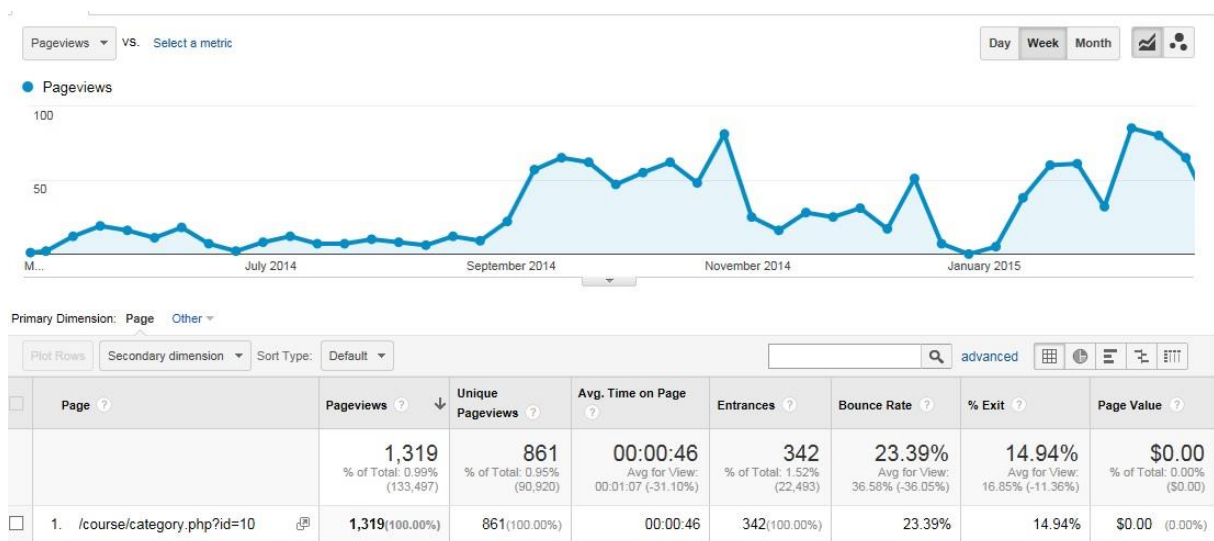
Figure 19: The 'page view' report for the overall FIWARE Ops landing page

These 'page view' numbers rank FIWARE Ops as the fourth most visited course on the overall FIWARE ranking tables, with the section "Applications and Services Ecosystem and Delivery Framework" in first place, "Cloud Hosting" in second place, and "Internet of Things (IoT) Service Enablement" in third place.

The next section presents the 'page view' reports and analysis from the target stakeholder courses on FIWARE Ops, and attempts to formulate an evaluation of each of these courses.

3.3.1   FIWARE Ops: Courses on Offer

The FIWARE Ops section of the FIWARE Training Portal offers the following courses:

1) FIWARE Ops Core Concepts

2) FIWARE Ops for Infrastructures

3) FIWARE Lab for SMEs, Start-ups, and Accelerators

4) FIWARE Lab for Developers

5) Showcase Videos

The remainder of section 3.3.1 provides a report on the 'page views' for each of the five courses.

3.3.2 FIWARE Ops Core Concepts

This was the first of our training videos and was released to the XIFI YouTube TV channel and the Training Portal on the 21st May 2014. This video outlined the Core Concepts of the FIWARE Ops, and was designed for a general audience interested in the benefits provided by a federated infrastructure offering.
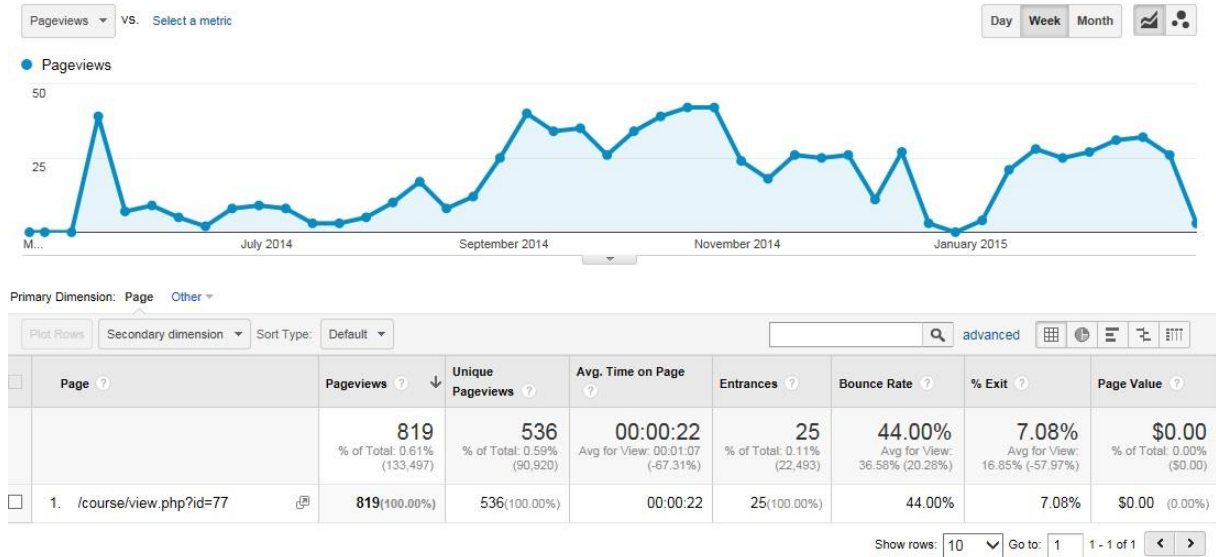
Figure 20: FIWARE Ops Core Concepts course statistics

The FIWARE Ops Core Concepts course comprises the video produced by the work package and the Figure 20 above shows an initial spike in viewing at the launch in May 2014, which is followed up by increases in traffic in September 2014, October 2014 and February 2015, which corresponds to the launches of other training material onto the portal. The 22 seconds would refer to the amount of average time a user spent on the page before clicking to watch the video.

3.3.2.1 FIWARE Ops for Infrastructures

This training course was aimed at Infrastructure Owners/Operators and FIWARE Ops users who want to offer the FI-PPP technologies (i.e. Generic and Specific Enablers) to 3rd parties, and who might also want to join the FIWARE Federation through the FIWARE Lab.

The course modules were taken from presentations designed for Infrastructure Owners/Operators, and presented at a XIFI training workshop in Madrid in June 2014.
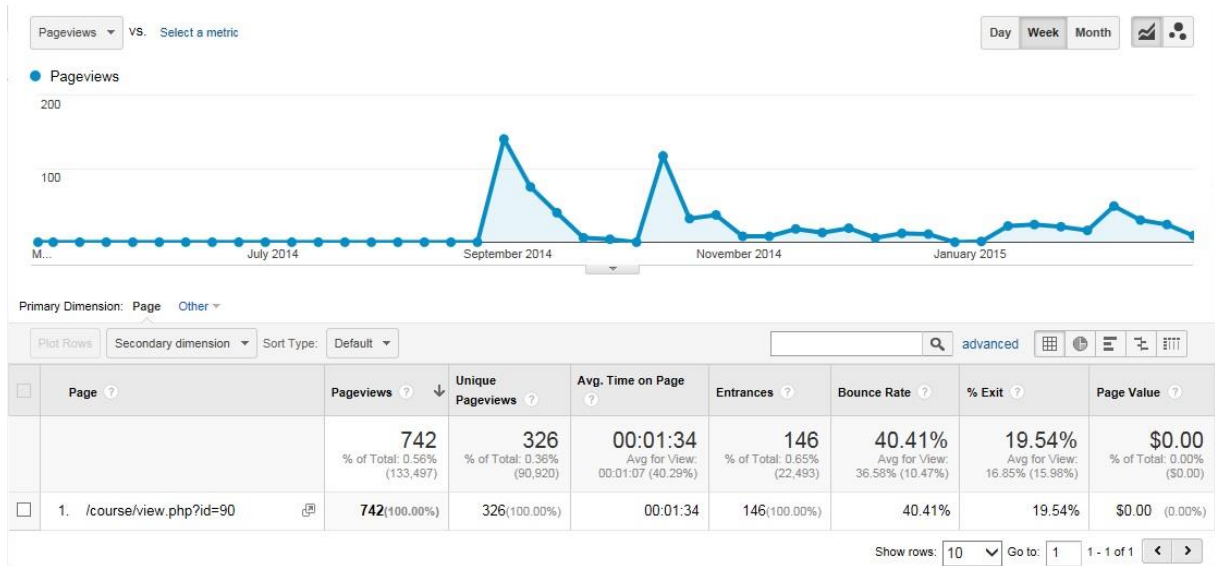
Figure 21: FIWARE Ops for Infrastructures course statistics

The Figure 21 shows a good interest by this stakeholder group at the initial launch, and another spike after the October training promotion towards the Accelerator stakeholders, but the tail-off from there is indicative of a general waning in interest.

3.3.2.2   FIWARE Lab for SMEs, Start-ups, and Accelerators

This FIWARE Lab training course was aimed at SMEs, Start-ups and accelerators who might want to exploit the FIWARE Lab offering.

The course modules were taken from presentations designed for SMEs, Start-ups and Accelerators, and presented at a XIFI training workshop in Munich in September 2014.
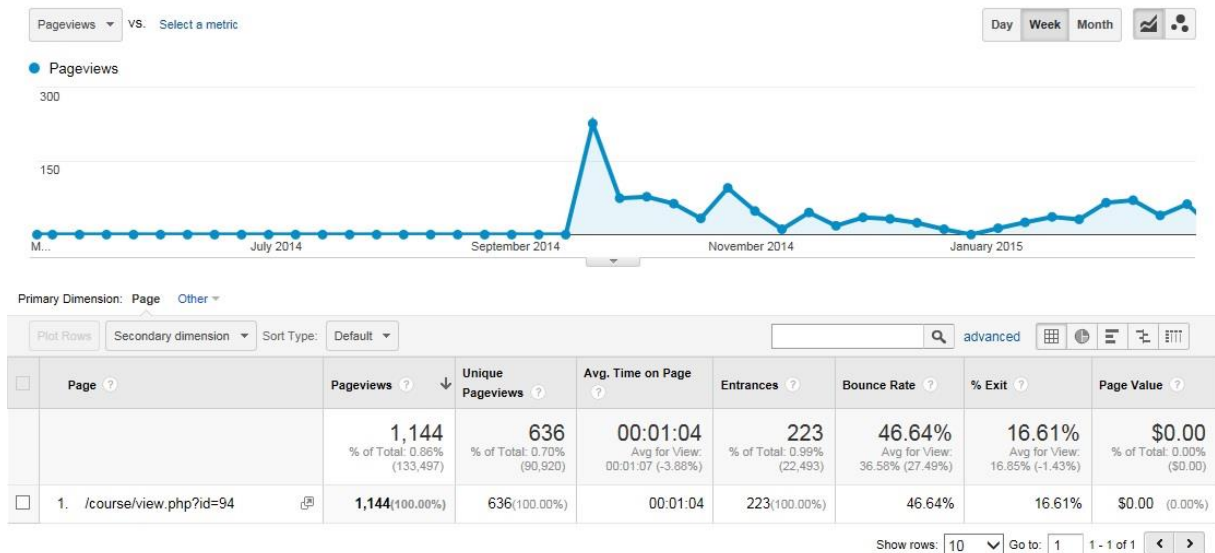
Figure 22: FIWARE Lab for SMEs, Start-ups, and Accelerators course statistics

Although the training for this stakeholder group started later than the Infrastructure stakeholder, it should be noted that their overall page view figures are higher than those from the report in the previous section as seen in the Figure 22. However, the trend is similar, with a high spike in viewing to begin with and then a gradual tail-off.

3.3.2.3   FIWARE Lab for Developers

This FIWARE Lab training course was aimed at Developers who might want to build services and deploy these to the FIWARE Ops offering.

The course modules were taken from presentations designed for Developers, and presented at a XIFI training workshop in Berlin in June 2014.
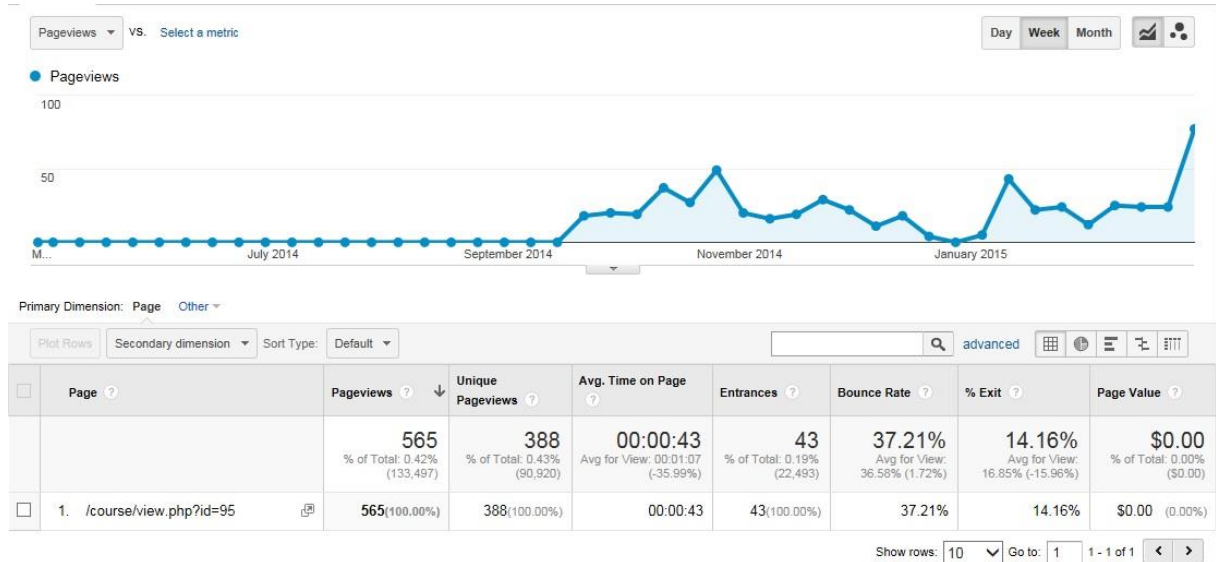
Figure 23: FIWARE Lab for Developers course statistics

Although the physical training for this stakeholder was the first in our targeted series, we did not produce recordings of the presentations given, and as such we were limited to only providing the presentation slides as training material uploads to the portal. The Figure 23 above shows that the overall interest in this section of the FIWARE Ops Training Portal is weak, and the lack of presentation videos is indicative of this weakness. There is a spike in interest latterly, and this is put down to the series of online webinars that were conducted in February 2015 and their subsequent upload to this section of the training portal.

3.3.2.4   Showcase Videos

FIWARE Ops produced a series of training videos, which present and showcase the federation in a very clear and comprehensive way. These videos were used as supporting materials during our training sessions.
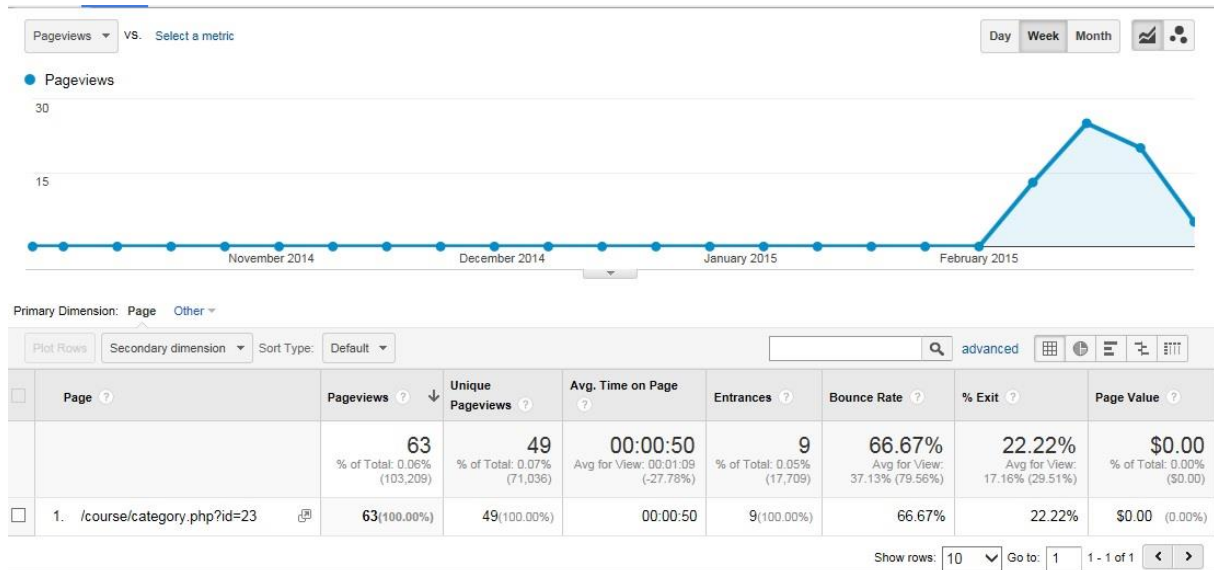
Figure 24: Showcase videos Training Portal statistics

The showcase videos were uploaded to the Training Portal at the beginning of February 2015, and as such their page views (Figure 24) are so far quite limited. However, a more accurate appraisal of their potential for stakeholder engagement is probably to be found in the reports from section 3.2.

3.3.2.5 Evaluation and Conclusions

Overall, it can be concluded that the FIWARE Ops section of the FIWARE Training Portal had a mix set of results, from excellence to less good. The 'page view' figures benchmarked against the overall portal do indicate strong stakeholder value, although there does seem to be an indication that this value was stronger for the Accelerator stakeholder community than for either the Developers or the Infrastructure owners/operators.

The last review was critical of the value of the training assets, and indicated that the "*material is however still of fairly poor quality and focuses mostly on recording presentations, rather than actually explaining usage or providing relevant insights for potential up-takers*". In response to this, it is important to reiterate that the strategy identified in the previous deliverables high-lighted that the overall work package training plan was to provide physical training workshops and online webinars to our specifically targeted stakeholder groups and to use the material generated from these workshops as input for the Training Portal, by way of PDFs and edited videos. The work package has been very active in trying to establish community building links via tools such as StackOverflow, and it remains to be seen whether or not these connections will be successful in their aims. In addition, this WP works very closely with the XIFI project's Support team, whereby first-line support is provided to developer stakeholders directly via the FIWARE Lab Helpdesk (i.e. Jira).

3.3.3 Training Assets: Analysis and Evaluation

The WP7 strategy was to provide a range of training assets and these assets were to come from the following sources:

- Targeted and specific training videos

- Assets in the way of Powerpoint presentations and video-recordings from our in-situ training workshops

- Assets in the way of Powerpoint presentation and audio-recordings our live webinars

The rest of this section provides an analysis and evaluation for those training assets.

3.3.3.1   Core Concepts Video
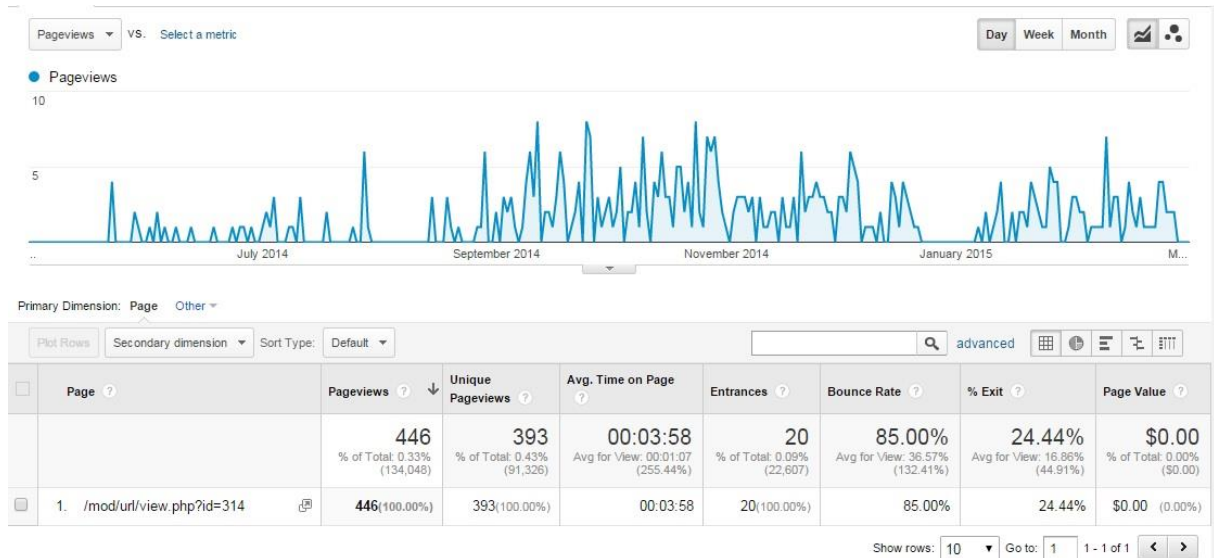
Figure 25: Core Concepts video statistics

The total 'page views' in the Figure 25 above for the embedded Core Concepts video is 446 and this number closely correlates with the figures identified in section 3.2, which for YouTube showed a total of 820 views, of which 54% (i.e. 442) were from an external embedded player (i.e. the FIWARE Ops URL). This provides a metric in trying to evaluate the potential for Community Building from the Portal versus YouTube directly. What the numbers also show is that there was steady traffic generally through the portal September through to mid December 2014, and then again from mid-January through to end of February 2015.

3.3.3.2   Infrastructure Owners and Operator Presentations

This section takes a look at the 'page view' statistics from the "Infrastructure Owners and Operators" course on the FIWARE Ops part of the Training Portal, and more specifically at the results generated by the PDFs of presentations from the XIFI coordinated Madrid workshop for Infrastructure Owners and Operators. This analysis does not include the statistics generated by the recorded video presentations from the Madrid workshop, as the analysis for these were covered by the YouTube 'page views;' in section 3.2.

Presentation Slideshows as PDFs	Page Views	Avg. time on page
FIWARE Ops: Training Introduction	39	00:01:46
Architecture of Federated Platform	24	00:03:36
Components That You Need	34	00:02:50
Process for joining the Federation	19	00:03:13
Infrastructure Toolbox	39	00:02:56
Detailed Components	10	00:04:03
Marketplace and Resource Catalogue	8	00:00:46
Support Processes	7	00:01:05
Deployment and Configuration Adapter	18	00:01:41
Network Controller	13	00:00:35

Table 4: Presentation slideshow statistics - Infrastructure Owners and Operators course

The 'page views' numbers in the Table 4 are very low in comparison to the general traffic through the FIWARE Ops portal, and again this is possibly a reflection of the fact that the subject matter being presented here is quite detailed, and is possibly outside of the interest levels of the people viewing these types of detailed training assets.

3.3.3.3 FIWARE and FIWARE Lab for SMEs, Start-ups, and Accelerators

In this section we present the 'page view' statistics from the "FIWARE and FIWARE Lab for SMEs, Start-ups, and Accelerators" course on the FIWARE Ops part of the Training Portal, and more specifically at the results generated by the PDFs of presentations from the XIFI coordinated workshops for SMEs, Start-ups and Accelerators at the ECFI2 in Munich 2014. This analysis does not include the statistics generated by the recorded video presentations from the Munich workshop, as the analysis for these were covered by the YouTube 'page views;' in section 3.2.

Presentation Slideshows as PDFs	Page Views	Avg. time on page
The FIWARE Offering	306	00:02:01
FIWARE Ops Overview	426	00:02:17
Introduction to the FIWARE Open Ecosystem	312	00:03:12
eLearning Platform	182	00:02:05
FIWARE and FIWARE Lab Service Offer	104	00:01:28

Table 5: Presentation slideshow statistics - FIWARE and FIWARE Lab for SMEs, Start-ups, and Accelerators course

In comparison to the usage statistics from the previous section, these usage numbers are significantly greater and this on the back of the fact that these presentations were uploaded to the portal a month or so later than the presentations from the Madrid workshop. Why is this? The dissemination of the portal has more or less been the same for both sections of the portal, so the answer cannot really be down to marketing. If we look at the content of the actual presentations we can see that the first three entries in the Table 5 are quite high-level and the last two slightly more detailed, but definitely a lot less detailed in nature to the content of the presentations from the previous section. This points once again to there

being an appetite for high-level information on FIWARE but not so much of an appetite for more detailed course offerings.

3.3.3.4   FIWARE Lab for Developers

Here we present the 'page view' statistics from the "FIWARE Lab for Developers" course, and more specifically at the results generated by the PDFs of presentations from the XIFI coordinated Developers workshop in Berlin 2014.

Presentation Slideshows as PDFs	Page Views	Avg. time on page
Introduction to FIWARE Lab	326	00:02:34
FIWARE Lab for Developers	379	00:03:23
Using S3C	136	00:01:19
A FIWARE Lab Showcase	204	00:02:02

Table 6: Presentation slideshow statistics - FIWARE Lab for Developers course

The figures in the Table 6 above clearly identifies the contrast between the usage statistics for the high-level course content (e.g. FIWARE for Developers with 379 views) and the more detailed course content (e.g. Using S3C with 136 views), which once again infers the stakeholders appetite for the higher-level courses.

3.3.3.5   Deliverables and Manuals

In the course for Infrastructure Owners and Operators we have provided a FIWARE Ops User Manual and a public deliverable on the Federated Platform Architecture. The usage figures for both are presented in the Table 7 below:

Presentation Slideshows as PDFs	Page Views	Avg. time on page
Federated Platform Architecture	21	00:03:48
FIWARE Ops Infrastructure Provider Manual	81	00:03:42

Table 7: Deliverables and manuals statistics - Infrastructure Owners and Operators course

The usage figures for the deliverable 'page views' are very weak, and indicate a low interest level in the details of the federation. The usage figures for the manual are slightly better, but again indicate a weak appetite for lower level training materials.

3.4   Interactions with other WPs

One of the difficulties that arises in these types of collaborative projects is finding a mechanism that creates cohesion, knowledge transfer and synergy between the technical work package and the more business related domains. In XIFI the Showcases work package (WP6) provided just such a mechanism.

As described in section 3.2.1, WP7 identified that the showcases being developed in WP6 were significant to providing training asset material, by way of training videos.

At the M12 review the review team had made various recommendations surrounding the showcases and following on from this discussions arose between WP6 (Showcases), WP7 (Knowledge-Transfer and Training) and WP8 (Sustainability) on how best to leverage the showcase potential. In conclusion it was decided to perform a deeper analysis of the 13 technical Use Cases from WP6 and to encapsulate these as a number of high-level scenario type Showcases that abstracted the technical use-case value into business-value.

The plan then was to shortlist these showcases into candidates for three professionally produced knowledge-transfer training videos. A small team was formed that included WP6/7/8 leaders and the task leader from T7.2.

This team was headed by WP7 leader, whose first objective was to produce an agreed Request for Proposals (see Appendix C for RfP) for the three videos. This was a very useful interaction, as it helped formulate the discussion in terms of a cross-over collaboration between the technical components of the federated infrastructures and what their business value and future sustainability actually meant, and provided a fuller model of the value propositions behind the various elements of the federation.

From the issuance of the RfP this team was in constant communication, all the way through the lifecycle production of the three videos. This enabled a bridging between the technical challenges being faced by the implementation of the federated architecture and a broader understanding of the value to be derived from this federation.

The production process itself helped to shape this dialogue. A very typical and concrete example of this can be provided by an explanation of the scripting process. Having issued the RfP and made our agreed selection on which company would produce the videos, our first task was to brief the winning contractor. Their next step in the production lifecycle was to produce the voiceover script for the first video. To obtain our agreement for their first draft of this script they used an online tool called "ProofHQ", which is a tool that enables comments from multiple sources.

This was a highly iterative and collaborative approach. There were three scripts being generated in tandem, which meant that there were three separate commentaries going on at any one time. WP6 leader acted as a very important proxy for the technical input required, and WP8 leader was able to provide the important and necessary business value inputs. WP7 coordinated the overall process in terms of providing a proxy between the interests of XIFI (including WP7 training interests) and the external creative production team.

In this case the end product justified the means, and it was agreed that although it was a very demanding process, the collaboration was very effective in providing a better shared understanding between the technologists and the business strategists.

3.5 Conclusions

In summary, we can conclude from the detailed usage statistics presented in this section that currently within the FI-PPP context, there is strong demand for knowledge transfer and training courses targeted at a general level of information relating to FIWARE, and a weaker demand for more detailed component level information.

The FIWARE Ops training material was considerably improved along the course of the project, particularly during Year 2. Given the detailed usage statistics from our analysis of the course content provided in this section, we believe that XIFI has achieved quite a lot but that there is still some work to be done to engage additional developer stakeholders that see the value of the FIWARE Ops offering and who want to actively participate in the future expansion and construction of the FIWARE Lab.

4 REPORT AND ANALYSIS OF THE TRAINING SESSIONS

4.1 Achievements

Task T7.2 "Community Building and Training" addressed the actual delivery of the training material and worked in close collaboration with T7.1 to organise the training events, ensure that the appropriate trainers were available and execute the training.

As planned in the DoW, and already reported in D7.3, WP7 started its activity in September 2013 and the first training event was organized in March 2014.

WP7 organized the following events:

- Six "physical" training sessions (2 session for developers, 2 sessions for infrastructure owners and operators, 1 session for Phase III Accelerator Projects and 1 session for Phase III SMEs and web entrepreneurs);

- Seven webinars (2 internal webinars for the new XIFI nodes, 2 webinars for Infrastructure owners and operators willing to join the Federation and 3 webinars dedicated to researchers and developers);

- Three awareness and training sessions for Public Authorities

In total, 16 training events were organized, more than 200 trainees participated in our sessions and the majority of trainees were satisfied with their participation in the XIFI training programme.

In the following, we report and analyse all the training events organized within XIFI. Some training sessions were already reported and analysed in D7.3 and we do not replicate the content in this deliverable.

4.2 Training Sessions

4.2.1 Physical Training Sessions

The following training sessions were planned in the DoW:

- 4 sessions of basic training;

- 2 sessions of intermediate training;

- 2 sessions of advanced training

Co-located at 4 different dates:

- 1 basic first;

- 1 basic and 1 intermediate;

- 1 basic+1 intermediate+1 advanced and finally

- 1 intermediate + 1 advanced

This schedule was planned at the very beginning of the project, when the actual delivery of training was not yet started. Following the outcomes of our five physical training sessions organised in the first 18 months of the project, we decided to implement a new training strategy at project level and replace our remaining physical sessions with 3 webinars. Given that we needed to adapt our planned sessions to the trainers' availability and to the needs of our community, we decided that virtual environments were more appropriately received than physical events, where most people found it more difficult to travel and spend days at a given location. Replacing our remaining physical events with webinars, allowed us to more broadly engage our community and involve more participants.

In addition, on March 17th, 2015, the XIFI project organised, in collaboration with the Budapest node and the EIT ICT Labs Budapest Associate Partner Group, an additional training session dedicated to developers.

During the XIFI project lifecycle, WP7 organized six physical training sessions as follows:

- 1st Training sessions organized in Berlin (FhG premises): basic training for developers;

- 2nd Training session organized in Madrid (UPM premises): basic training for infrastructure owners and operators;

- 3rd Training session organized in Madrid (UPM premises): intermediate training for infrastructure owners and operators;

- 4th Training session organized in Munich (ECFI-2 premises): basic training for Phase III Accelerator Projects;

- 5th Training session organized in Munich (ECFI-2 premises): basic training for Phase III SMEs Developers.

- 6th Training session organised in Budapest: intermediate training for developers.

4.2.1.1 First Training session "XIFI for Developers"

As already reported in D7.3, the first physical training "*XIFI for Developers*" was organized at Fraunhofer FOKUS's premises, Berlin, on May 15th, 2014 and was dedicated to developers who were interested in using the XIFI Infrastructures and services to run their experiments (e.g. new FI-PPP based services).

In collaboration with WP9, the FhG, TUB and DT teams were involved in this training, we prepared an announcement (please see Appendix A "Training sessions announcements") and we set up an Eventbrite page in order to monitor the number of participants.

8 developers (from a FI PPP Use Case project – FI-STAR, 2 Universities – BTH and Eötvös Loránd University, and 1 Danish company – INSERO Software) participated in this first training session.

The "maître" of this session was Bernd Bochow (FhG) and the trainers were: Bernd Bochow (FhG), Thomas Günther (FhG), Kay Haensge (DT), Matthias Baumgart (DT) and Yahya Al-Hazmi (TUB).

The content of the session and the feedback outcomes have already been analysed in D7.3.

4.2.1.2 Second and Third Training sessions dedicated to infrastructure owners and operators and FIWARE Ops users

As has already been reported in D7.3, the 2nd and 3rd training sessions were organized on UPM's premises (http://www.upm.es) in Madrid, on 24th and 25th of June 2014 respectively. These training sessions were dedicated to infrastructure owners and operators and FIWARE Ops users (mainly infrastructures) who want to either install an instance of FIWARE Lab or become part of a federated offering, powered by FIWARE Ops.

As was done for the training in Berlin, we prepared an announcement (please see Appendix F "Training sessions announcements") and set up an Eventbrite link to advertise these training sessions.

The "maître" of the session was Federico Alvarez (UPM) and the trainers were: Sergio Morant (ILab), Jose Gonzalez (UPM), Attilio Broglio (CNET), Alvaro Alonso (UPM), Joaquin Salvachua (UPM), Javi Cervino (UPM), Alessandro Martellone (CNET), Daniel Nehls (TUB), Luis Miguel Contreras Murillo (TID) and Jorge Valhondo (UPM).

The content of the session and the outcomes of the feedback received were already analysed in D7.3.

4.2.1.3 Fourth and Fifth Training sessions "A guide to FIWARE for beginners": Phase III SMEs Developers and Phase III Accelerator projects Training

The 4th and 5th training sessions were organized alongside the ECFI2 event in Munich on 18th September 2014. More than 100 people attended the two sessions, which were respectively dedicated to SMEs and Accelerator projects. The content of these sessions was planned in collaboration with FIWARE.

As was done for our previous training sessions, we prepared an announcement for both sessions and set up for both sessions an Eventbrite link to collect the registrations. WP7 and WP9 disseminated these sessions via the following channels:

- FI-PPP website;

- FI-PPP Internal mailing list;

- Phase III Accelerator Projects mailing list;

- XIFI external mailing list;

- XIFI "All" mailing list;

- XIFI Social networks and website;

- FIWARE website and social networks.

The 4th training session "*A Guide to FIWARE for beginners: SMEs Developers introductory training session*" was dedicated to SMEs and web entrepreneurs who wanted to use FIWARE Open Ecosystem to run their experimentations and use them to develop highly innovative services and applications and also take advantage of the Phase III Accelerator programme.

This session was a big success: more than 50 people attended it. After an overview of the FIWARE Global offer, focusing on the FIWARE benefits for SMEs, technical details were provided on FIWARE Lab, and on the FIWARE Generic and Specific Enablers available. The session finished with a description of the e-Learning portal and the FIWARE Helpdesk.

Jacques Magen (InterInnov) was the "maître" of the session and the trainers were: Maurizio Cecchi (Telecom Italia), Fernando Lopez (TID) and Uwe Herzog (Eurescom).

The afternoon session dedicated to the Accelerator Projects (called "*A Guide to FIWARE for beginners: Accelerators introductory training session"*) was equally successful with more than 40 participants. The focus was similar as in the morning with in addition an introduction to FIWARE Ops. This session focused on explaining to Phase 3 accelerator projects how to illustrate FIWARE Open Ecosystem to the SMEs and web entrepreneurs.

Jacques Magen (InterInnov) was the "*maître*" of the session and the trainers were: Maurizio Cecchi (Telecom Italia), Fernando Lopez (TID), Uwe Herzog (Eurescom) and Federico Alvarez (UPM).

At the end of the training, we distributed the questionnaires to collect feedback from the trainees. In addition to this, we set up an online questionnaire in order to collect the feedback from the participants who did not have time to complete our questionnaire *in loco*.

The outcomes of these questionnaires are analysed in Section 5, below.

4.2.1.4 Training @ Budapest Node

The Budapest node of FI-PPP XIFI and EIT ICT Labs Budapest Associate Partner Group organised in Budapest, Hungary (Venue: EIT ICT Labs Co-Location Centre, Bogdánfy utca 10/a, H-1117), on March 17th, 2015 the FIWARE Lab Training event dedicated to developers. The training aimed at providing a technical introduction on how the FIWARE Lab platform and the various FIWARE open APIs can foster innovation in various domains of ICT by enabling developers to create and prototype novel Future Internet applications. After the training session, our experts offered a consultation session to discuss how their generic ideas can be solved in a FIWARE-enabled way.

The training session covered the following topics:

- FIWARE and XIFI overview
- FIWARE Lab Cloud Portal
- Context management with Orion Context Broker
- Front-end and mashup development with WireCloud
- Real-time video processing with Kurento
- Event processing and data analytics with CEP and BigData GEs
- Adding Identity Management and Access Control
- Connecting to IoTs
- Open data in FIWARE
- Consultations

We had 24 participants on the event. These were mostly developers from SMEs from Hungary, the Netherlands and Serbia. Some of them were the winners of the CEEDTech and FINISH accelerators. At the end of the training session, we distributed our feedback questionnaires. Unfortunately, due to the fact that the training session finished late in the afternoon, we got back only 9 feedback forms, and we were not able to complete a detailed feedback report.

4.2.1.5 Awareness and Training Sessions for Public Authorities

WP7 organized three awareness and training sessions dedicated to Public Authorities.

As already reported in D7.3, in the first 18 months of the project, 2 awareness and training sessions were organized: the first one was organized to take advantage of the XIFI presence at FIA Athens (18-20/03/2014) and the second one was organized in collaboration with the FIWARE Consortium at the "Smart Product for a Smart Digital Europe" event held in Brussels on June 17th, 2014.

In the second year of the project, the third session for Public Authorities was organised in collaboration with the FIWARE Consortium at the FIWARE booth alongside the Smart City Expo World Congress in Barcelona (19-20/11/2014).

The awareness and training session "What can FIWARE do for your City?" took place on November 19, from 16:00h to 17:30h and on November 20th, from 12:30h to 14:00h and was dedicated to Smart Cities (i.e. representatives from City councils and related agencies-utilities who are involved in the development of Smart Cities who want to find early access to new ideas and advanced technology and reduce costs for development by using FIWARE Open Ecosystem). This session allowed Smart Cities' representatives to:

- Understand the added value that they can get from FIWARE;

- Understand the added value to their innovation ecosystem (including start-ups and SMEs) in particular to access advanced services and reduce development time;

- Find ideas for sharing costs/risks;

- Get access to wider resource pool;

- Get access to wider user group(s);

- And run trials with real users.

The session covered the following topics:

- What does FIWARE bring to Smart Cities?

- Why should Smart Cities invest in smart ICT infrastructures and services?

- How to join the FIWARE open innovation ecosystem - concrete steps to connect your city to the FIWARE Lab

- Testimonies (Demo sessions)

As part of this training awareness session dedicated to Smart Cities, there was also a three-day "*training in pills*" for sharing with the public key concepts to make them understand the FIWARE Lab ecosystem, its usage, its benefits and key resources available. ATOS was responsible for this "training in pills" at the Smart City Expo World Congress in Barcelona, during 18, 19 and 20 November 2014. During this event, our demo about FIWARE Lab-FIWARE Ops in the context of Smart Cities and how XIFI infrastructure can provide benefits to different stakeholders was presented.

The "*training in pills*" targeted a large technical and non-technical audience, namely:
- Commercial and business: those people interested in knowing the offering and find ways of commercial applicability of our services
- Developers: who were interested in using infrastructures and FIWARE Lab, and developing services for infrastructures
- Infrastructure owners: who were interested in joining the infrastructures federation and bringing value providing resources to the GEs and FIWARE Lab.

The audience in the first group was composed mostly of business oriented people, or entrepreneurs, followed by the second group, developers (and no visits from Infrastructure companies). Also, it's important to say that we were approached by many European SMEs that wanted to participate in the PPP through the Open calls that the accelerators projects were publishing, and we had to explain how our offering can be used for commercial purposes. Also, we had some developers, and entrepreneurs, amateurs that develop applications on their own and were keen to learn its potential. Randomly we explained this to some big companies and key EU players' staff.

The goal of this "training in pills" sessions was to teach people and make sure they understand what the FIWARE Lab is and how it can be used in any potential Smart city scenario or in any other scenario (applicable in many aspects of our daily lives).

We presented the key XIFI Demos about FIWARE Ops and FIWARE Lab, specifically what the FIWARE Lab is (detailing what is the cloud portal, store, etc), and also mentioning what are the XIFI multi-region nodes and features, and how these tools can be used to deploy, setup and operate the FIWARE instance. We showed important features like the operational part, the FIWARE Ops (and components like IT box, infographics, monitoring (Naam), security Dashboard and Marketplace).

Also, demonstrating the link between XIFI and FIWARE Lab, making sure that people understand that FIWARE Ops is a part of the FIWARE Lab (and that all is the same platform). Underlining that the FIWARE Ops are the key tools to build and operate any distributed cloud linked to FIWARE Lab.

4.2.2 Webinars

4.2.2.1 Webinars for Infrastructure Owners and Operators

As already reported in D7.3, WP7 organized – in collaboration with WP5 – two webinars dedicated to the new XIFI nodes. The content and the results of these webinars were analysed in D7.3.

In addition to these webinars, WP7 organised two webinars dedicated to external infrastructure owners and operators willing to join the Federation.

These webinars were organised in conjunction with the "Recognition and Reward Programme", which was designed to encourage Infrastructures to join the FIWARE Lab Federation of Infrastructures (for more information please see Section 6).

The first webinar "*FIWARE Lab for Infrastructures*" was organized on October 15th, and it covered the following topics:

- Introduction to FIWARE Lab for Infrastructures
- Architecture and Federated Platform

The trainers were Alessandro Martellone (CNET) and Jorge Valhondo (UPM); Mark Roddy from TSSG moderated the webinar and chaired the Q&A session.

The webinar was advertised via these channels:

- XiPi mail list;
- XIFI website and Social Networks;
- XIFI internal and external mail lists.

10 external infrastructure owners and operators (from Consortium GARR, Nova-Res, ImaginNew, RWTH, Roma Tor Vergata and Bremen Universities, HLRS, Heanet and Ubiwere) participated in this webinar.

The second webinar "How to join the Federation of Infrastructures" was organized on October 30, 2014 and it covered the following topics:

- Introduction;
- Basic infrastructure requirements;
- Legal and administrative clearance;
- Deployment of the infrastructure and registration at the cloud portal

The webinar was advertised via these channels:

- XiPi mail list;
- Participants for our previous webinar;
- XIFI website and Social Networks;
- XIFI internal and external mail lists.

5 people (from Adral, Uni Bremen, Consortium GARR, GIPTA and ImagiNew) took part in this

webinar.

Anastasius Gavras (Eurescom) chaired the session.

An online feedback questionnaire was set up for both webinars to collect the trainees' feedback, which is analysed in Section 5 below.

4.2.2.2 Webinars for Developers

As explained in Section 4.2.1 above, WP7 decided to implement a new strategy and replace the remaining training sessions with 3 webinars.

On the 23rd and 25th of February, WP7 organized two successfully webinars dedicated to researcher/developers.

We started a "webinar advertisement campaign" in order to disseminate these events and involve more participants.

As a first step, an announcement (please see Appendix A), where some basic information and the registration procedure were explained, was created. Then, this announcement was circulated via these channels:

- XiPi mailing list;
- Phase III Accelerator Projects mail list;
- WP7 contacts;
- XIFI internal and external mailing lists;
- XIFI website and social networks;
- FIRE and OpenStack LinkedIn groups.

The first webinar "FIWARE Lab Solution for Managing Resources & Services in Cloud Federation" – an intermediate/advanced webinar dedicated to researchers and developers who wanted to take advantage of the solution-concerned FIWARE Lab tools and components- covered the following topics:

- Introduction to FIWARE Lab;
- FIWARE Lab Solution for Managing Resources & Services in Cloud Federation;
- Q&A session.

Yahya Al-Hazmi (TUB) presented the webinar.

76 people registered to this webinar, and at the end we had 72 participants from:

- Phase III accelerators SMEs;
- Universities;
- Companies;
- Research centres;
- European Infrastructures.

The outcomes of the webinar are analysed in Section 5 below.

The second webinar "XIFI for developers" – a basic/intermediate webinar dedicated to researchers and

developers aiming to develop and deploy to the XIFI federation – covered the following topics:

Using the FIWARE Lab portal

- Getting access, getting started, getting help

- Setting up your tenant

- Working with your tenant

- Exploring the cloud

Using command line tools

- Installing OpenStack client tools

- Managing virtual machine images

- Working with virtual machines

- Working with volumes

Bernd Bochow (FhG) presented this webinar.

70 people registered to this webinar, and at the end we had 54 participants from:

- Phase III accelerators SMEs;

- Universities;

- Companies;

- Research centres;

- European Infrastructures.

The outcomes of the webinar are analysed in Section 5 below.

Following the positive outcomes of the previous webinars and the requests we received from our trainees, on March 3rd, 2015 from 11:00 to 12:00 CET, we organised an additional webinar. This webinar "XIFI SSH" provided a quick introduction to the protocol, clients and setup for accessing FIWARE Lab.

Eamonn Power (WIT) presented this webinar.

In collaboration with WP9, we advertised the webinar via these channels:

- WP7 contacts generated thanks to our previous training sessions;

- XIFI internal and external mailing lists;

- XIFI website and social networks;

- XiPi mailing lists.

13 trainees participated in this webinar.

4.2.3   Handover to FI-CORE

In D7.3 we planned to organise a "handover training" to FI-CORE, where the FI-CORE partners should be trained on the XIFI Components. After an internal discussion with our Technical Management Team, we decided to drop this training and focus on different stakeholders, since the XIFI components' owners are also partners in FI-CORE, so they will train their colleagues afterwards.

Even though it had been agreed that there was no requirement for "handover training" to FI-CORE, there was still a question as to requirements for handover of the Training Portal to the FI-CORE Academy. There was a follow-on discussion with the XIFI partner Engineering, who are also a partner in charge of the portal in FI-CORE. Two questions were asked:

1. Have you reviewed the FIWARE Ops training portal, and have you any modifications/suggestions that you would like us to make before we finish up in March?

2. What do you need from XIFI WP7 to take-up the maintenance/updating of this training portal, once XIFI is finished?

In conclusion it was agreed that:

1. All the contributions from the XIFI project in terms of components adoption (e.g. RSS block) will be passed over to FI-CORE. The customization for the look and feel of the category and the courses will be available to the partners in charge of the communication for the entire FIWARE brand. Since Engineering are in charge of the platform in both projects there is no problems or risks foreseen, and everything related to the platform (as a tool) has been smoothly transferred from one project to the other.
2. Taking into account the contents published Engineering have reviewed this and separated the more promotional contents from the ones closer to the training concept.
3. Regarding the external resources, (videos, slides ...) these have been handed over to the partner in FI-CORE responsible for these.

5 COMMUNITY FEEDBACK

WP7 set up a feedback mechanism, which allowed us to analyse the outcomes of our training events and improve our training strategy.

At the end of each training sessions (physical and webinars), we asked our trainees to fill in a brief questionnaire.

Each feedback questionnaire comprised 3 major parts:

a. In the first part, we asked the trainees to rate the training in general (e.g. the trainers' skills, the interaction trainers/trainees, the training material and equipment etc…);

b. In the second part, we asked the trainees to rate the content of each part of the training;

c. In the third part, we asked the trainees to answer 3 open questions:

   1. Favourite part of the training

   2. Lest favourite part of the training

   3. Suggestions and comments to improve our future sessions.

In order to attract more users and enlarge our Community, after each training session, the link to our training portal was sent to all registered participants, together with the links on where the information was to be found:

How to get involved:

- *Find the training documents, videos and latest StackOverFlow Q&A threads on the [TRAINING PORTAL](#)*

- *Watch XIFI training & Showcase videos on [YouTube](#)*

- *Read XIFI [PUBLICATIONS](#), Stay tuned for [XIFI Blog](#) and find XIFI documents on the [XIFI WIKI](#)*

- *Find Q&A discussions on the [StackOverFlow](#) Forum*

- *FIWARE [help/contact](#) page*

- *Find and Attend [XIFI EVENTS](#)*

- *Follow XIFI on [TWITTER](#)*

- *Join & discuss in the XIFI group on [LINKEDiN](#)*

- *Find us and Subscribe the XIFI Newsletter at: [www.fi-xifi.eu](#)*

- *Contact XIFI: [contact(at)fi-xifi.eu](#)*

In addition to the generic questions asked below, we added the following open questions:

1. Are you aware of the FIWARE Ops Training portal (http://edu.fi-ware.org/course/view.php?id=90)?
- Yes / No
  If Yes: Have you found the material useful or how the Training portal could be improved to better serve you?
2. Are you aware of the Stackoverflow community?
  Yes/No
  The most tagged FIWARE related Q&As:
  [fiware] http://stackoverflow.com/questions/tagged/fiware (rss-feed linked to the FIWARE

Ops Training portal)
[fiware-orion] http://stackoverflow.com/questions/tagged/fiware-orion
[fiware-wirecloud] http://stackoverflow.com/questions/tagged/fiware-wirecloud
[filab] http://stackoverflow.com/questions/tagged/filab

If Yes: Have you found the Stackoverflow community forum useful and how the FIWARE Ops training portal could be improved by help of Stackoverflow community?

3. Can you describe what your interest is in FIWARE Lab and/or FIWARE Ops?
4. Are you interested in using FIWARE Lab and/or FIWARE Ops, and if so can you tell us a little more about this please?

Thanks to these questionnaires, we better evaluated the feedback from our community, the benefits for the XIFI stakeholders, effectiveness of the training and we involved them to our online Training Portal. Additionally in the training portal the collection of the latest FIWARE related Q&A threads of the StackOverFlow was implemented to help the infrastructure owners, developers and users to easier find the latest on-going discussions in the StackOverFlow and link these two forums tighter to each other.

In this section, we analyse the feedback questionnaires we received after each sessions and the benefits for our Community.

5.1 Analysis of the Feedback Reports

Concerning our first training session "XIFI for Developers", which took place in Berlin (May 2014), the 2nd and 3rd training sessions organized in June 2014 in Madrid and the feedback received from the participants of our first two webinars detailed in section 4.2.2, the outcomes of the feedback received were already reported and analysed in D7.3. The feedback received from the participants of these webinars/training sessions was positive, except for the 2nd day of the training organised in Madrid: the trainees required more time for the hands-on sessions.

Thanks to the feedback gathered from these training sessions, we implemented our training strategy and we started to prepare the next training events well in advance, improving the organisation between WP7 and the technical WPs. As a result, the 4th and the 5th training sessions were very well organised and, consequently, a success.

These training sessions were respectively dedicated to Phase III SMEs Developers and Phase III Projects accelerators (ECFI-2, Munich, September 2014), a feedback mechanism was also set up.

Comprehensively, the feedback we received from the trainees who participated in the Phase III SMEs Developers and in the Phase III Accelerator Projects Training sessions was very positive: the majority of trainees rated the training event "good and excellent" and 91% of trainees are interested- or quite interested- in participating in our future training sessions. The skills of the trainers, their professional demeanour and preparation were rated "good and excellent" by the majority of the participants. In addition to that, the Accelerator Projects were also informed about our latest webinars and they invited their ecosystem to participate in our online sessions. The participants were invited to our Training Portal and the material presented, together with the presentations' recording links, was sent to the trainees.

Regarding the training session organised in Budapest on March 17, 2015, we got back just 9 questionnaires/24 participants. For this reason, we were not able to produce a detailed feedback report as we did for the other training sessions. However, the 9 feedback questionnaires we received were positive, and the following parts of the training were appreciated:

- Big Data and networking.
- Meeting other people using FIWARE and exchanging experiences and views.

- The Orion Context Broker, the wirecloud part and the IoT connectivity.
- Kurento demos.

However, the CEP and Bigdata were judged too high level.

In addition to the above, we collected and analysed the feedback report from the trainees who participated in our 5 webinars dedicated to external infrastructure owners and operators, researchers, developers, Phase III developers.

Regarding the two webinars dedicated to infrastructure owners and operators held in October 2014 (*FIWARE Lab for Infrastructure* and *How to join the Federation of Infrastructures*), the feedback received was also positive. The trainees appreciated the content explained and the trainers' professional skills. The process and the requirements to join the Federation were detailed and carefully explained during these webinars and all the information needed to apply were explained. After these webinars, a follow-up procedure was put in place and the participants were informed about the Recognition and Reward Programme, in order to attract them to our Federation.

The feedback received from the trainees who participated in the webinars held in February (*FIWARE Lab Solution for Managing Resources & Services in Cloud Federation* and *XIFI for Developers*) was very positive: the content of both webinars was judged very useful and interesting for developers who want to experiment within FIWARE technology. The trainees were invited to visit our Training Portal, download our courses, to participate in the Stackoverflow Community and contact us should they require further information.

After these webinars, we started the advertisement of the "XIFI SSH". The places for this webinar were limited to 20 participants due to our GTM license and in total we had 13 participants. During the webinar, an interactive discussion on the following topics was put in place:

- How do you know the username to log into a given image?
- Can we download the images to try locally on VirtualBox for example?

The trainer referenced the previous webinars and pointed everyone toward http://edu.fiware.org for reference information.

Comprehensively the participants were satisfied with the results.

5.2 Benefits for the XIFI Stakeholders

Each training session organised, was dedicated to a specific stakeholder group(s) and the content was carefully prepared following their specific needs and requirements.

The training was in line with our Community Building strategy and the feedback gathered helped us to better engage our Community and improve our training events.

From a stakeholders' point of view, the participation to our training provided a range of benefits:

- Our Community was allowed to choose between several events (physical sessions, webinars, and training "in pills", etc…), different levels of training (basic, intermediate, and advanced). This approach provided our Community with a catalogue of events in line with their level of knowledge;

- Our Community benefited from a high level training course given by professional trainers. For each question and doubt that they had before, during and after the training, they received a prompt feedback from our Technical Team;

- Our Community was fully aware of our Training Portal, forum and tools used by our technical team, such as Stackoverflow tools and the OpenStack forum. They could easily ask questions and follow the major topics related to FIWARE, FIWARE Lab/Ops and the XIFI project;

- We provided the people who registered to our sessions, but who in the end could not

participate, with the presentations given and the recorded version of the session;

- Our Community was trained on the major FIWARE/FIWARE Lab/FIWARE Ops related topics.

Thanks to our training sessions, the following stakeholder categories were able to:

Developers/Phase III SMEs developers: understand the FIWARE Open Ecosystem, understand how to utilise the FIWARE portal for creating, managing and deploying services to the federation, running their experimentations and use them to develop highly innovative services and applications; understand how to take advantage of the solution-concerned with FIWARE Lab management tools and components;

Infrastructure owners and operators: understand how to use their ICT Infrastructure for Future Internet experimentation and how to become a part of the European Future Internet Programme. Our training sessions explained how to offer, powered by FIWARE Ops, the FI-PPP technologies (Enablers) to 3rd parties and join the infrastructure federation and therefore FIWARE LAB;

Phase III Accelerator Projects: understand how to illustrate FIWARE Open Ecosystem to the SMEs and web entrepreneurs;

Public Authorities, sponsor and/or investors: understand the added value that they can get from FIWARE, understand the added value to their innovation ecosystem (including start-ups and SMEs) in particular to access advanced services and reduce development time; find ideas for sharing costs/risks; get access to wider resource pool; get access to wider user group(s); run trials with real users.

6 REPORT AND ANALYSIS OF THE FIWARE LAB RECOGNITION & REWARD PROGRAMME

6.1 Objectives of the Programme

The FIWARE Lab Recognition & Reward Programme has been launched to support the achievement of the following objectives:

- Recognise and validate the quality of existing nodes within the FIWARE Lab infrastructure federation.

- Strengthen the sustainability of FIWARE Lab nodes and of the infrastructure federation.

- Encourage further infrastructure nodes to join the FIWARE Lab federation.

- Advertise the benefits of the FIWARE Lab infrastructure federation towards users.

- Encourage further use of the FIWARE Lab infrastructure.

- Achieve at least 10 successful applications, including at least one Gold award and one node not funded under XIFI.

Through these objectives, the programme has supported the general communication, dissemination and exploitation goals of the XIFI project.

6.2 Award levels and Selection Criteria

6.2.1 Award levels

The Recognition & Reward Programme has three levels of accreditation:

Bronze

This level required engagement and basic integration in the federation. A FIWARE Lab training should have been completed and the processes understood.

Silver

Beyond the Bronze level, Silver required full integration in the

infrastructure federation and the offering of a similar service level as the other infrastructures nodes. In addition, a sustainability plan for continued operation in FIWARE Lab is needed.

Gold

Beyond the Silver level, Gold required the facilitation of the use of the federation by local users and developers, the engagement in the local ecosystem in the creation of FIWARE showcases, and offering of additional infrastructure capacities beyond cloud hosting.

Federated infrastructure nodes which fulfilled the requirements for any of the labels were eligible for the following rewards:

- The right to use the achieved FIWARE Lab label (Gold, Silver, or Bronze) on the node website and any other online and offline publications.

- A certificate in recognition of the achieved level (Gold, Silver, or Bronze).

- A monetary reward of €500 for reaching each level for nodes not already funded by XIFI:

  - Bronze – €500

  - Silver – an additional €500

  - Gold – an additional €500

These three award levels reflect the different stages of commitment and service level, which the infrastructure nodes have. They are meant as both documentation and motivation for the nodes as well as reassurance and encouragement for node users.

6.2.2 Selection Criteria

In order to guarantee a transparent and fair award process in the Recognition & Reward Programme and ensure a high quality of awarded nodes, XIFI defined measurable selection criteria for FIWARE Lab nodes.

6.2.2.1 Minimal requirements for all award levels

For all three-award levels, the nodes applying had to fulfil the following minimal requirements:

Connectivity requirements

The connectivity capacity is used for two aims: connect to the backbone of XIFI federated cloud to support node management operations, and provide connectivity to deployed services for end users.

- 1 Gbps GEANT connectivity for the backbone

  - Backbone will be implemented in IPv6

- 100 Mbps Internet connectivity for end-users

  - Service to end-users will be provided in dual stack IPv4 / IPv6

- SEC Firewall

Data Center requirements

The data center capacity will be used for deploying FIWARE platform and GEs and the XIFI services that will allow connectivity to the federation. To this aim, data centers are required to be able to host an OpenStack installation, or to have it already available. The basic required software stack is the one described in FIWARE documentation for DCRM installation additional services will be provided by XIFI for network and data center monitoring. Such services in general terms will leverage on top of

existing monitoring tools provided by the data center.

The following resources should be dedicated to FIWARE Lab for the hosting of GEs and SEs:

- At least 100 CPU cores
  - Core types: Intel VT-x or AMD AMD-v
- RAM 2 GB x Core
- HD 20 GB x Core

6.2.2.2   Specific criteria per award level

For the three award levels, XIFI defined transparent selection criteria, against which every application was checked:

Bronze

☐ Successfully attended at least one training

☐ Complies with minimum capacity requirements (see section 6.2.2.1)

☐ Completed Federation into FIWARE Lab

☐ Registration at federation portal completed

Silver

☐ Fulfils Bronze

☐ Provides Help Desk for the node

☐ Provides dedicated resources to FIWARE Lab

☐ Presented a viable sustainability plan beyond FI-PPP (in order to facilitate the preparation of such a plan, we provided a sustainability plan template for guidance)

Gold

☐ Fulfils Silver

☐ Facilitates the use of the federation by local users and developers

☐ Engaged the local ecosystem in the creation of FIWARE showcases

☐ Offers additional infrastructure capacities beyond cloud hosting

☐ Commits to long-term operations within FIWARE Lab at least until the end of FI-PPP

6.3   Implementation

The implementation of the programme included three major elements:

- The promotion of the programme towards potential applications, i.e. all FIWARE Lab nodes.
- The definition and launch of a simple and transparent application procedure, and
- An effective management and verification of applications

6.3.1 Promotion

After several months of preparation, the official launch of the FIWARE Lab Recognition and Reward Programme took place in November 2014. At the same time, a combination of communication and dissemination measures were implemented, in order to raise awareness for the programme among node operators and motivate them to apply.

The central reference point has been the FIWARE Lab Recognition and Reward Programme section on the XIFI website at https://www.fi-xifi.eu/federation/recognition-reward-programme.html which contains comprehensive information about the

programme as well as the application form for download and contact details for submitting the application or asking questions.

Figure 26: Recognition and Reward Programme on the XIFI web

Through news releases on the XIFI website and individual mailings to node operators we ensured that by December 2014 every FIWARE Lab node operator had heard about the programme and the opportunities it provided.

6.3.2 Application Procedure

In order to facilitate a high level of applications, we defined a simple application process, which at the same time complied with the requirements for fairness and transparency.

To participate in the FIWARE Lab Recognition and Reward Programme, applicants had to fill out an application form and send the completed and signed form to the XIFI Federation Office at contact@fi-xifi.eu, together with any supporting material, like, e.g., a sustainability plan for node operations.

6.3.3 Application management and verification

The applications were managed by the XIFI Federation Office at Eurescom. The Federation Office processed all applications and served as the central contact point for questions on the programme.

Figure 27: Recognition & Reward Programme verification form

The verification was done by a team consisting of Giulia Pastor (InterInnov), Silvio Cretti (Create-Net), and Milon Gupta (Eurescom).

The verification was done via a verification form (Figure 27), which followed the selection criteria for

the three award levels. If discrepancies were found between the statements in the application form and the status as perceived by the verification team, applicants had the chance to respond and, where necessary and possible, address the points raised. After conclusion of the verification process, which usually only took a few days, the Federation Office contacted the applicants to inform them about the result. At the same time, new award recipients were added to the Recognition and Reward Programme web pages and they received the labels in a standard image format in order to be displayed on the node website.

6.4   Results

6.4.1   Applications

By 27 March 2015, we had received 13 applications.

#	Node	Country	R&R application status	Label
1	iMinds	Belgium	application submitted 03/2015; verification done	Gold
2	Neuropublic	Greece	application submitted 03/2015; evaluation done	Gold
3	PSNC	Poland	application submitted 03/2015; evaluation done	Gold
4	UPRC	Greece	application submitted 03/2015; verification done	Gold
5	UTH, NITOS	Greece	application submitted 02/2015; verification done	Gold
6	WIGNER	Hungary	application submitted 03/2015; verification done	Gold
7	BTH	Sweden	application submitted 03/2015; verification done	Silver
8	CESNET	Czech Republ	application submitted 1/2015; evaluation done	Silver
9	TSI-TUC, Crete-Nod	Greece	application submitted 03/2015; verification done	Silver
10	ACREO Swedish ICT	Sweden	application submitted 12/2014; verification done	Bronze
11	ImaginLab, Brittany	France	application submitted 11/2014; verification done	Bronze
12	Waterford	Ireland	application submitted 12/2014; verification done	Bronze
13	Zurich University of Applied Sciences (ZHAW)	Switzerland	application submitted 02/2015; verification done	Bronze
14	Berlin	Germany	not applied	none
15	Com4Innov	France	not applied	none
16	Sevilla/Malaga	Spain	not applied	none
17	Trento	Italy	not applied	none

Table 8: Recognition and Reward Programme applications

6.4.2 Awards

Out of the 13 applications, the following awards were achieved:

Gold label (6 awards)

- iMinds VZW, Belgium
- Neuropublic A.E., Greece
- NITOS, Greece
- Poznan Supercomputing and Networking Center (PSNC), Poland
- Wigner Research Centre for Physics, Hungary
- University of Piraeus Research Center (UPRC), Greece

Silver label (3 awards)

- Blekinge Institute of Technology (BTH), Sweden
- CESNET, Czech Republic
- TSI-TUC (Crete Node), Greece [not funded under XIFI]

Bronze label (4 awards)

- ACREO Swedish ICT, Sweden
- ImaginLab – Lannion, France
- Waterford, Ireland
- Zurich University of Applied Sciences (ZHAW), Switzerland

6.4.3 Evaluation of Results

As a key performance indicator we had set ourselves to achieve at least 10 successful applications, including at least one Gold award and one node not funded under XIFI. With 13 applications, 6 Gold awards, and one successful application by a node not funded under XIFI, this goal has been significantly exceeded. The results confirm that the programme has been attractive for the majority of node operators, who perceived a significant value in applying and receiving an award. The value for a node operator consists particularly in the validation of the node's quality and the potential use of the label for marketing and promotion of its use. The programme also seems to have had a motivating effect in same cases for the elaboration of detailed sustainability plans. Thus, the programme has been both validating and further stimulating the quality and sustainability of the nodes.

7 TRAINING AND KNOWLEDGE TRANSFER ACHIEVEMENTS: ANALYSIS OF THE PERFORMANCE AGAINST THE STATED OBJECTIVES

7.1 Introduction to Work Package Achievements

The main aim of WP7 was to educate, inform and train the stakeholders groups in how to use and interact with the XIFI Federation effectively, whilst understanding the varying needs, interests and abilities of each stakeholder group.

To achieve this aim the work package was organised into two tasks:

- T7.1: Training Strategy and Materials
- T7.2: Community Building and Training

In the Description of Work each of these tasks had their own list of objectives that informed their part to play in achieving the overall work package aim, as identified above.

For T7.1 these objectives were:

- Define the training strategy
- Develop the training materials
- Launch a Recognition and Reward Programme

For T7.2 these objectives were:

- Create an online community
- Organise training events

The achievements against these objectives will be discussed in more detail in the remaining sections.

7.2 Analysis of Task 7.1 Achievements

To achieve the three high-level T7.1 objectives as described in the previous section, the task began by setting out the work package strategy, as defined in the deliverable D7.2 "XIFI Training Strategy and Material". To summarise, this overall WP7 strategy included the following:

- Development of a training programme, tailored towards the stakeholder groups
- Creation and support for a sustainable stakeholder community
- Building of an online Training Portal
- Launch of a Recognition and Rewards Programme for new nodes

Having defined and agreed the above strategy the T7.1 task began to work very closely with the technical work packages towards developing training material that would be tailor-made for the targeted stakeholders. In tandem with the knowledge acquisition, pertaining to the deployment of the federated infrastructures by the technical work packages, this training material also evolved throughout the project lifecycle.

The training material was presented by the XIFI technical component experts at a series of knowledge-transfer workshops that were organised to specifically target the following stakeholder communities:

- The Developer Community
- The Infrastructure Operator and Owner Community
- The FIWARE Accelerator Community

It was recognised that each of these communities had differing knowledge-transfer needs, and so it

was vital to tailor the workshops to satisfy these needs.

Slide-sets Training Material achievements:

- 24 slide-sets were produced and incorporated into the Training Portal as course material

The XIFI project introduced a number of additional nodes into the project and these new nodes formed part of both the Developer Community and the Infrastructure Operator and Owner Community. They provided informed feedback to WP7, in terms of how effective the workshops had been in their knowledge transfer aims, and how this could be improved. As new nodes their goal was to join the federation, and this activity was coordinated by WP5. WP7 liaised extensively with WP5 team and although their technical needs were being coordinated through WP5, it was identified that WP7 could assist by organising a series of targeted and supplemental online webinars.

From these workshops and webinars emerged training assets by way of delivered presentation content. All of this presentation content was used to create on-demand knowledge-transfer material for the FIWARE Ops Training Portal. In addition, two of the workshops were video recorded and all of the webinars were recorded, and this material was edited and uploaded to the Portal.

Workshop and Webinar Multi-media Training Material achievements:

- 14 presentation videos were produced and incorporated into the Training Portal as course material
- 5 webinars were produced and incorporated into the Training Portal as course material

Separately, WP7 worked with the XIFI Federation Office in launching the Recognition & Reward Programme. The idea behind this programme was to encourage new nodes to join the federation and in recognition of this achievement to present them with a reward.

Recognition & Reward Programme achievements:

- 13 Infrastructures nodes applied, and 6 of them achieved the Gold label

In addition, WP7 collaborated with an external video production company to release four professionally produced knowledge-transfer videos. The first of these was a video on XIFI's Core Concepts, and this video was released to the XIFI YouTube TV channel back in May 2014.

Core Concepts video achievements:

- YouTube viewing figures since May 2014 release was 820
- YouTube minutes watched since May 2014 release was 1919

Finally, WP7 engaged with WP6 with the aim of creating knowledge-transfer videos from the abstracted Use Cases from WP6. This aim was achieved in close cooperation between WP6, WP7 & WP8, and three professionally produced Showcase videos were released to the XIFI YouTube TV channel and the Training Portal in February 2015.

Showcase video achievements:

- Combined YouTube viewing figures after one month release was 392
- Combined YouTube minutes watched after one month release was 768

7.3   Analysis of Task 7.2 Achievements

The main achievements of Task 7.2 are:

Organisation of 7 physical training sessions

6 physical training sessions were organised (5 basic, 1 intermediate). As explained in Section 4, WP7 modified its strategy in order to reach more stakeholders and better engage our Community.

Organisation of 3-5 webinars

WP7 organised 7 webinars as detailed in Section 4:

- 2 webinars for XIFI new nodes (intermediate/advanced level)
- 2 webinars for XIFI external infrastructures (basic level)
- 3 webinars for developers (intermediate/advanced level)

Organisation of 3-5 awareness and training sessions for Public Authorities

3 Awareness and training sessions for Public Authorities were organised.

Build a Community and set up a feedback mechanism

In total, more than 250 people signed up to our training programme and more than 200 attended our training events. Some trainees participated in at least 2 different events. In general, our Community was satisfied with our training programme and very interested in the technology offered. All the training material was stored in the Training Portal and our Community was continually informed about the material and courses available. In addition to the above, our Community was invited to participate to the Stakehoverflow Community and OpenStack forum. Our technical and WP7 teams were available to help our participants before, during and after the training. A feedback mechanism was put in place at the beginning of the project and improved during the project's lifetime.

7.4   Conclusions

A considerable amount of work has been performed in T7.1 and T7.2 to achieve the objectives stated in the DoW and be able to address unforeseen needs that emerged at project run-time and with the overall FI-PPP framework evolution. We can conclude that WP7 achieved its objectives. In addition, WP7 identified some lessons learnt, thanks also to its feedback mechanism, as detailed in Section 8 "recommendations and lessons learnt" here below.

8 RECOMMENDATIONS AND LESSONS LEARNT

8.1   Lessons Learnt

COMMUNITY BUILDING AND TARGET STAKEHOLDERS

The XIFI's main stakeholder group has been the Infrastructure owners and operators and their related Developers. Application Developers and Accelerator Programme participants have become the other key target stakeholders during year 2 of the project although the direct relationship has been and will be taken care of mostly by the Phase 3 Accelerators and the FI-CORE project.

Although there were some technical challenges and delays with respect to the original plan in the federation set-up, the Infrastructure owners and operators were able to create a value proposition during year 2 at the heart of the federated architecture. During year 1 there was a knock-on effect for community engagement and knowledge transfer but on the other hand when the value proposition was matured, so did the level of engagement within this community.

Interest levels from the Developers community grew progressively, in line with the start of Phase 3 when the SMEs, start-ups and web entrepreneurs were directly involved with the Accelerator Programme. We engaged them in training rounds at that stage, increasing their level of engagement together with the more mature value proposition that was produced in year 2 of the project. As a consequence, the Accelerator Programme stakeholders have become one of the XIFI's most engaged community during the 2nd year of XIFI the project.

TRAINING MATERIAL AND TRAINING PORTAL

The review team provided feedback about the value of the training material and the training portal. The work package analysed the feedback and concluded that in hindsight more could have been performed, in terms of hands-on example material. WP7 put in place some correctives actions: for example, the showcase videos were added to the training portal and widely publicised and the StackOverFlow cross-links were added to the training portal.

Given the usage statistics from our analysis of the course content, the work package has learnt that more work is to be done with earlier stakeholder engagement, particularly those developer stakeholders that see the value of the FIWARE Ops offering and who want to actively participate in the future expansion and construction of the FIWARE Lab. This is in-line with the above mentioned Developer Community issue i.e. the Apps developers should be brought on board as soon as possible, even though they were indirect target stakeholders for the XIFI project (via FI-WARE and Phase 3 accelerator projects).

TRAINING SESSIONS

There are a number of key lessons we learnt from the training sessions.

The first of these was to ensure that all of the presentations were video recorded by professionals. The Berlin presentations were not professionally recorded and this was a lesson that was quickly learnt for future training sessions. The review team questioned the training value of these video recordings but the fact remains that they do present value and as such are to be recommended for the future.

The second lesson learnt was that the feedback received from training sessions for infrastructure owners and operators needed to have well organised hands-on lessons. This was a justified criticism for the second day of the Infrastructure Owners and Operators workshop, where the feedback was quite negative in this regard. To respond to this negative point, we organised 2 additional webinars, which proved to be more satisfactory to the trainees, as explained in D7.3.

The third lesson was one which only came up at the very last webinar, when one of the participants thanked us for organising the event but wanted more of them. This, as already stated, shows that efficient training could start only with the alignment between the start of Phase 3 and the maturity of the training material from XIFI.

Despite the initial challenges, 16 training events were successfully organized, more than 200 trainees participated in our sessions and the majority of trainees were satisfied with their participation in the XIFI training programme.

RECOGNITION AND REWARD PROGRAMME

As a key performance indicator we had set ourselves to achieve at least 10 successful applications, including at least one Gold award and one node not funded under XIFI. XIFI has achieved this goal. It confirms that the programme has been attractive for the majority of node operators and that they perceived a significant value in going through the procedure.

The work package has learnt that the Programme needs to have real value if it is to be picked up by the existing nodes. It took a while to learn what that value actually was, and in the end we realised that the value of the R&R accreditation label was for the accredited to advertise their value to the community outside of XIFI, and in particular the Phase 3 Accelerators who might want to use the nodes for their own prototype experimental deployments.

There were also some internal discussions about the monetary value on offer from the reward, as an enticement and inducement mechanism for external Infrastructure Owners and Operators. In the end there was only one external infrastructure who applied and was granted an award, and that was for a Silver accreditation. In the end we decided to split the overall monetary reward on offer; another option would have been to give the full amount on offer to one external Infrastructure Owner/Operator, and define an open and upfront mechanism to do so.

One of the arguments against the award process was that it might be perceived as diminishing the value proposition and that Infrastructure Owners and Operators should see value and therefore want to join the federation. This might be true if the federation was a fully functioning commercial offering, and only time will tell on the validity of this argument.

Overall though, the R&R was seen as a positive contribution to XIFI.

8.2 Recommendations for Future Activities/Evolution

The work package has identified the following recommendations:

1. In the context of Training and Knowledge Transfer the Community Building is a key aspect. Community engagement needs to start early in the project lifecycle, which is difficult as the project is typically, in such a phase, still trying to assess and analyse its priorities. To be able to engage effectively the indirect stakeholders (e.g. Apps. Developers, SMEs) the related projects should also start early enough in close collaboration.

2. The creation of the training material needs to collaboratively involve technical and business domain project partners, which is sometimes difficult for the different focus. The co-production of the training videos was a key mechanism in overcoming some of these difficulties and is to be recommended for future activities.

3. The project recommends the creation of training material from video recordings of workshop presentations.

4. More hands-on webinars would be recommended.

5. It took a while to create the linkage between the Stack Overflow Q&A forum and the training portal and it is still to be seen what value this has created. However, it is recommended that

such linkages are pursued and further developed in future.

6. As discussed in the "TRAINING SESSIONS" subsection above: Based on the feedback we received from the Madrid training event held in June 2014 we recommend for future physical training events that detailed coordination needs to go into the hands-on aspect of the workshops, with dry-runs being an important consideration.

7. Although the R&R was seen as beneficial and worthwhile, a recommendation for the future would be to create more appealing rewards, as was commented on in the previous subsection "RECOGNITION AND REWARDS PROGRAMME".

9 CONCLUSION

A considerable amount of work has been performed within WP7 in trying to achieve all the objectives stated in the DoW, but also in adapting the course of action in line with the development of the work, the overall FI-PPP context evolution and the feedback provided along the way by the Project Officer and the Project reviewers.

Six physical training sessions, 3 awareness and training for Public Authorities and 7 webinars have been successfully organised.

Community Building activities with our key stakeholders were implemented and at the end of the project we had more than 200 trainees who participated in our training events.

Thanks to the intensive work performed in Y2, our number of trainees increased (from 10-15 participants in our first webinars to 60-70 participants in our final webinars), the quality of the training material was improved (we delivered 3 additional training videos realised in collaboration with WP6 and WP8) and we had 13 successful applications in the Recognition and Reward Programme, including one Gold award and one application from a node not funded under XIFI.

Moreover, as explained in Section 8, the work package identified some specific recommendations for future activities and lessons learnt, which will be transferred to the XIFI partners, which are also part of the FI-CORE consortium to guarantee continuity of the efforts.

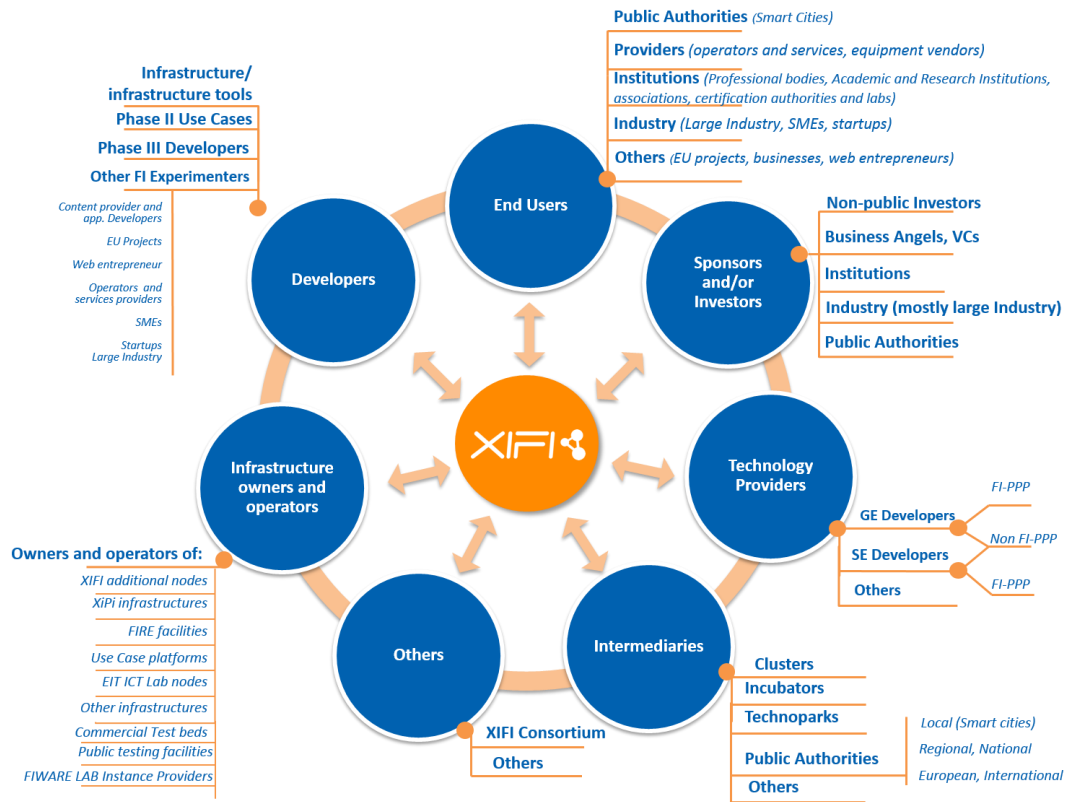# Appendix A – The Updated Stakeholder Picture

Figure 28: Stakeholders

Appendix B - Helpdesk / JIRA Statistics

Related stakeholders:
- Infrastructure owners and operators
- Infrastructure and Infrastructure tools developers
- Application (Apps) developers

An important community of XIFI is the community of Developers that build their applications on top of the XIFI federation of nodes in FIWARE Lab. This is actually the most important user community for XIFI – although seen more active after the XIFI - as these are the users of the ultimate result or "product" of the XIFI project.

An analysis has been done in order to identify the size and some characteristics of this developer community. We are lacking details of FIWARE Lab users in general because only the FI-PPP Phase 3 Accelerator and Use-case projects have access to the user data (the Application Developers are indirect stakeholder to the XIFI), the analysis was based on those developers who contacted the FIWARE Lab Level-1 helpdesk which is staffed also with experts from XIFI. The source data for the analysis was taken from the JIRA ticketing system that is used in the FIWARE-Lab. The analysis was done with all data - i.e. developer requests – sent from September 2014 onwards. This is the point in time when the XIFI federation became extended with the new nodes selected in the XIFI Open Call.

Below the Figure 29 shows the number of unique requests received per month between 09/2014 – 01/2015:
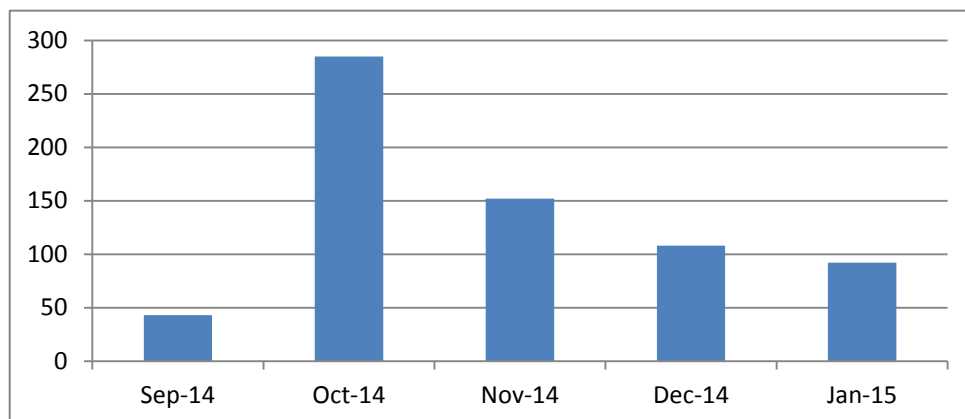

Figure 29: Number of support requests received / Jira tickets created

In total, 680 requests have been received in the period 01/09/14 – 31/01/15 which is between 2 and 12 tickets per day on average. The chart shows that the number of tickets had a peak in October which is likely caused by FIWARE events and activities towards the developer community (ECFI-2, training events).

A deeper analysis in Figure 30 shows how many unique developers have actually sent support requests i.e. filtering out the second, third or further request from each unique developer.
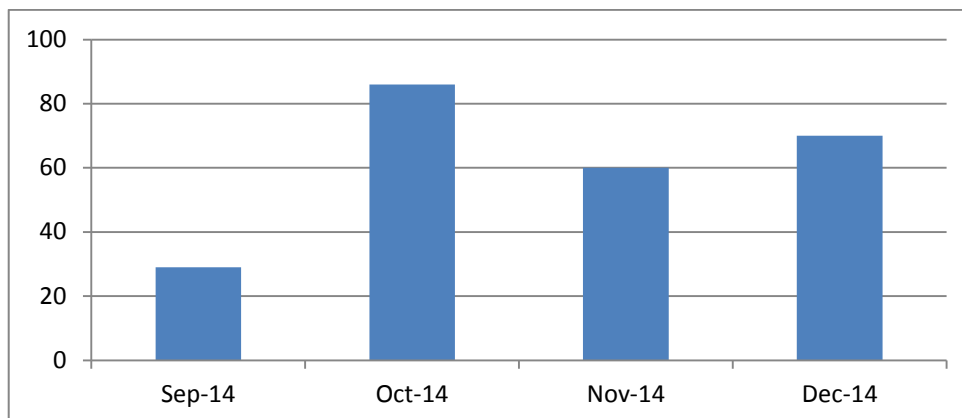
Figure 30: Number of unique developers that have sent support requests

The chart in the Figure 30 shows that the number of developers is basically increasing since September. There is still a peak in October but it is much less compared to Figure 29. Therefore the conclusion is that the size of the community is growing (Figure 30; cf.

	End of year 1	End of year 2
XIFI LinkedIn members	76	161
Additional LinkedIn groups addressed	4	11
Additional LinkedIn members addressed	5 000	> 500 000
XIFI News/Newsletter database	206	475
R & R programme - Gold	0	6
R & R programme - Silver	0	3
R & R programme - Bronze	0	5
XiPi mailing list: Infrastructure owners/operators globally	230	242
XIFI Partners	23	38
FIWARE Lab nodes in the federation	5	19
FIWARE Lab users/developers	1 591	8138
Participants to F2F training events	0	160
Participants to training webinars	0	171
[fiware], [filab] and [fiware-orion] tagged Q&A threads in the Stack OverFlow	0	269
Training portal visitors	34	1 432

Table 2), and that developers getting more experienced in the use of the FIWARE Lab and thus need less support (Figure 29).

The total number of unique developers that contacted the helpdesk from September to December 2014 was 206. The geographic distribution of the requests is depicted in the Figure 31. Overall, developers were identified from 16 countries: the largest group is in Spain (39%), followed by Italy (13%) and Germany (10%).
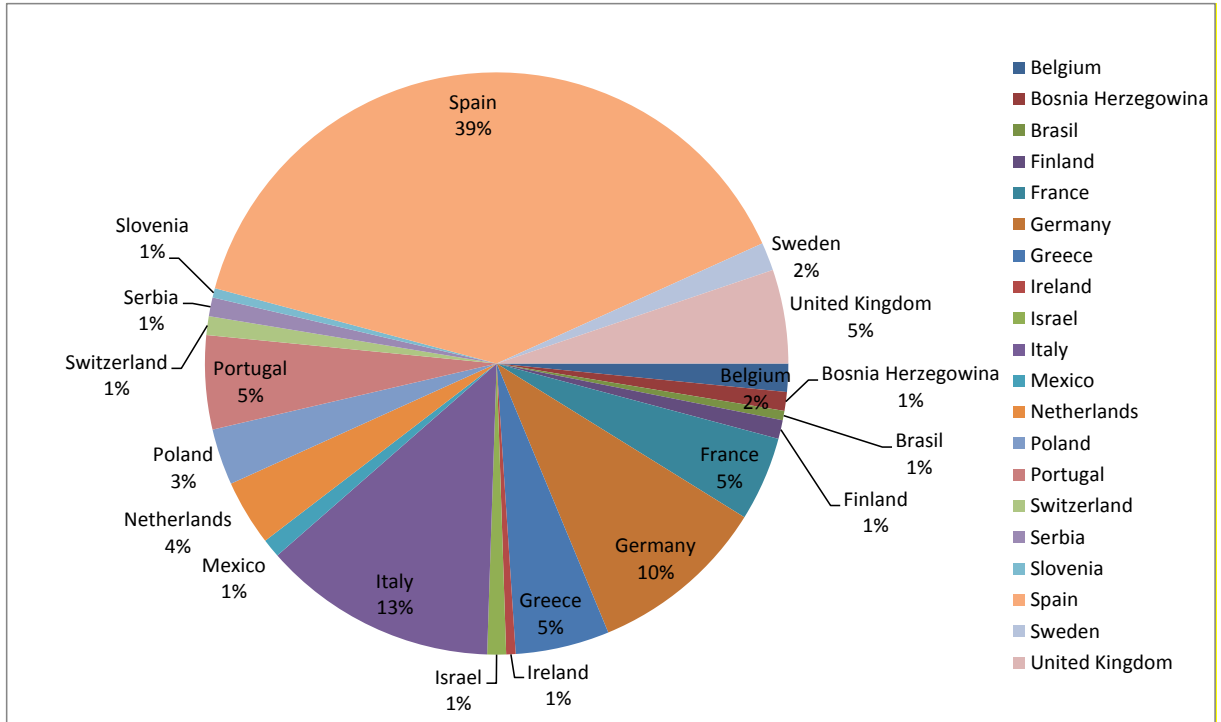
Figure 31: Geographic distribution of FIWARE-Lab users

Appendix C – The LinkedIn Group Profiles

EIT ICT Labs LinkedIn – community reached: EIT ICT Labs testbeds 943 members

This is an EIT ICT Labs group to foster collaboration among EIT ICT Labs partners. You may announce a new activity you are starting, share information on your latest readings, ask for partner invitations in your latest EU or other projects, or just write something that is relevant to EIT ICT Labs partners.

FI-WARE LinkedIn Group - FI-WARE general 707 members

FIWARE is an innovative, open cloud-based infrastructure for cost-effective creation and delivery of Future Internet applications and services, at a scale not seen before. FIWARE API specifications are public and royalty-free, driven by the development of an open source reference implementation which accelerates the availability of commercial products and services based on FIWARE technologies.

Creation of a sustainable innovation ecosystem around FIWARE is materialized through FI-Lab, a working instance of FIWARE enabling free experimentation with the technology. FI-Lab is a place where application sponsors (application customers, public administrations, investors) and application developers and web entrepreneurs (individuals, SMEs and other companies) can meet each other. A genuine meeting point for innovation on the Internet.

FIRE LinkedIn – FIRE testbeds 482 members

The FIRE (Future Internet Research and Experimentation) Initiative was launched at the beginning of 2007 as part of Framework Programme 7 (FP7). It builds on the "Situated and Autonomic Communications" Initiative and other internet-related projects funded under the Future and Emerging Technologies (FET) Programme, as well as on several projects launched as Research Networking Testbeds already operating under FP6.

FIRE has two related dimensions: on the one hand, promoting experimentally-driven long-term, visionary research on new paradigms and networking concepts and architectures for the future internet; and on the other hand, building large-scale experimentation facilities to support both medium- and long- term research on networks and services by gradually federating existing and new testbeds for emerging or future internet technologies.

FI-PPP LinkedIn – FI-PPP projects/general 407 members

The Future Internet Public-Private Partnership (FI-PPP) is a European programme for Internet-enabled innovation. The FI-PPP will accelerate the development and adoption of Future Internet technologies in Europe, advance the European market for smart infrastructures, and increase the effectiveness of business processes through the Internet.

The FI-PPP programme runs from 2011 to 2016 is driven by the vision of a sustainable economy and an inclusive society in Europe and is helping to achieve the EU goals of the Innovation Union.

Open Stack LinkedIn – Open Stack developers 30,758 members

What the software does: The goal of OpenStack is to allow any organization to create and offer cloud computing capabilities using open source software running on standard hardware. OpenStack Compute is software for automatically creating and managing large groups of virtual private servers. OpenStack Storage is software for creating redundant, scalable object storage using clusters of commodity servers to store terabytes or even petabytes of data.

Why open matters: All of the code for OpenStack is freely available under the Apache 2.0 license. Anyone can run it, build on it, or submit changes back to the project. We strongly believe that an open development model is the only way to foster badly-needed cloud standards, remove the fear of proprietary lock-in for cloud customers, and create a large ecosystem that spans cloud providers.

Who it's for: Institutions and service providers with physical hardware that they'd like to use for large-

scale cloud deployments. (Additionally, companies who have specific requirements that prevent them from running in a public cloud.)

How it's being used today: Organizations like Rackspace Hosting and NASA are using OpenStack technologies to manage tens of thousands of compute instances and petabytes of storage.

Timeline: Openstack was announced July 19th, 2010. While many components of OpenStack have been used in production for years, we are in the very early stages of our efforts to offer these technologies broadly as open source software. Early code is now available on LaunchPad, with an inital release for OpenStack Storage expected in mid-September and an initial release for OpenStack Compute expected in mid-October.

Open Source LinkedIn - Open Source developers 122,474 members

This group is for all the Software professionals who are working on Open Source Technologies like - Drupal, Joomla, PHP, Linux, Apache, MySQL, Perl, Ruby on Rails, X-Cart, iDevAffiliate, Redaxo etc.

Living Labs LinkedIn – Living Labs, Smart Cities, End Users, SMEs, Public authorities 2,946 members

A Living Lab is about experimentation and co-creation with real users in real life environments, where users together with researchers, firms and public institutions look together for new solutions, new products, new services or new business models.

But also Living Labs are about societal involvement, about promoting innovation in a societal basis, involving academia, SMEs, public institutions and large companies in an Open Innovation process that because happens in real environments has an immediate impact. This is how Living Labs aim to contribute to a new Innovation System where users and citizens become active actors and not only passive receivers.

The European Network of Living Labs (ENoLL) is a bottom up grown organization coming from the European Living Labs, the E.U., national and regional governments, academia and leading companies + SMEs, providing networking and a global context to its members.

On Startups - The Community For Entrepreneurs 448,222 members

The largest entrepreneurial startup group on LinkedIn with close to 400,000 members.

Discuss marketing, sales, financing, operations, hiring and any other startup or small business related topic.

EBN - European Business & Innovation Centres (BIC) Network 1,191 members

EBN is the leading non-governmental pan-European network bringing together 200+ Business & Innovation Centres (BICs), and similar organisations such as incubators, innovation and entrepreneurship centres across the enlarged Europe.

"Q-Light" is the first e-Magazine of EBN dedicated to quality and innovation issues.

Q-Light is aimed at stimulating discussions among the members and other innovation practitioners, and at contributing to the ongoing debates gravitating around the concepts of innovation, incubation, entrepreneurship, and overall SME development.

European Entrepreneurship & Innovation @ Stanford | Silicon Valley 14,995 members

This group serves European, American and other entrepreneurs, startup founders/CXOs, venture investors, university students/professors/researchers/administrators/leaders, corporations, technology transfer offices, innovation professionals, service providers, academics and policy makers with an interest in European technology entrepreneurship and innovation, practised in Silicon Valley, northern California and/or Europe. Europe includes those countries from Iceland to Russia, and from Scandinavia to the Mediterranean.

This group is managed in connection with the Stanford University School of Engineering's 'European Entrepreneurship and Innovation Thought Leaders' speaker series offered each Jan-March (http://me421.stanford.edu). Please also visit our Facebook group and YouTube Video Channel for additional information.

Speaker Videos: www.youtube.com/user/StanfordEuropreneurs

Speaker Slides: www.slideshare.net/burtonlee1/presentations

Twitter: @Europreneurs

Onevest - The Startup & Investor Network 40,820 members

Onevest is a leading startup investing platform connecting early stage startups with accredited investors. Onevest also matches entrepreneurs with core founding team members possessing complementary skills and shared goals and values, scientifically creating balanced teams.

Appendix D: Showcase Videos – Request for Proposals

Request for proposal for the production of a series of online knowledge transfer videos for the XIFI project

RfP issue date: 20th October 2014
RfP closure date: 31st October 2014 at 17:00 CET

Background

Funded by the European Union, the XIFI project[27] will establish a sustainable marketplace for trial infrastructures and Future Internet services. XIFI will achieve this vision by integrating and federating a multiplicity of heterogeneous environments – starting from the generic and specific enablers provided by the FIWARE[28] core platform and the FI-PPP[29] use cases and early trials. Through this approach XIFI will demonstrate and validate the potential and capabilities of a unified market for Future Internet facilities overcoming a number of existing limitations to the current set of Future Internet experimental infrastructures available across Europe, such as fragmentation, interoperability and scalability.

In this context, the work package 7 has been dedicated to the training and knowledge transfer.

The work package 7 aims to educate, inform and train the stakeholders groups in how to use and interact with the XIFI Federation effectively, whilst understanding the varying needs, interests and abilities of each stakeholder group.

The XIFI project has planned to develop training videos on the outcomes of the XIFI project results and has decided to use professional help to produce a series of online knowledge transfer videos.

The XIFI project is in charge of this Request for Proposal.

Subject of the Request for Proposal

The XIFI project is requesting proposals for producing a series of online knowledge transfer videos in the frame of work package 7 "Training and Knowledge Transfer".

XIFI asks the winning company to:

a. Produce three training videos. The content of these videos will be derived from the project Showcases, which are detailed further in Appendix D.1 "The XIFI Showcases".

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[27] https://fi-xifi.eu/

[28] http://www.fi-ware.eu/

[29] https://www.fi-ppp.eu/

The purpose of this RfP is to provide a fair evaluation for all candidates and to provide the candidates with the evaluation criteria against which they will be judged.

Questions related to this RfP can be sent by email to Mr. Mark Roddy: mroddy@tssg.org

Submission deadline and conditions

The XIFI project is responsible for issuing this Request for Proposal. Please note that:

- All responses will be considered.
- This is an open and competitive process.
- This proposal must contain the signature of a duly authorized officer or agent of the company submitting the proposal.
- The price you quote should be inclusive. If your price excludes certain fee or charges, you must provide a detailed list of excluded fees with a complete explanation of the nature of those fees.

The evaluation criteria are mainly the following:

- Alignment between the proposal and the expectations explained in this Request for Proposal.
- Cost of the proposed project (s).
- Previous experience in similar activities and expertise demonstrated in the proposal by the submitting organization.
- Other criteria may also be used as seen fit by the XIFI project. The XIFI project will select a winning proposal.

The deadline for this request for proposal is: 31st October 2014 at 17:00 CET

Please send your proposal to the following email address: mroddy@tssg.org

Activities to be performed

The winning organization will perform the following activity:

Activity 1: Production of the three videos, to be derived from the three XIFI showcases.

We ask the winning proposal to produce three videos, based on the XIFI showcases presented in Appendix D.1. This RfP is not intended to be prescriptive, so the video can include a mix of any number of video production techniques, for example overlay graphics (computer generated and stock photographs), voice-overs, overlay video footage, music, 'piece to camera' (PTC) instructions presented by a member/s of the XIFI team (head and shoulder).

As an example of a previous video produced by XIFI, have a look at:

http://youtu.be/MXg5L_mjCWE

For an example of a general video related to telecommunications, you can see:

http://www.youtube.com/watch?v=wOryfTLTc1o

Objective of the training videos

The XIFI project wants to produce a series of **training** videos, which will present the showcases of the XIFI project in a very clear and comprehensive way. These videos will be used as supporting materials during our training sessions and also will be published in our on-line learning platform and social media channels.

Target audience

a. The key purpose of the MG1 & MG2 videos is to present the showcases of our project towards Infrastructure Owners and Operators, showing the advantage of joining the FIWARE Lab federation and of installing FIWARE Ops and the FIWARE Generic Enablers (GEs[30]).

b. The key purpose of the MG3 video is that it sells the benefit of being part of the FIWARE Lab ecosystem to a range of stakeholders, including the Infrastructure Owners/Operators, as well as Smart City innovators, that include the Public Authorities, SMEs/Developers and Accelerators.

Context for usage of the videos

The videos will be:

*   Used as a support during the training sessions;

*   Published on the XIFI e-learning platform (Moodle based tool);

*   Published on YouTube;

*   Used during events and webinars

Technical requirements for the videos

*   Each video should be 5 minutes (max) in length (including opening and closing title sequences);
*   The videos should include music, creative graphics and voice-overs, as well as additional video material if required (creative decision left up to the proposer).
*   The videos could also include a mix of 'piece to camera' (PTC) instruction presented by a member/s of the XIFI project - head and shoulder (this is optional and should be priced accordingly);
*   The videos must be produced to broadcast quality;
*   The videos must be able to be reduced in size without sacrificing quality (i.e. for a laptop display format);
*   The videos must be able to be deployed to the XIFI e-learning Platform (the suggested format for this platform is mp4. For more information please refer to: http://forge.fi-ware.eu/plugins/mediawiki/wiki/fiware/index.php/How_to_create_a_SCORM_course) as well as to multiple video platforms (e.g. YouTube), and advertised on the most common social media (e.g. Facebook, Twitter, and LinkedIn).
*   A minimum level of consistency with the existing XIFI logo and layouts should be ensured (cf. XIFI web site at www.fi-xifi.eu). The proposal shall explain how consistent the videos will be with the existing design.

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[30] https://www.fi-xifi.eu/about-xifi/what-is-xifi.html

Additional information

In order to perform the activity in the most efficient manner, besides the information already available in Appendix D.1 a telephone conference will be organized at the beginning of the activities in order to provide all required additional information to best define the content of the videos.

Deliverables

The video Producer will deliver the finished products in desired formats including: DVD and web-compatible formats. The finished products will include broadcast quality videos to be aired during the XIFI Training sessions, posted in the E-learning platform and distributed through social media.

Proposals shall include the following deliverables:

- Draft and then final agreed story boards;
- Overlay graphics (computer generated and stock photographs);
- Final scripts (in English);
- Voice-overs;
- Rough cuts (including music and voice-overs);
- Finished tapes, DVDs, CDs and/or electronic files.

Timeline

Proposals are due no later than 31st October 2014 at 17.00 CET. Proposals will be evaluated immediately thereafter and the contract is planned to be awarded.

An **indicative** milestone schedule is mentioned below. The winning contractor will supply their own detailed milestone schedule, which they must agree to adhere to:

Activity 1:

- Final Story Boards Review: within 1 week after the contract is awarded
  Sign-off of the Final Story Boards by the XIFI project: 1 week after the submission of the proposed storyboards
  Voice-over: draft scripts against story boards to be written: 2 weeks after the contract is awarded
- Overlay Graphics Review (computer generated and stock photographs): within 3 weeks after the contract is awarded
  Sign-off of the Overlay graphics: within 3 days after the release of the proposed graphics
- Rough Cut/Offline Edit Review: 4 weeks after the contract is awarded
  Sign-off of the Rough Cut/Offline Edit.
- Final Videos Release Review: 6 week after the contract is awarded.
  Sign-off on the Final Videos Cut.
- Finished tapes, DVDs, CDs and/or electronic files: completed within the end of January 2015
  Sign-off on final deliverables

Format of the proposal

There is no specific format for the proposal. However, at least the following shall be included:

- Proposed vision for the videos (i.e. broad concepts on what the final product may look like);
- Description of all activities that will be performed as well as a time schedule and milestones;

- Indicative liaison schedule between the winning company and the XIFI project (milestone signoff);

- Description of all deliverables and outcomes;

- Total costs – an all-inclusive fixed cost must be proposed (e.g. to include any costs associated with music copyright, stock photography, etc); additional 'piece to camera' shooting and editing could be proposed as an option;

- Description of previous experiences relevant to this RfP (proposers should provide examples of past projects, preferably of a similar size and scope);

- Company profile and contact person for the proposal.

D.1 – The XIFI Showcases

For each macro-showcase, Table 1 below shows:

- its **name**;

- the **problem space** behind the showcase;

- the **rationale** and why it is important for XIFI;

- and finally a **storyboard** for the showcase.

Please note that where you see UCx in Table 1 below, that this refers to an old showcase version. This is important because we have used these old showcases to crystalize these new macro-showcases.

If you need to understand the details of the old showcases, then please note that we have uploaded webinars on all of them to our XIFI TV channel on YouTube[31].

MG1: As a FIWARE Lab deployed Infrastructure owner/operator, how do I let "customers" know what's available?
PROBLEM SPACE: ***Getting the most out of the services available***. This Use Case covers all aspects of the cloud computing paradigm (IaaS, PaaS, SaaS), demonstrating how easy it is for an Infrastructure owner/operator to create a FIWARE Lab-compatible IaaS environment from the bare metal up (**UC8**), search, compare, register and advertise available PaaS or SaaS services (GEs/SEs) across the XIFI federation (**UC3**, **UC4**), how to take into consideration specific requirements, such as regulatory or data protection restrictions, during design and deployment of an application (**UC2**) and finally how to monitor the performance of running services (**UC11**), requiring no intervention from the stakeholder (performance monitoring adapters come pre-installed with the GE images).
RATIONALE: For those involved in developing and exploiting FI technology, what do they do to get the best out of FI infrastructures? How do they know what's available and where best to use it? How do they know that it's working and working well?
MG1 STORYBOARD John is the CTO of a software development company (SME) located in a European country that has a private cloud and is thinking of validating an innovative, web-based e-health application to a FIWARE-Lab cloud federation. In particular, this e-health service consists of an application server, a database and sensor nodes that send patient data to the database to be retrieved by the doctors subscribed to this service through a secure web interface. After spending a couple of days of researching, he is convinced that not only FIWARE Lab provides the means for addressing all his concerns, but it also opens up new opportunities and perspectives for his company:

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[31] http://www.youtube.com/playlist?list=PLqDbpNPSmo_wKZAwjRQoB8dn9EC8KDVBb

Taking advantage of the Marketplace services (**UC4**), John has a single point of entrance for searching, discovering, comparing and exchanging information regarding the services offered (GEs and SEs), realizing that several GEs and SEs exist, offered as SaaS and thus providing the opportunity to realize (and even) extend e-health service capabilities. Moreover, John realizes that FIWARE-Lab offers the ability to easily register a new GE or SE (**UC3**). From this perspective not only is his company able to reach the pan-European market, but also income can be increased by advertising his own developed SE through the Marketplace. By looking at the Marketplace ratings (**UC4**), he realizes that although the e-health database has to be deployed in a specific node within his country (in compliance with European regulations), the application server could well be deployed in another country that provides greater bandwidth. By leveraging the advanced functionality of FIWARE-Lab (**UC2**), John is capable of easily designing and deploying a real distributed, multi-tier application across the FIWARE-Lab federation that takes into consideration regulation and data protection restrictions. In addition, John, through the creation of blueprint templates, is offered fine-grained control of deployment along with the proper tools, making distributed deployment an easier task. Moreover, John is given the opportunity (**UC11**) to either adapt his own monitoring tools in order to check service performance in an easy way or make use of monitoring adapters that come pre-installed within the GE images, requiring no intervention from the application developer. Finally, John finds out that FIWARE-Lab offers tools (**UC8**) where his private cloud infrastructure can become part of FIWARE-Lab, ready to offer services and resources to other interested stakeholders.

MG2: As a FIWARE Lab Node operator, what will differentiate my offer to Developers?

PROBLEM SPACE:

Optimising network performance. It's important to know where to deploy and on occasion to be able to manage bandwidth and performance so that technologies work at their best. This showcase demonstrates how to monitor (**UC7**), manage performance (**UC6**) and capitalise on network performance (**UC5** and **UC12**).

Without the FIWARE Network Adapters it is not possible to offer tenants the NaaS (Network as a Service) features across the whole federation (i.e. users cannot create virtual networks spanning multiple FIWARE Lab nodes).

This aggregated showcase focuses on the network functionalities, which allow the user to leverage the FIWARE Lab network federation. These include also the possibility to offer QoS and monitoring the network traffic.

To achieve this goal FIWARE has developed solutions which operate both at intra-domain and inter-domain level. At intra-domain level it is possible to associate a QoS policy to a VM acting at the OpenStack NaaS level (**UC5**).

The XIFI additional features at inter-domain level are:

- to join the tenant's networks to different FIWARE Lab nodes using the federated network (MD-VPN) -> Tenant VMs can be deployed on multiple FIWARE Lab nodes but then can communicate with each other using an isolated virtual network (i.e., multi-tenant networks spanning multiple Nodes) (**UC5-UC6**)

- to enable QoS in the federation performing network monitoring and network optimization (**UC6**)

To achieve these goals, an SDN controller and monitoring component has been developed.

Please note that **UC12** falls into this macro group of showcases, because in addressing a more

general capability of FIWARE to support a migration pathway, it is actually a real example of porting an experiment defined in the FIRE Ofertie project (http://www.ofertie.org/) from the OFELIA testbed (http://www.fp7-ofelia.eu/) to FIWARE Lab.

RATIONALE: There are some services and applications which need to meet certain performance criteria because of user demands or because of application criticalness. I need to be able to check and manage performance across resources.

MG2 STORYBOARD

This showcase demonstrates how the solutions developed in FIWARE can enable the network federation for the cloud, how the user[32] can take advantage using virtual isolated networks through the FIWARE Lab nodes along with the benefit from the QoS and how an infrastructure owner can better manage and monitoring its infrastructure.

The showcase will run through two phases. The first step (UC5) shows how a user can benefit from different QoS levels (Gold, Silver and Bronze) offered to him both in a single FIWARE Lab node and across multiple nodes in the federation. In a second phase (UC6) we see how the FIWARE Lab network facilities can maintain or improve the QoS, by means of Traffic Engineering and network monitoring. Here are explained the network concepts leveraged in a specific scenario (UC12) which demonstrates how the FIWARE network functionalities can be used to run an experiment designed outside the FIWARE Lab project.

The macro showcase illustrates how a user can deploy a video streaming service across the federation. If the user does not select an appropriate QoS, once the video service is running, other users can generate traffic up to the maximum capability of the network, implying delay, packet loss, jitter, and so on, degrading the video service. This effect will be directly visible on the video played in this showcase. Using an appropriate QoS (e.g., Gold), the traffic coming from this user will be prioritized over the other users allowing running the video service in good condition satisfying his quality of experience. This will be visible with the video played in this showcase that will instantaneously be played fluently.

But if too many users ask for the maximum QoS, there is a point where the latter cannot be maintained anymore. The showcase is relevant to that situation by configuring all the other user traffics the Gold QoS. In consequence, we will see that the video displayed is degraded a second time. Now that all the user actions are consumed, infrastructure owner intervention is required to restore the QoE of his users (UC6). For that purpose, the infrastructure owner can rely on the XIFI network controller that will send him an alarm when an inter-data centre connection is saturated. They can then use the GEANT Bandwidth on Demand network facility to dynamically request more bandwidth in order to satisfy his users' new needs. By performing this action, the infrastructure owner will restore the QoE of the aforementioned user, allowing the video to be played continuously again. Considering that sizing the inter-data centre connection and

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[32] For the sake of simplicity user is used as synonymous for stakeholders such as Developers and End Users, but importantly this also includes the Phase III Accelerators

predicting in advance the inter-XIFI nodes traffic needs are very difficult and strongly linked to the success of its users services, such a facility for an infrastructure owner, to dynamically adapt their network resources to their users' usages patterns is a significant feature that must be promoted, especially in a federated environment.

FIWARE Lab innovative support for QoS can be successfully used to host different types of applications and distributed services (especially bandwidth consuming and QoS sensitive services). For this reason a specific experiment (UC12) falls in this macro-group of showcases: in addressing a more general ability of the FIWARE Lab of supporting migration pathway it is actually porting an experiment defined in FIRE Ofertie project (http://www.ofertie.org/) from OFELIA testbed (http://www.fp7-ofelia.eu/). The experiment is about improving the Quality of Experiences for users of ROIA (on line) games by exploiting SDN features for reconfiguring the network and for providing different services according to different class of users.

MG3: As a FIWARE Lab Node operator, what is the advantage I have in being part of the FIWARE ecosystem?

PROBLEM SPACE:

FIWARE Lab nodes offer a unique environment to support start-up and innovative product bootstrapping.

The process of creating a start-up or an innovative product is a challenge. Indeed, the road to success requires a mix of ingredients like technological skills, funding, specific types of resources, mentoring, test-users, etc.

This showcase aims to demonstrate how a rich ecosystem offered by the combination of infrastructures (FIWARE Lab – the Federated Infrastructures) and an innovative platform (FIWARE) can effectively support the different needs of acceleration for an innovative idea through:

- The availability of appropriate resources capable of supporting the development of FIWARE-based products;
- Technical consultancy for the adoption of a Future Internet platform;
- Business coaching and mentoring;
- Funds to support the product proof-of-concept (pre-seed or seed);
- Early-adopters and testers to validate the idea;
- Easy portability of the FIWARE product to different areas.

Each FIWARE Lab node represents a complete ecosystem designed to fully support the innovation lifecycle. FIWARE Lab nodes offer more than 'standard cloud-based' resources (e.g., cloud services, sensors, and networks): for instance, they provide access to geo-localized accelerators, test-users and open data sets. Moreover, the design of FIWARE Lab guarantees the easy migration of an application to any other node belonging to the FIWARE Lab.

RATIONALE: To build a start-up or an innovative product is challenging: I need resources to host my FIWARE development environment, together with economic support for the development itself; more importantly, I need end-users to test and validate my product. Finally, I want to easily provision my service to different locations around Europe. Is this just a dream?

MG3 STORYBOARD

Antonio is the CTO of an innovative startup located in Spain, whose company provide smart devices that are able to interact with the users' environment to crowd-source data. Antonio is looking for business opportunities to expand his offer and user base. During his everyday work, he spends much time scouring suitable offers for startups on several acceleration Internet platforms. Finally, one lucky day, he discovers via the *F6S* portal that there is an open challenge for startups and SMEs, supported by the EIT ICT Labs and focused on the development of a new product, based on an innovative platform called FIWARE. After analyzing the terms and conditions of the challenge, he decides it is worth giving it a try, and so he applies!

To this end, the first step is for him to review the specific offers and competences of the infrastructures involved in the challenge. Antonio selects Trento for two main reasons: the first, because of the availability, in the Trento platform, of specific Open Data sets that are of interest for his smart devices; the second, because the Trento ecosystem, through a SmartCrowd service offered by Trento Rise, is able to provide an early adopter base to validate his application.

The operators of the Trento node are happy to support Antonio's idea, since it constitutes a nice demonstrator for their services to other potential developers, so as to attract more users to the node. Also, by supporting his idea, the Trento node is able to interact with the other actors in the local ecosystem and showcase them their services. Indeed, this would facilitate the creation of a long-term collaboration with the ecosystem, which ultimately increases the user base of the node: e.g., EIT ICT Labs by itself is able to provide business coaching and mentoring, but has no technical expertise or hosting services to offer to startups in its ecosystem. This is, actually, a win-win situation for Trento EIT ICT Labs and Trento FIWARE Lab node. The smart solution offered by Antonio may have great added value for the citizens of Trento, thus has the potential to enrich the services available to them based on localized Open Data.

After testing the application in Trento and implementing feedback received by the testers, Antonio would like to deploy also the application in Berlin. Trento operators help him to get in contact with the Berlin ecosystem in order to understand, beyond the hosting, which services he could get there and he happily starts deploying a Berlin version of his application on the Berlin FIWARE Lab node! A small start for a great expansion around several EU major cities!

Table 9: Summary of the macro-showcases, or macro-groups (MGs)

Appendix E - Training Portal Analysis for Individual Assets

E.1 - FIWARE Ops: Training Introduction (Presentation)
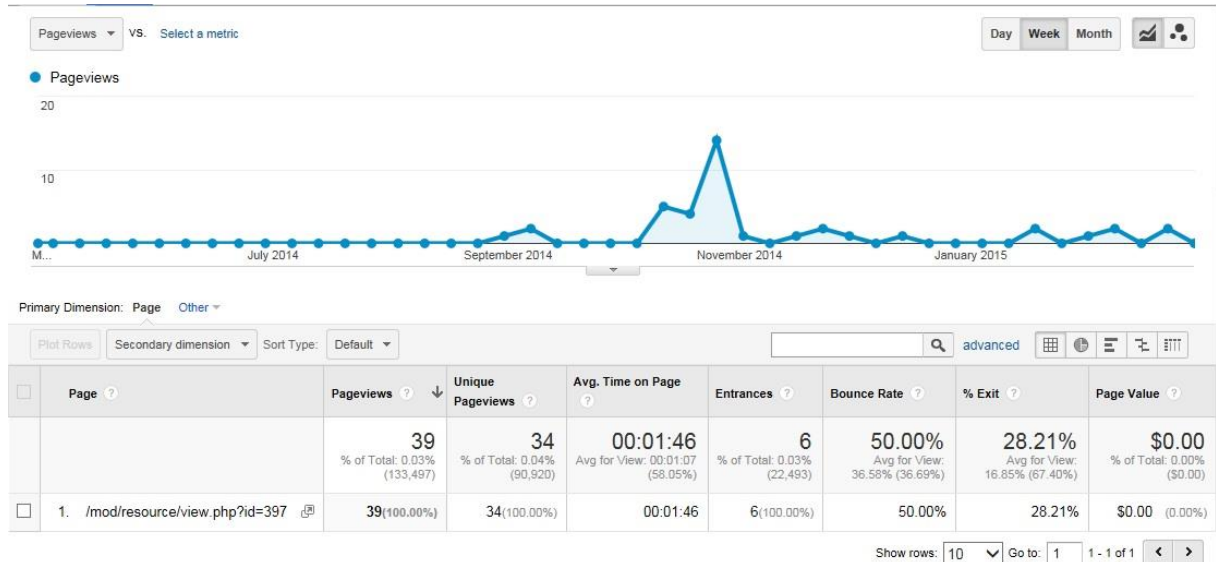
Figure 32: FIWARE Ops statistics - Training Introduction (Presentation)

E.2 - Architecture of Federated Platform (PresentationPDF)
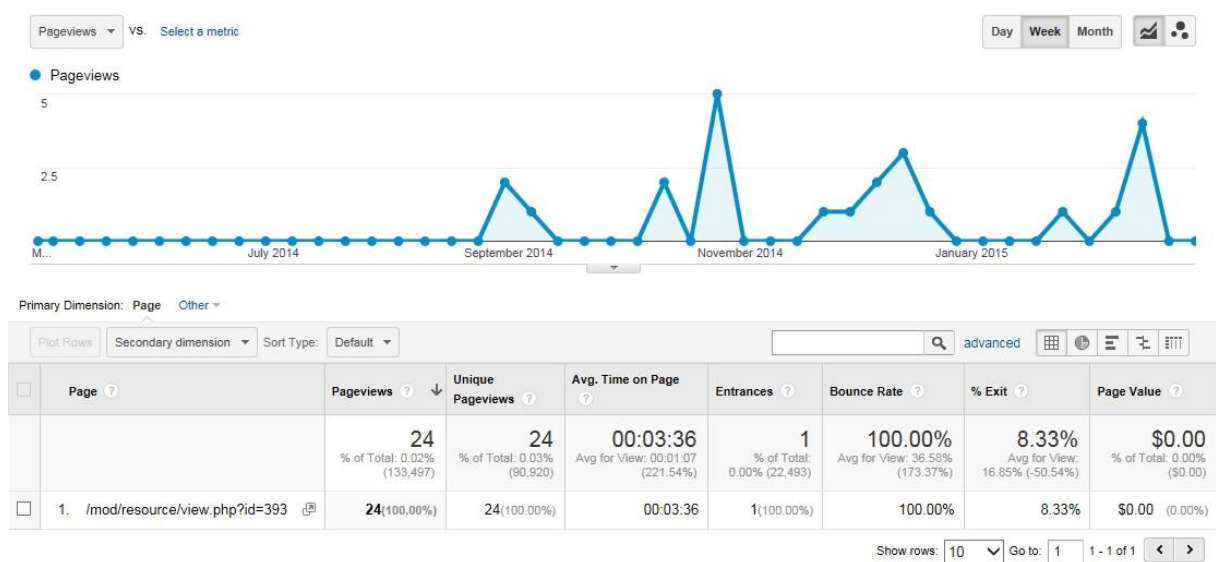
Figure 33: FIWARE OPs statistics - Architecture of Federated Platform (PresentationPDF)

E.3 - Components That You Need (PresentationPDF)
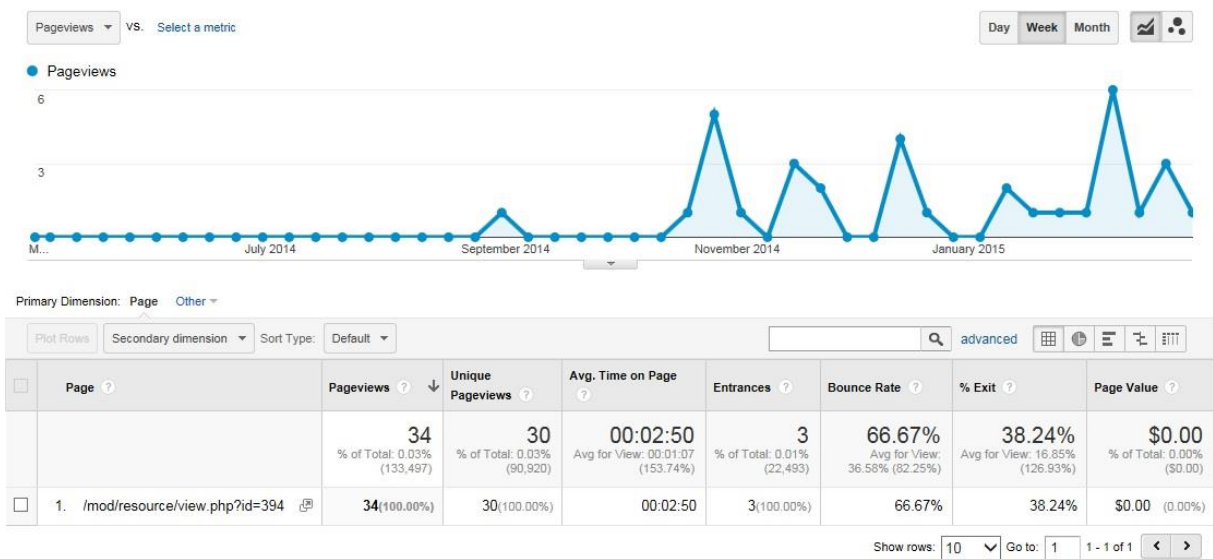
Figure 34: FIWARE OPs statistics - Components That You Need (PresentationPDF)

E.4 - Process for joining the Federation (Presentation)
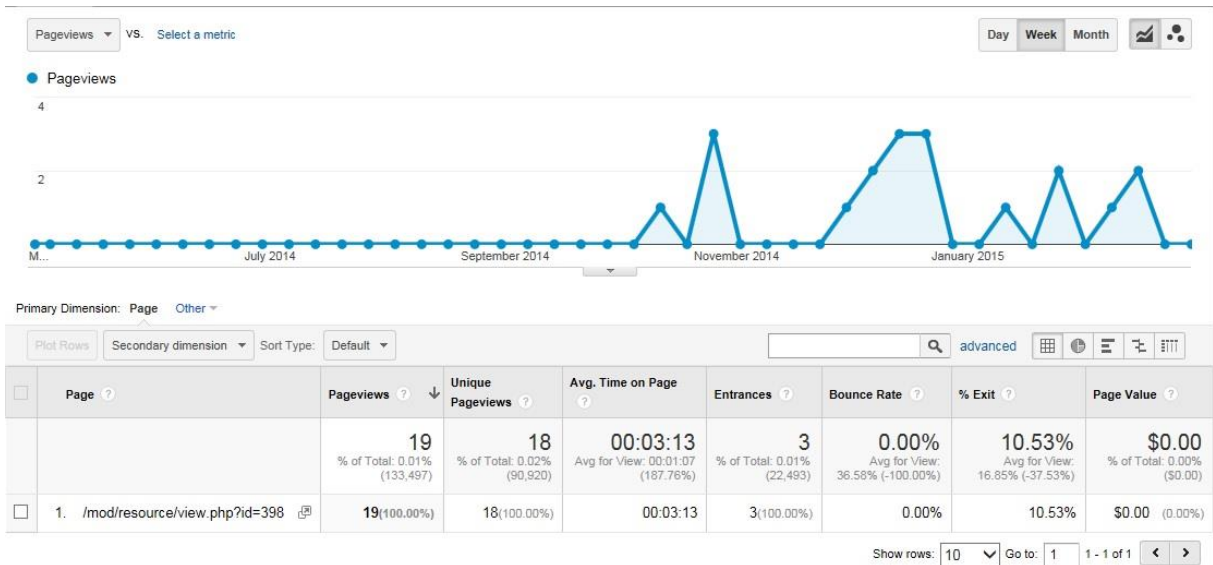
Figure 35: FIWARE OPs statistics - Process for joining the Federation (Presentation)

E.5 - Infrastructure Toolbox (Presentation)
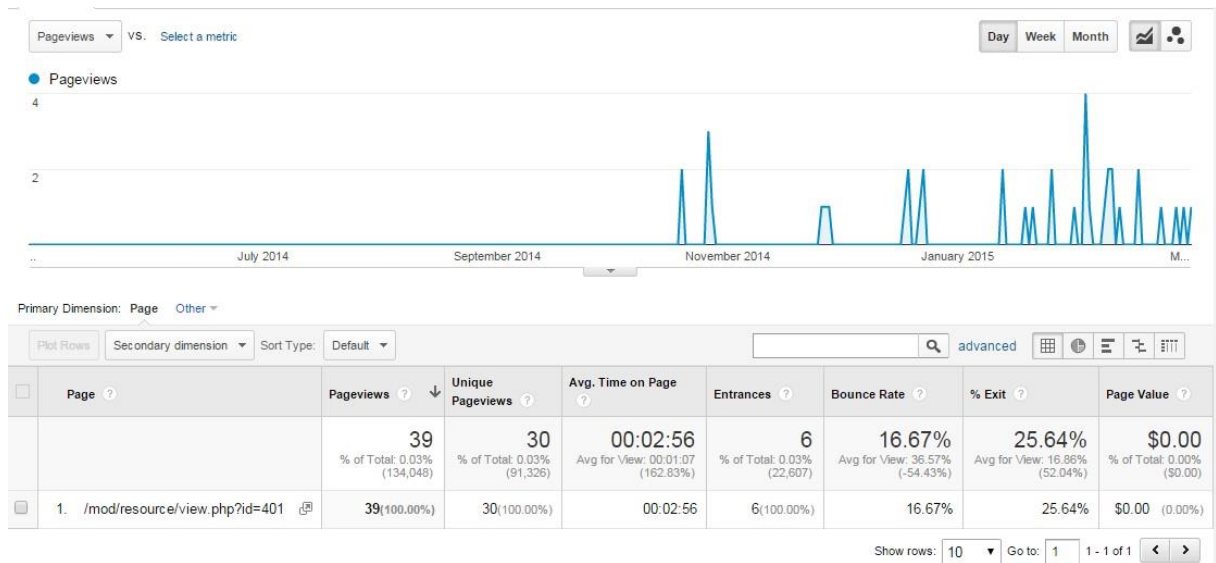
Figure 36: FIWARE OPs statistics - Infrastructure Toolbox (Presentation)

E.6 - Detailed Components (Presentation)
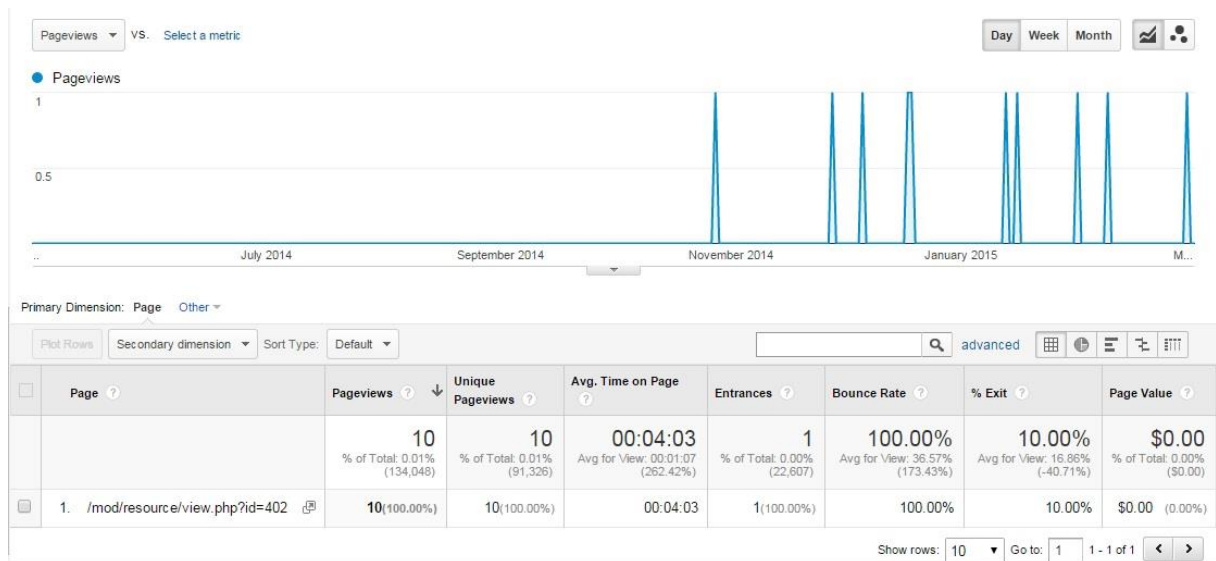
Figure 37: FIWARE Ops statistics - Detailed Components (Presentation)

E.7 - Marketplace and Resource Catalogue (Presentation)
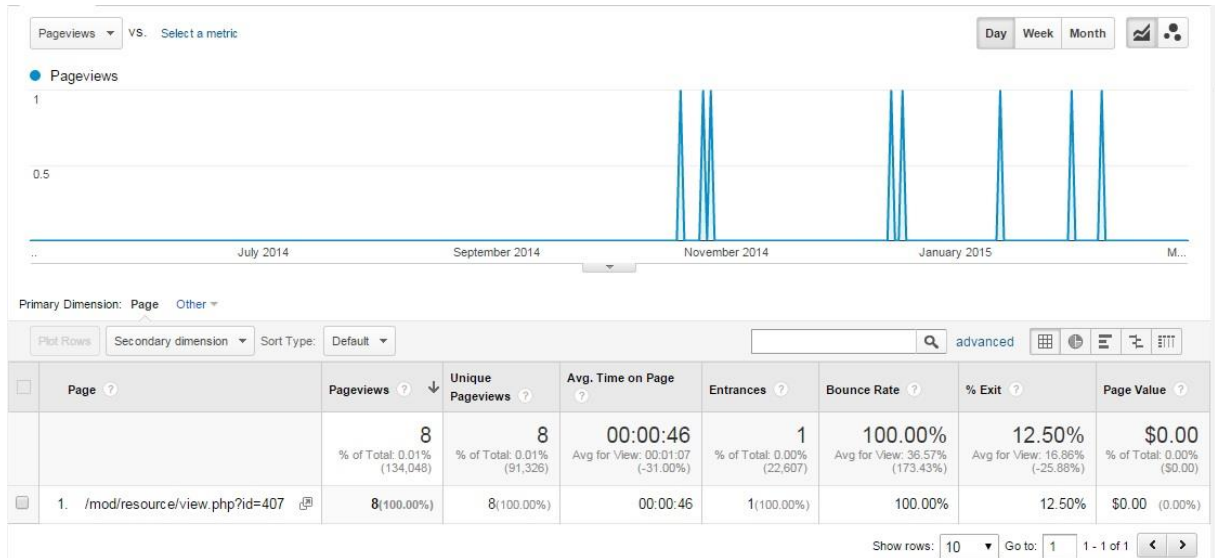
Figure 38: FIWARE Ops statistics - Marketplace and Resource Catalogue (Presentation)

E.8 - Support Processes (Presentation)
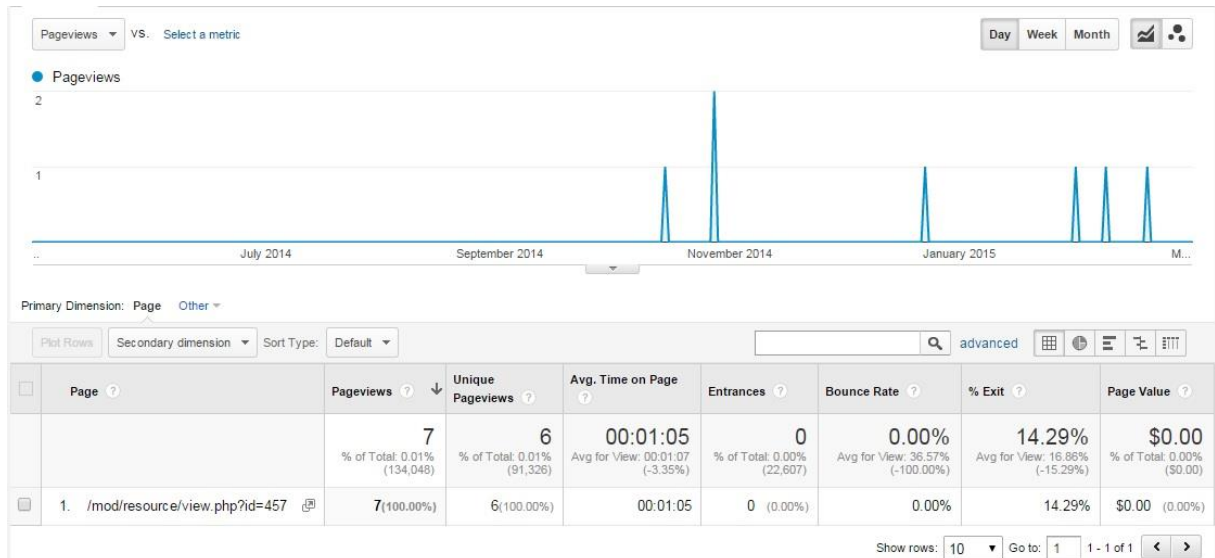
Figure 39: FIWARE Ops statistics - Support Processes (Presentation)

E.9 - Deployment and Configuration Adapter (Presentation)
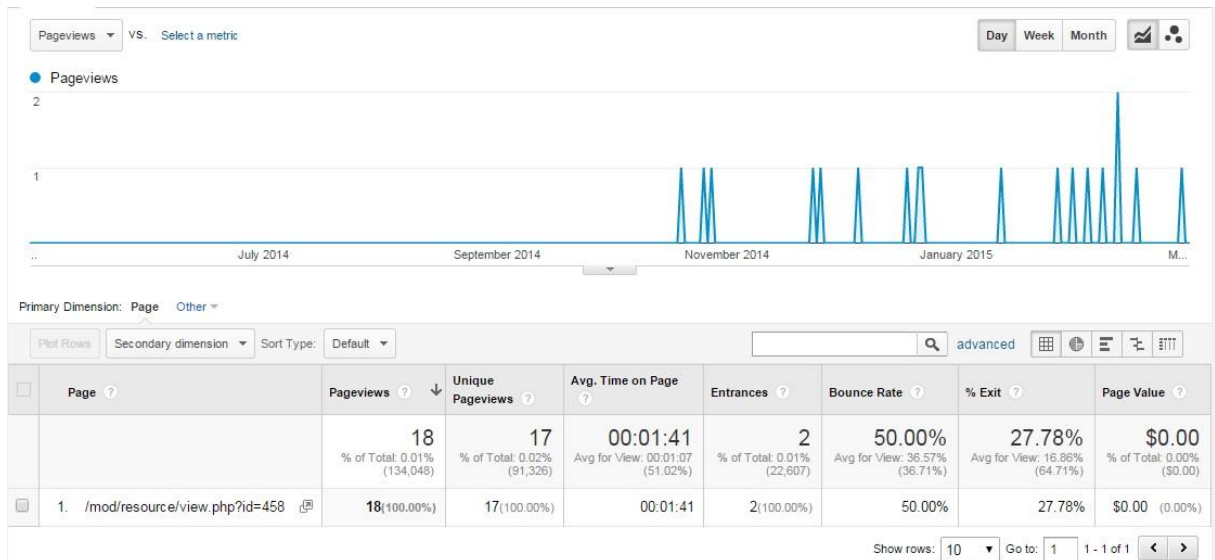
Figure 40: FIWARE Ops statistics - Deployment and Configuration Adapter (Presentation)

E.10 - Network Controller (Presentation)
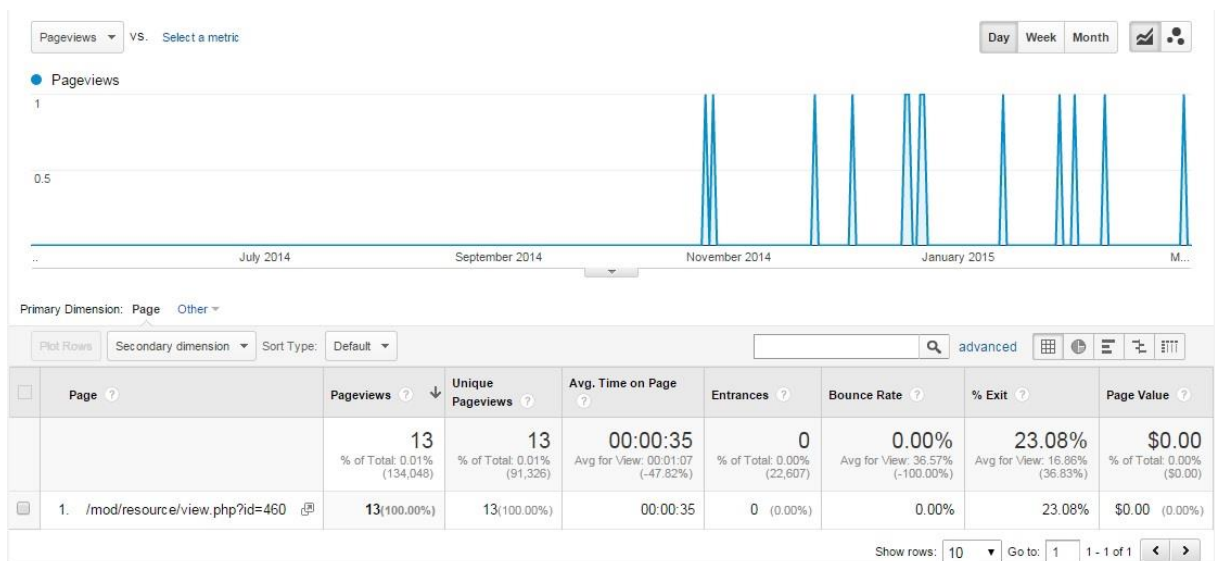
Figure 41: FIWARE Ops statistics - Network Controller (Presentation)

E.11 - The FIWARE Offering (Presentation)
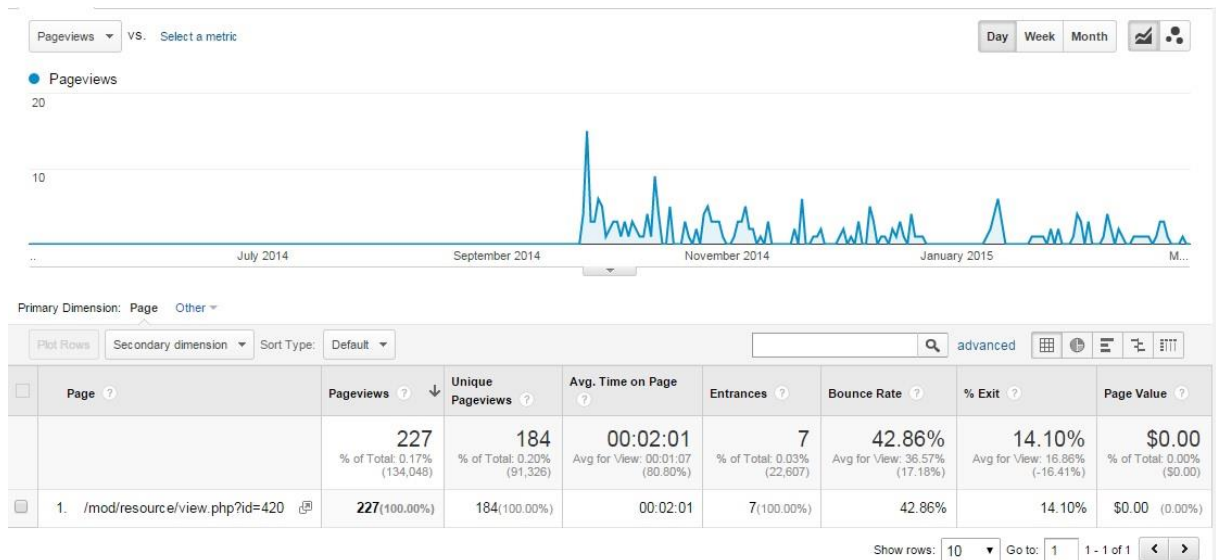
Figure 42: FIWARE Ops statistics - The FIWARE Offering (Presentation)
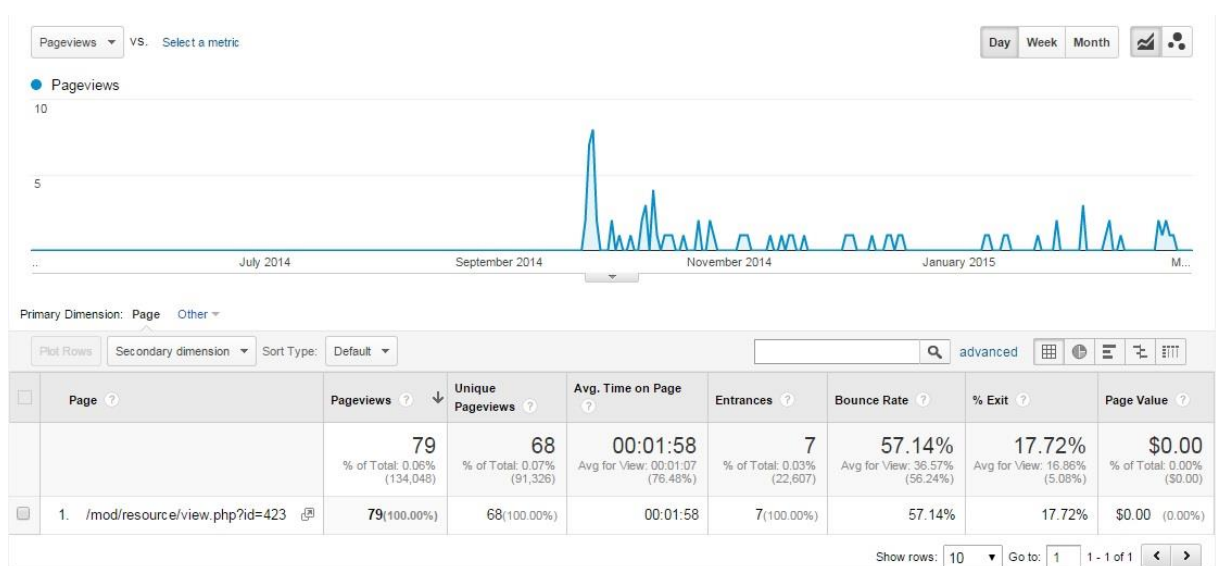
Figure 43: FIWARE Ops statistics - The FIWARE Offering (Presentation) – Part 2

E.12 - FIWARE Ops Overview (Presentation)
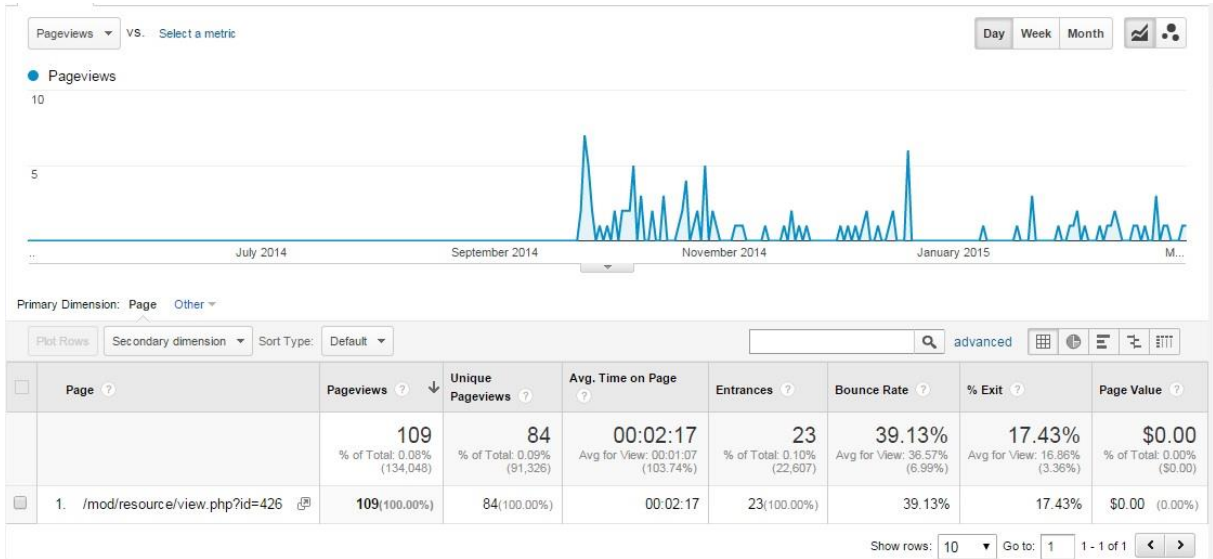
Figure 44: FIWARE Ops statistics - FIWARE Ops Overview (Presentation)

E.13 Introduction to FIWARE Open Ecosystem (Presentation)
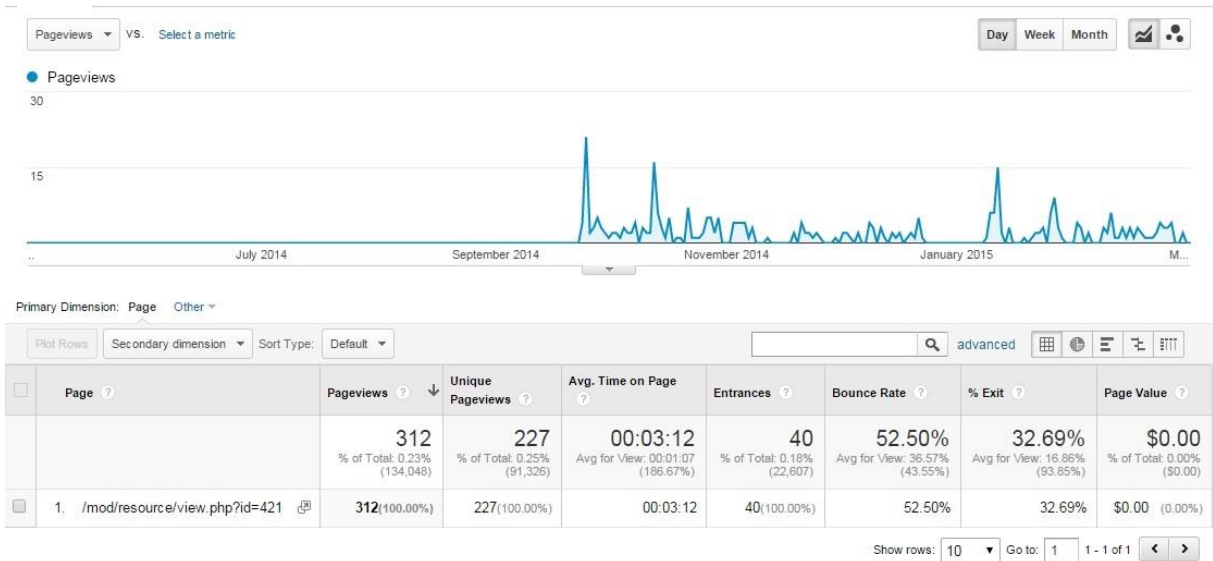
Figure 45: FIWARE Ops statistics - Introduction to FIWARE Open Ecosystem (Presentation)

E.14 - eLearning Platform: Support to FIWARE Developers (Presentation)
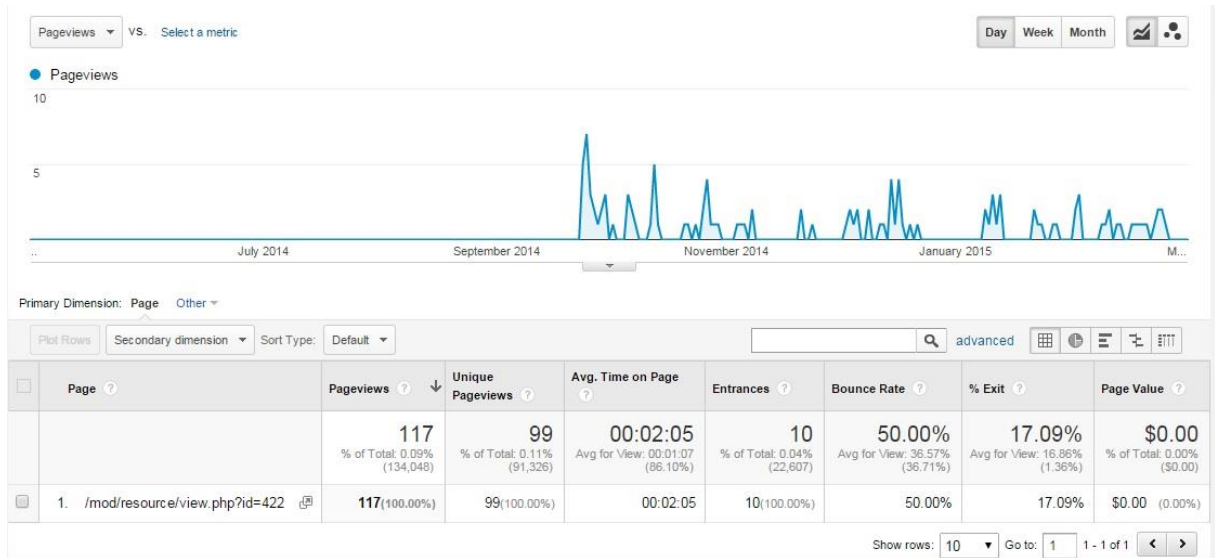
Figure 46: FIWARE Ops statistics - eLearning Platform: Support to FIWARE Developers (Presentation)
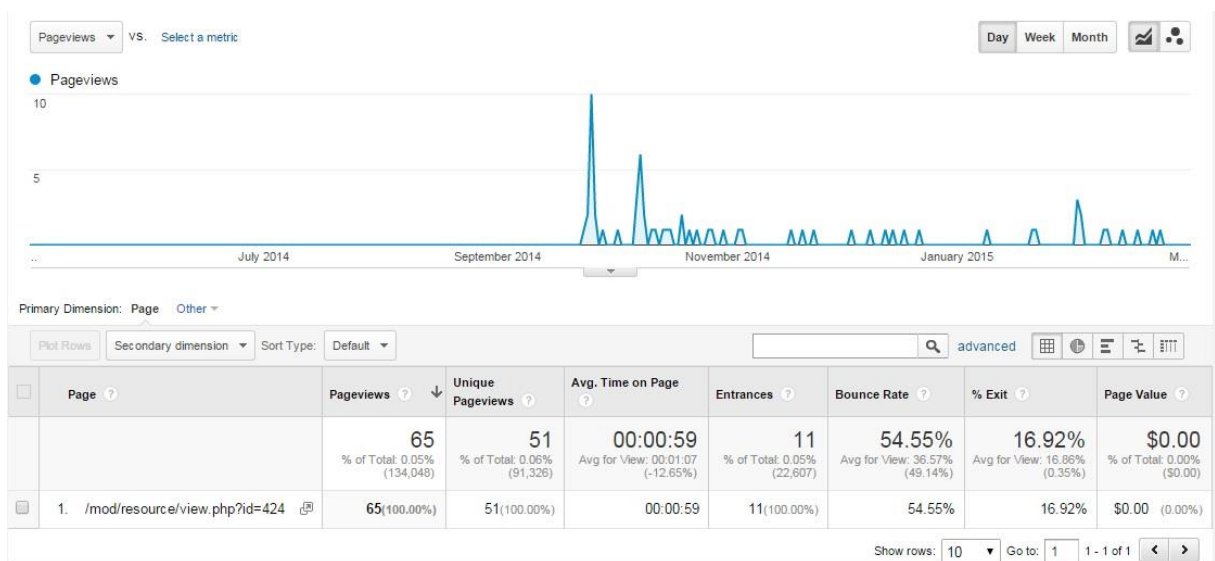
Figure 47: FIWARE Ops statistics - eLearning Platform: Support to FIWARE Developers (Presentation) Part 2

E.15 - FIWARE and FIWARE Lab Service Offer (Presentation)
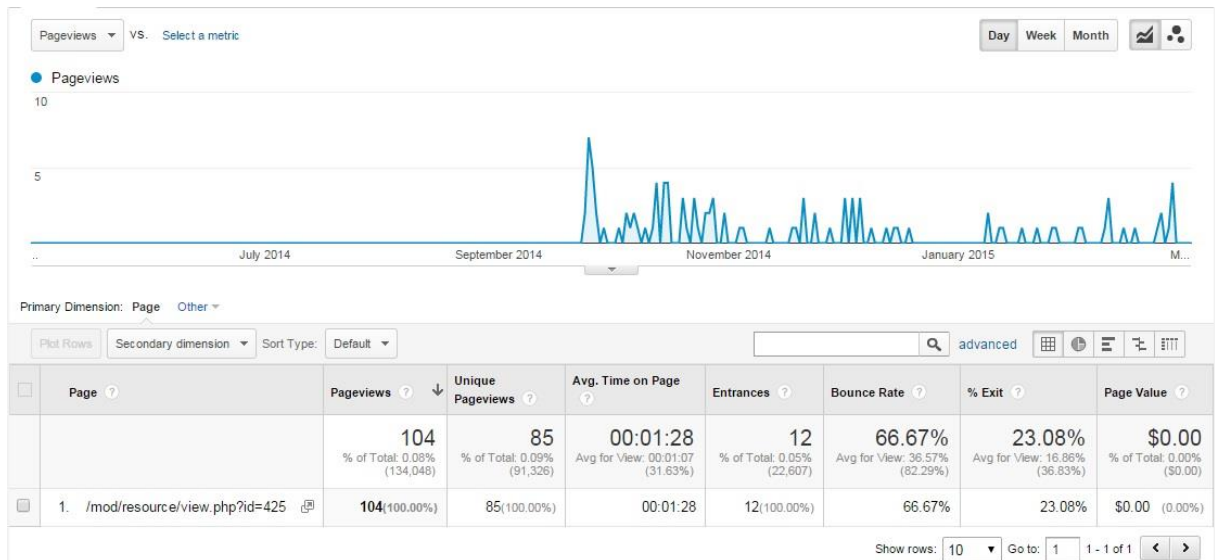
Figure 48: FIWARE Ops statistics - FIWARE and FIWARE Lab Service Offer (Presentation)

E.16 - Introduction to FIWARE Lab (Presentation)
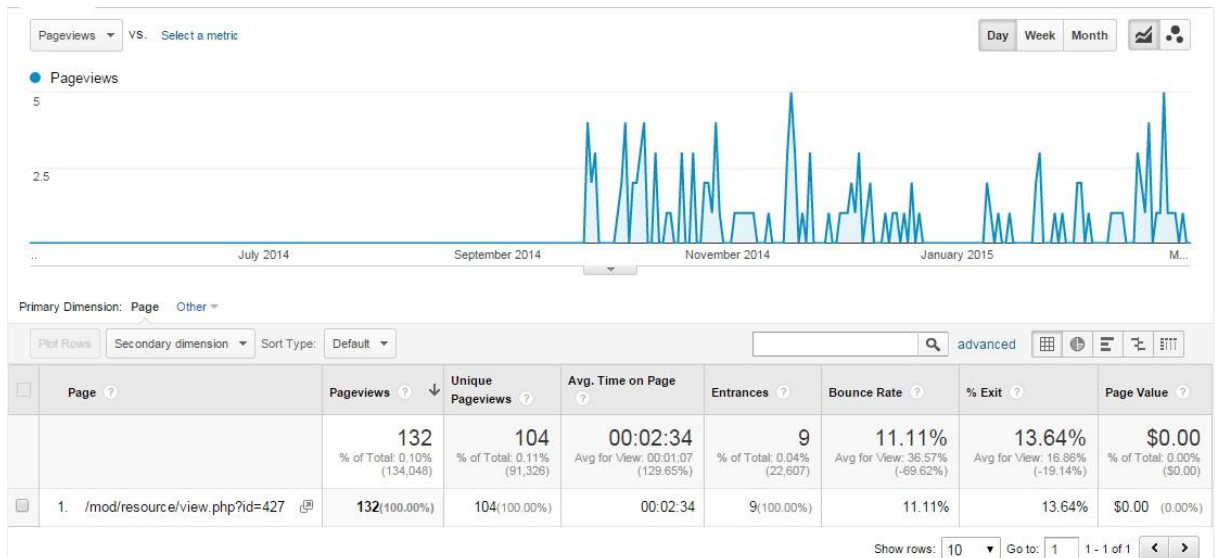
Figure 49: FIWARE Ops statistics - Introduction to FIWARE Lab (Presentation)
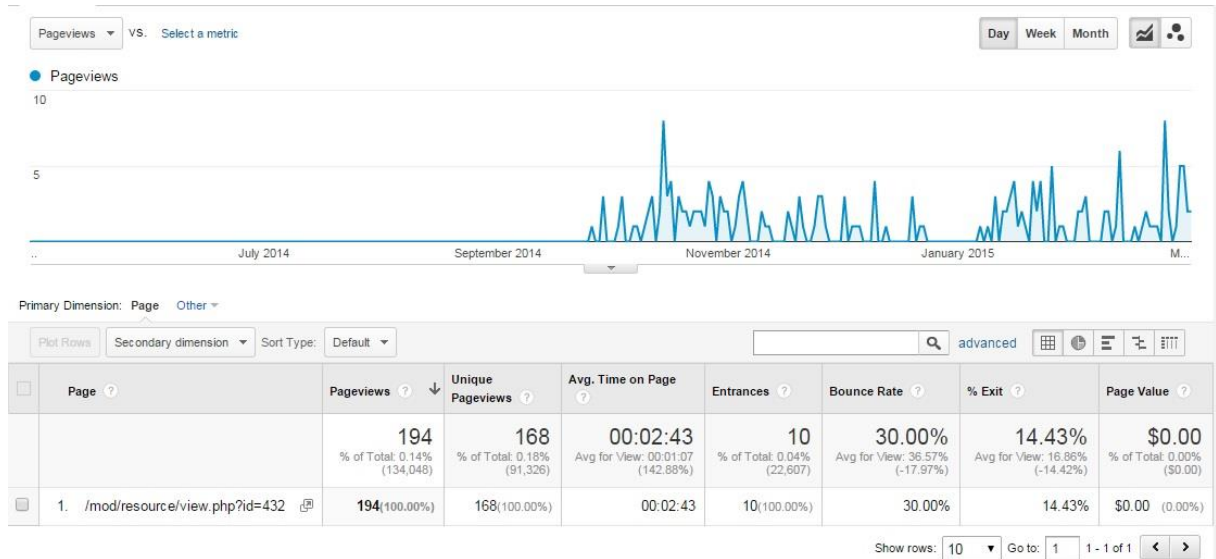
Figure 50: FIWARE Ops statistics - Introduction to FIWARE Lab (Presentation) - Part 2

E.17 - FIWARE Lab for Developers (Presentation)
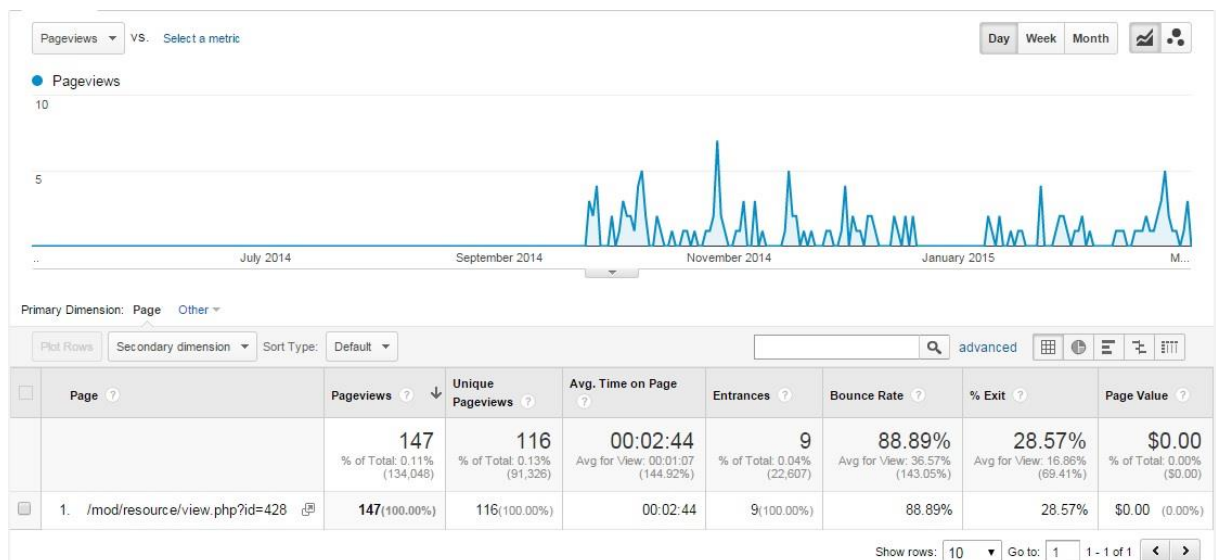
Figure 51: FIWARE Ops statistics - FIWARE Lab for Developers (Presentation)
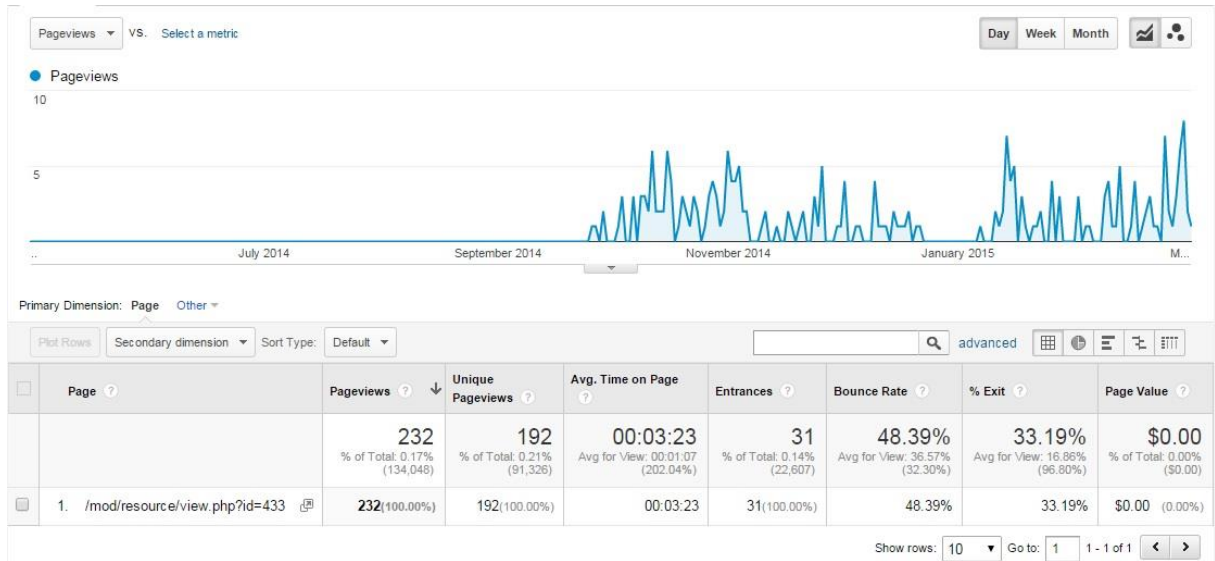
Figure 52: FIWARE Ops statistics - FIWARE Lab for Developers (Presentation) – Part 2

E.18 - Using S3C (Presentation)
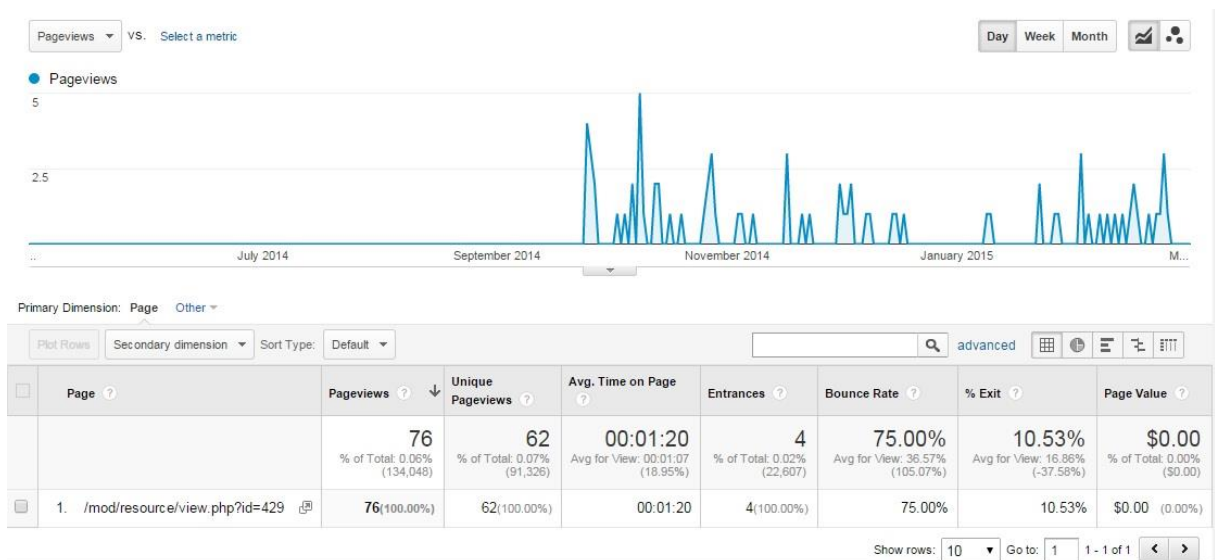
Figure 53: FIWARE Ops statistics - Using S3C (Presentation)
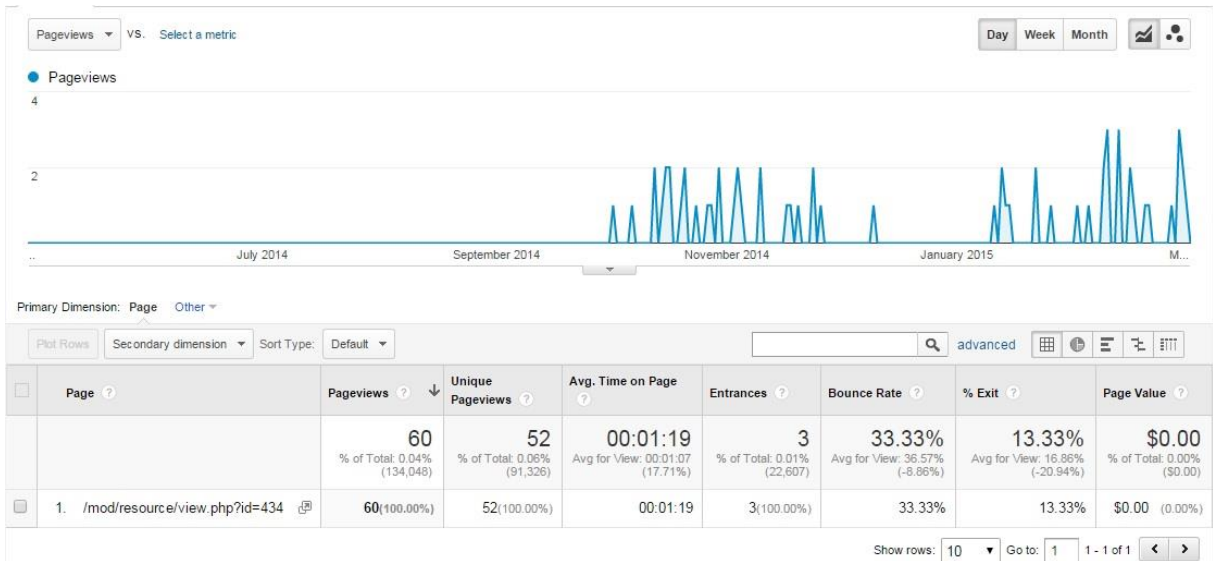
Figure 54: FIWARE Ops statistics - Using S3C (Presentation) – Part 2

E.19 - A FIWARE Lab Showcase (Presentation)
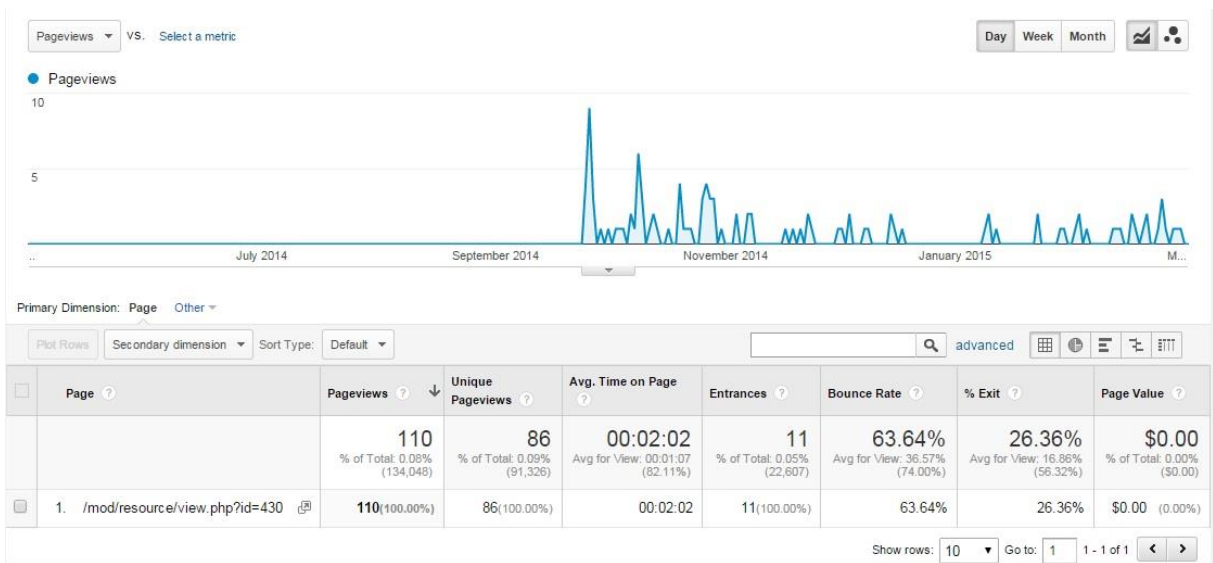
Figure 55: FIWARE Ops statistics - A FIWARE Lab Showcase (Presentation)
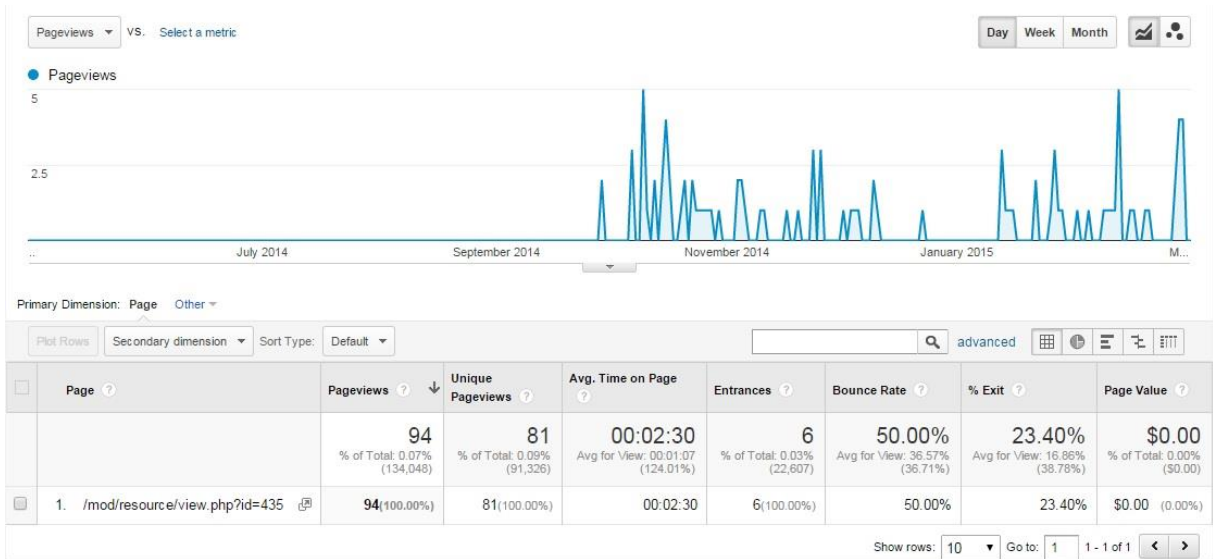
Figure 56: FIWARE Ops statistics - A FIWARE Lab Showcase (Presentation) – Part 2

E.20 - Federated Platform Architecture (Deliverable)
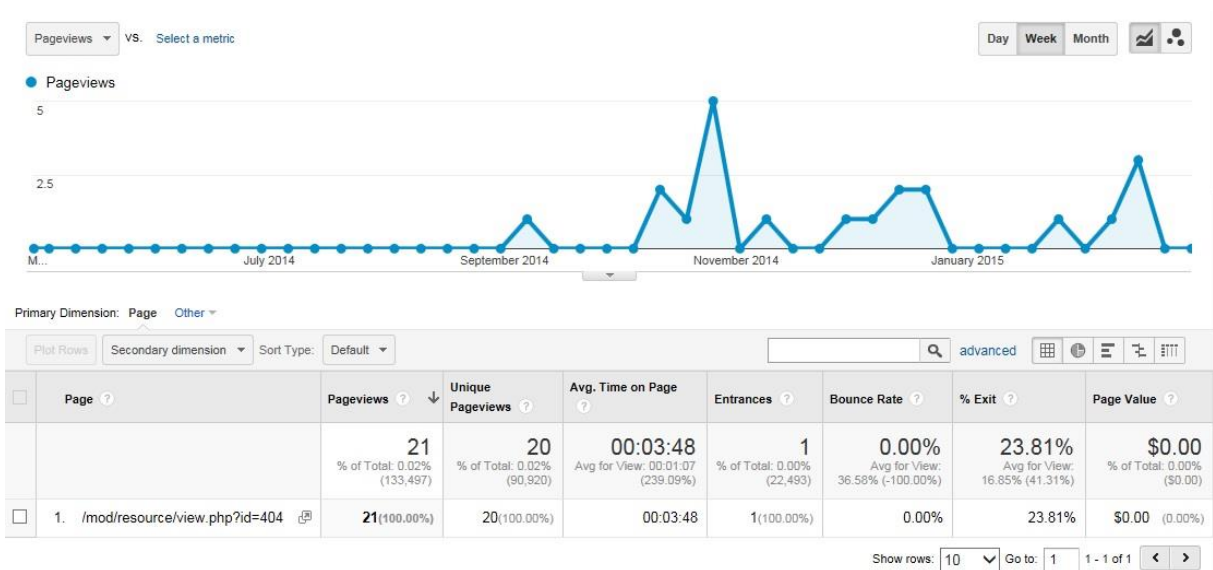
Figure 57: FIWARE Ops statistics - Federated Platform Architecture (Deliverable)

E.21 - FIWARE Ops Infrastructure Provider Manual (Deliverable)
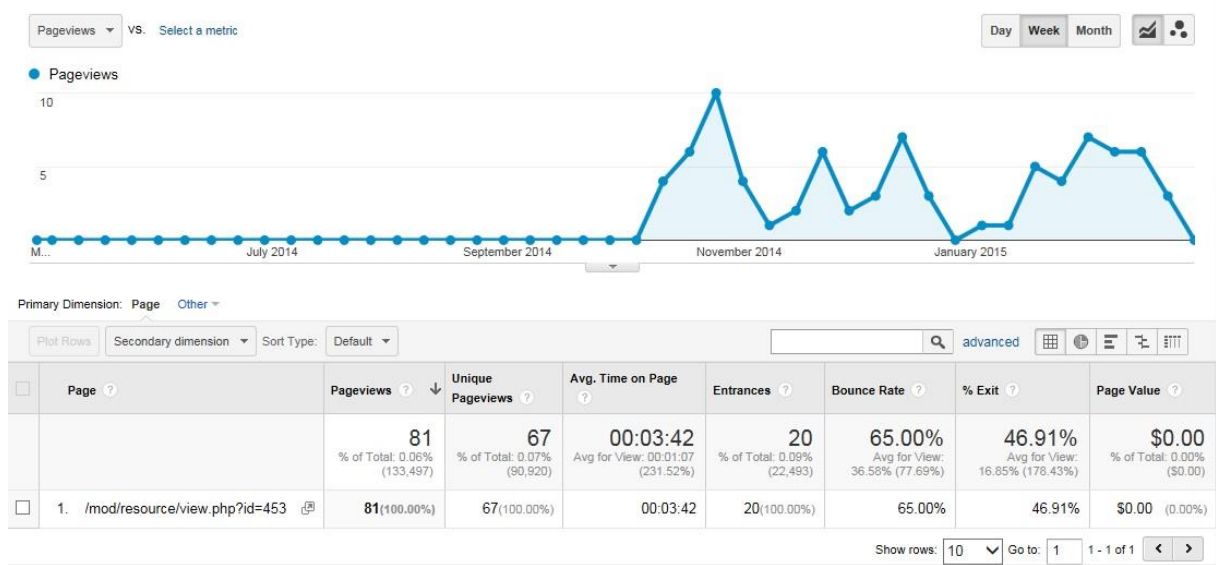
Figure 58: FIWARE Ops statistics - FIWARE Ops Infrastructure Provider Manual (Deliverable)

E.22 The FIWARE Offering (Video)
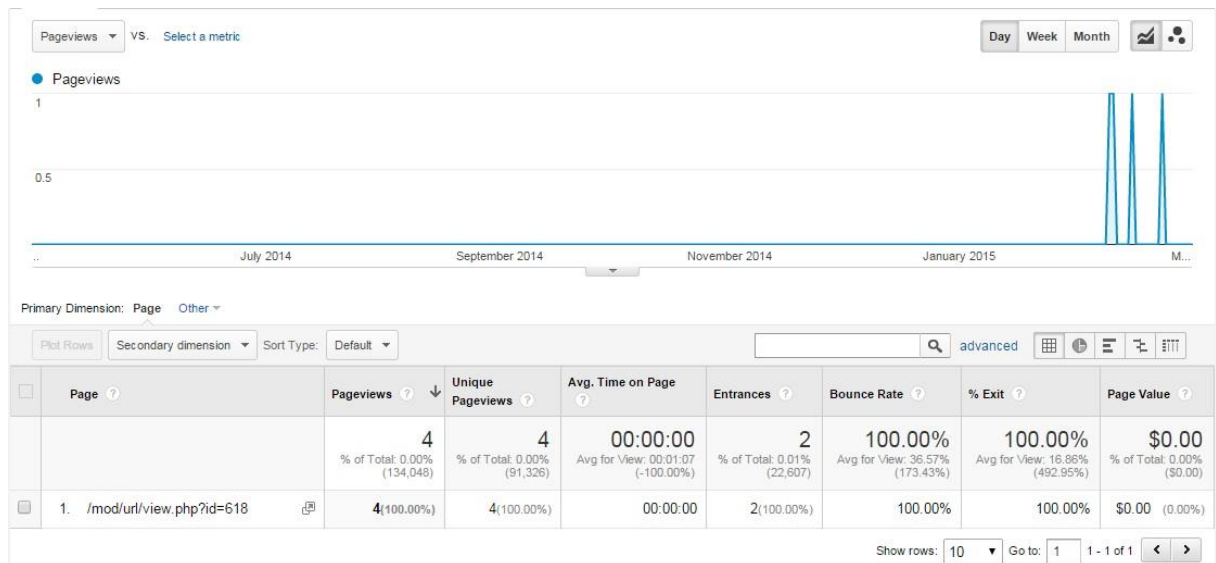
Figure 59: FIWARE Ops statistics - The FIWARE Offering (Video)

E.23 FIWARE Ops for Developers (Webinar)
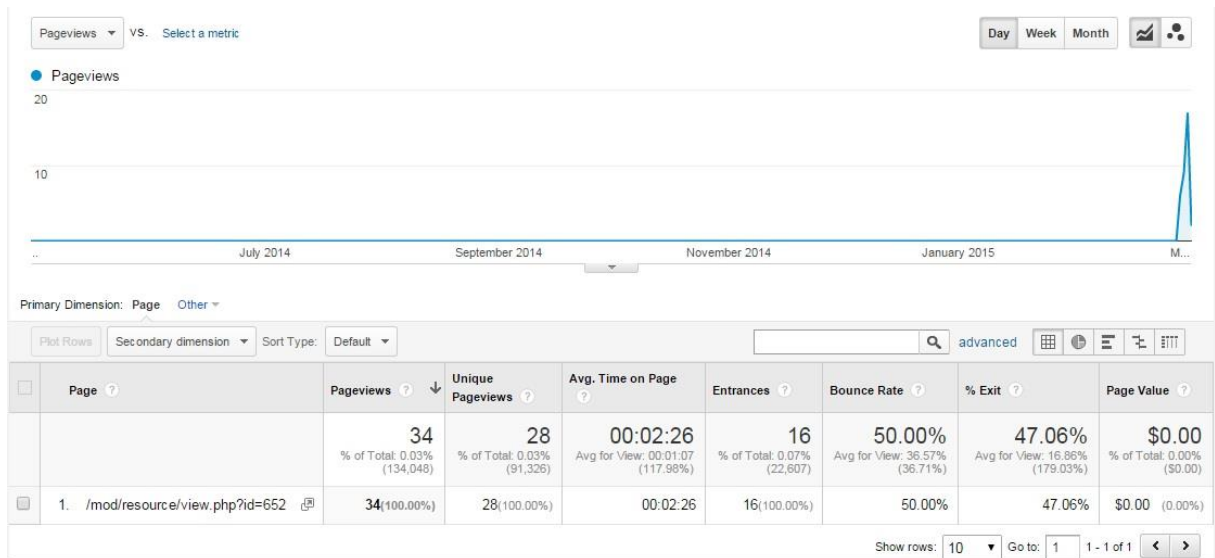
Figure 60: FIWARE Ops statistics - FIWARE Ops for Developers (Webinar)

E.24 FIWARE Lab Solution for Managing Resources & Services in a Cloud Federation (Webinar)
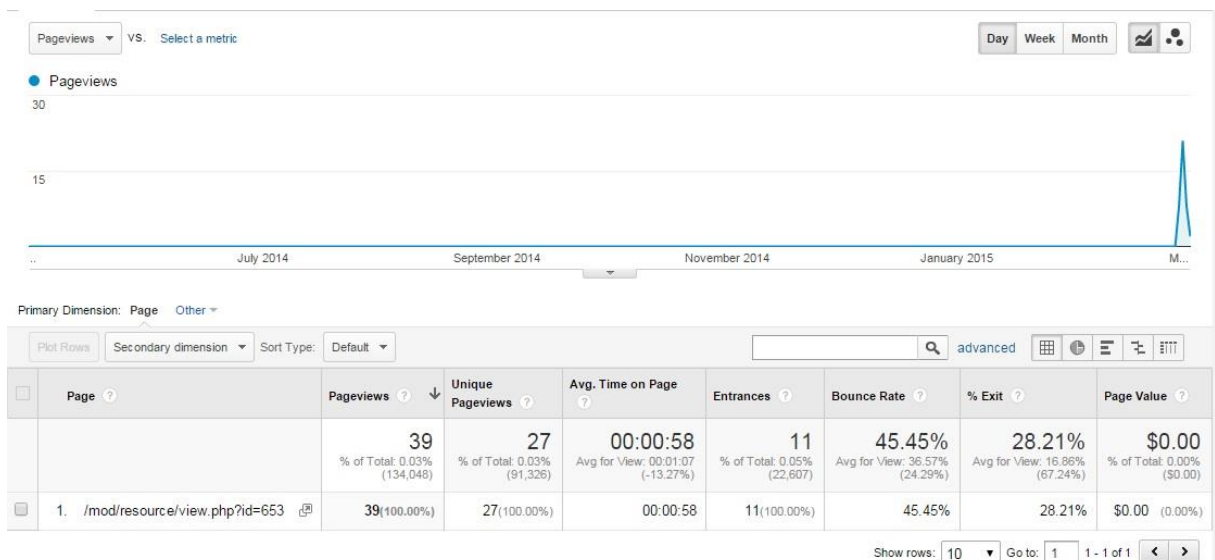
Figure 61: FIWARE Ops statistics - FIWARE Lab Solution for Managing Resources & Services in a Cloud Federation (Webinar)

Appendix F: Training Sessions Announcements

XIFI Project
1st Training session
Fraunhofer FOKUS, Berlin, 15th May 2014

We are pleased to announce you that the XIFI* project is organizing its first training session on May 15, 2014 at Fraunhofer FOKUS premises, Berlin, Germany.

This first training session is dedicated to *developers* (of FI-PPP Use Case projects, Web Entrepreneurs, Start-Ups) who want to use the XIFI Infrastructures and services to run their experimentations (e.g. new FI-PPP based services).

The session will cover

- Presentations - XIFI architecture and capacities
- Demonstrations and case studies (e.g. on XIFI Infrastructure, Showcases based on XIFI infrastructure and FI-WARE GEs)
- Practical examples potentially including practice / tutorials

The session will take place at Fraunhofer FOKUS, Auditorium 2 from 10:00 AM to 5:30 PM (CEST) on May 15, 2014.

Please register at: http://www.eventbrite.com/e/xifi-first-training-session-tickets-11343551869 or send an email to: edu@fi-xifi.eu

Registration Ends: May 15, 2014 9:00 AM

You are very welcome!

* XIFI (https://www.fi-xifi.eu) is a project of the European Public-Private-Partnership on Future Internet (FI-PPP) programme. In this context XIFI is the project responsible for the capacity building part of the programme. The Future Internet Public-Private Partnership, short: FI-PPP, is a European programme for Internet-enabled innovation (https://www.fi-ppp.eu/)

XIFI Project

Training sessions (dedicated to infrastructure owners and operators and FI-Ops users)

Universidad Politécnica de Madrid, 24th - 25th June 2014

We are pleased to announce you that the XIFI* project is organizing training sessions on June 24 and 25, 2014 at Universidad Politécnica de Madrid (UPM) premises, specifically in the Technical School for Telecommunications (ETS Ingenieros de Telecomunicación), Ciudad Universitaria, Madrid, Spain. Details on the venue can be found here: http://www.etsit.upm.es/index.php?id=18ttqltguphtgolkug&L=1

The sessions are dedicated to *infrastructure owners and operators* and *FI-Ops** users* (mainly infrastructures) who want to offer, powered by FI-Ops, the FI-PPP technologies (Enablers) to 3rd parties and join the infrastructure federation and therefore FI-LAB***.

The first day will take place at ETS Ingenieros de Telecomunicación http://www.upm.es/, UPM, ROOM "Sala de Juntas" (Building "A") on June 24th, 2014 from 10:00 AM to 5:30 PM.

This first day is a *basic training session* dedicated to infrastructure owners and FI-Ops users which are partially or not familiarized with the FI-PPP technological environment (FI-WARE, FI-LAB, FI-Ops, General and Specific Enablers, etc.). It will cover the following topics:

Presentations – FI-WARE, FI-LAB and FI-Ops: the technology core

FI-Ops in detail from its developers

How to install and use FI-Ops

Joining the federation and FI-Lab: practical approach to the technical and operational point of view

The second day the training session will take place at ETS Ingenieros de Telecomunicación http://www.upm.es/, UPM, in 3 different rooms (A-129, A-130 and A-131, Building "A") on June 25th, 2014 from 09:30 AM to 4:30 PM.

This second day is a practical training session (hands-on) dedicated to infrastructure owners and FI-Ops users who have participated in the training the day before or who are already familiar with FI-WARE, FI-LAB and FI-Ops. It will cover the following topics

Hands-on session with the FI-Ops developers (in 2-3 groups):

Configuring and deep understanding on adapting your infrastructure to the FI-PPP offer

Installation tips and technical insights

Operation of the federation / operation of a node (master or slave)

Please register at: http://www.eventbrite.com/e/fi-ops-training-tickets-11691570803?aff=rss or send an email to: edu@fi-xifi.eu

*Note: although registration is open for each single day, participants are encouraged to participate in the sessions on both days to have a full and practical coverage of the presented FI-PPP tools. The training session for the first day is open for **60 participants** max, and the session for the 2nd day is open for **30 participants** max, on a first come first serve basis. If more registrations happen, another training session will be proposed.*

* XIFI (https://www.fi-xifi.eu) is a project of the Future Internet Public-Private Partnership, in short: FI-PPP, which is a European programme for Internet-enabled innovation (https://www.fi-ppp.eu/). In this context XIFI is the project responsible for the capacity building part of the programme.

**FI-Ops (https://www.fi-xifi.eu/fi-ops.html) is a collection of tools that ease the deployment, setup, and operation of FI-WARE instances by Platform Providers. FI-Ops is the suite of tools used to build and operate the distributed Cloud linked to FI-Lab.

***FI-Lab (http://www.fi-ware.org/lab/) is a live instance of FI-WARE available to developers for free experimentation with the technology

A guide to FIWARE for beginners
SME Developers Introductory Training session
ECFI-2 Conference - Technical University Munich

We are pleased to announce that the *XIFI** team is organizing an introductory training session dedicated to developers (**SMEs and web-entrepreneurs)** who want to use FIWARE** Open Ecosystem to run their experimentations and use them to develop highly innovative services and applications.

The training will take place as part of the *ECFI-2 SME Training day*** at the Technical University of Munich premises, specifically in the Department of Informatics, Garching, from 10:00 to 12:00, on September 18, 2014.

It will cover the following topics:

What is interesting for SMEs (value proposition)?

Introduction to FI-WARE Open Ecosystem

Ecosystem and Support Services

Places are limited, so please ensure you register at: http://www.eventbrite.com/e/a-guide-to-fi-ware-for-beginners-introductory-training-sessions-tickets-12287854303 or send an email to: edu@fi-xifi.eu

* XIFI (https://www.fi-xifi.eu) is a project of the Future Internet Public-Private Partnership, in short: FI-PPP, which is a European programme for Internet-enabled innovation (https://www.fi-ppp.eu/).

** FIWARE: http://www.fi-ware.org

***ECFI-2 SME Training day: http://www.ecfi.eu/sme-training-day/

A guide to FIWARE for beginners
Accelerator Projects Introductory Training session
ECFI-2 Conference - Technical University Munich

We are pleased to announce that the XIFI* team is organizing two introductory training sessions on September 18, 2014 as part of the ECFI-2 SME Training day** at the Technical University Munich premises, specifically in the Department of Informatics, Garching.

The first introductory training session will take place on September 18 from 10:00 to 12:00 and it will be a training session dedicated to developers (**SMEs and web-entrepreneurs**) who want to use the FIWARE*** Open Ecosystem to run their experimentations.

This session will cover the following topics:

What is interesting for SMEs (value proposition)?

Introduction to FIWARE Open Ecosystem

Ecosystem and Support Services

This introductory training session will focus on *SMEs and web-entrepreneurs* who will respond to the Phase III open calls, to understand FIWARE Open Ecosystem and prepare a high-level proposal in the most efficient manner.

The second session will take place on September 18 from 13:00 to 14:00. This would be a basic training session focused on explaining to **Phase 3 accelerator projects** how to illustrate FIWARE Open Ecosystem to the SMEs and web entrepreneurs. Phase 2 projects are also welcome to attend if they wish.

This introductory training session will cover the following topics:

What is the FIWARE Accelerator Program value proposition?

*FIWARE and FIWARE Lab**** Service Offer*

*FIWARE Ops***** Overview*

Online Training Resources

FIWARE Lab HelpDesk

Places are limited, so please ensure you register at: http://www.eventbrite.com/e/a-guide-to-fi-ware-for-beginners-introductory-training-sessions-tickets-12287854303 or send an email to: edu@fi-xifi.eu

*XIFI (https://www.fi-xifi.eu) is a project of the Future Internet Public-Private Partnership, in short: FI-PPP, which is a European programme for Internet-enabled innovation (https://www.fi-ppp.eu/).

**ECFI-2 SME Training day: http://www.ecfi.eu/sme-training-day/

***FIWARE: http://www.fi-ware.org

****FIWARE Lab (http://lab.fi-ware.org) is a live instance of FI-WARE available to developers for free experimentation with the technology

*****FIWARE Ops (https://www.fi-ops.org) is a collection of tools that ease the deployment, setup, and operation of FIWARE instances by Platform Providers. FI-Ops is the suite of tools used to build and operate the distributed Cloud linked to FIWARE Lab.*

FIWARE Lab Recognition & Reward Programme for Infrastructure owners and operators
Introduction to FIWARE Lab: Webinar

We are pleased to announce that the XIFI* Team is organizing a webinar on October 15th, 2014 from 12:00 to 13:00 CET.

This webinar is organized in the frame of the "*FIWARE Lab** Recognition and Reward Programme*", which has been designed to encourage Infrastructures to join the FIWARE Lab Federation of Infrastructures. It will cover the following topics:

Introduction to FIWARE Lab for Infrastructures

Architecture and Federated Platform

If you are interested in using your ICT Infrastructure for Future Internet experimentation and if you want to be a part of the European Future Internet Programme, then you are ready to participate in our webinar and get Recognition and Reward!

Places are limited, so please ensure you register at: https://www.eventbrite.com/e/introduction-to-fiware-lab-webinar-tickets-13130811611 or send an email to: edu@fi-xifi.eu

*XIFI (https://www.fi-xifi.eu) is a project of the Future Internet Public-Private Partnership, in short: FI-PPP, which is a European programme for Internet-enabled innovation (https://www.fi-ppp.eu/).

** FIWARE Lab (http://lab.fi-ware.org) is a live instance of FIWARE available to developers for free experimentation with the technology

How to join the Federation of Infrastructures: Webinar

We are pleased to announce that the XIFI* Team is organizing a webinar on October 29th, 2014 from 10:00 to 11:00 CET.

This webinar will cover the following topics:

Introduction;

Basic infrastructure requirements;

Legal and administrative clearance;

Deployment of the infrastructure and registration at the cloud portal.

If you are interested in using your ICT Infrastructure for Future Internet experimentation and if you want to be a part of the European Future Internet Programme, then you are ready to participate in our webinar!

Places are limited, so please ensure you register at: https://www.eventbrite.com/e/how-to-join-the-federation-of-infrastructures-webinar-tickets-13821118337 or send an email to: edu@fi-xifi.eu

XIFI (https://www.fi-xifi.eu) is a project of the Future Internet Public-Private Partnership, in short: FI-PPP, which is a European programme for Internet-enabled innovation (https://www.fi-ppp.eu/).

WEBINARS: FIWARE Lab Solution for Managing Resources & Services in a Cloud Federation and XIFI for Developers

We are pleased to announce to you that the XIFI Project (https://www.fi-xifi.eu) is organizing two webinars on Monday, 23rd of February, from 11:00 to 12:00 CET and on Wednesday, 25th of February from 15:00 to 16:00 CET respectively.

The first webinar "FIWARE Lab* Solution for Managing Resources & Services in a Cloud Federation" is dedicated to researchers and developers who want to take advantage of the solution-concerned with FIWARE Lab management tools and components and it will cover the following topics:

Introduction to FIWARE Lab;

FIWARE Lab Solution for Managing Resources & Services in a Cloud Federation; Q&A Session.

The second webinar "XIFI for Developers", which will take place on February 25th, is dedicated to application developers aiming to develop and deploy to the XIFI federation**.

The course explains how to utilise the XIFI portal for creating, managing and deploying services to the federation complemented by an introduction how to utilise command line tools for those tasks not yet supported by the portal.

The course is focusing on the basic tasks and is suitable for less-skilled users but is also guiding more knowledgeable users by some best-practice examples

The webinar will cover the following topics:

Using the FIWARE Lab portal

Getting access, getting started, getting help

Setting up your tenant

Working with your tenant

Exploring the cloud

Using command line tools

Installing OpenStack client tools

Managing virtual machine images

Working with virtual machines

Working with volumes

Places are limited, so please ensure you register at:

Webinar "FIWARE Lab solution for managing resources in a cloud federation": https://www.eventbrite.com/e/fiware-lab-solution-for-managing-resources-services-in-a-cloud-federation-webinar-tickets-15403706902

Webinar "XIFI for Developers": https://www.eventbrite.com/e/webinar-xifi-for-developers-tickets-15493605792

or send an email to edu@fi-xifi.eu

*FIWARE Lab: (account.lab.fiware.org) is a live instance of FIWARE available to developers for free experimentation with the technology

**XIFI Federation: https://www.fi-xifi.eu/federation.html

*FIWARE Lab: (account.lab.fiware.org) is a live instance of FIWARE available to developers for free experimentation with the technology

**XIFI Federation: https://www.fi-xifi.eu/federation.html

WEBINAR: XIFI SSH

We are pleased to announce to you that the XIFI Project (https://www.fi-xifi.eu) is organizing an additional webinar on March 3, 2015 from 11:00 to 12:00 CET.

This webinar will provide a quick introduction to the **SSH** protocol. It is one of the main mechanisms for accessing instances of GE and virtual machines on FIWARE Lab. This webinar will provide a quick introduction to the protocol, clients and setup for accessing FIWARE Lab.

Places are limited, so please ensure you register at: https://www.eventbrite.com/e/xifi-ssh-webinar-tickets-15871906299

Appendix G: Feedback Reports

FIWARE TECHNOLOGY TRAINING

A guide to FIWARE for beginners – Accelerator Introductory training session

Feedback report

The XIFI team organized a training session dedicated to Phase III Accelerator Project partners on September 18, 2014 as pas of the ECFI-2 SMEs Training day in Munich.

More than 40 people from the 16 Accelerator Projects participated in the training.

This training covered the following topics:

1. Introduction (13:05-13:15): Maurizio Cecchi, Telecom Italia
   - Introduction to FIWARE Global Offer
   - The available infrastructure
   - FIWARE benefits for: Accelerator Program

   Online Training Resources (13:15 -13:45): Uwe Herzog, Eurescom

   - Overview of the eLearning Portal
2. FIWARE Lab HelpDesk
   - Online Helpdesk introduction
   - Support Procedures
   - What happens when someone logs a ticket?
3. FIWARE and FIWARE Lab Service Offer (13:45-14:15): Fernando Lopez Aguilar, Telefónica
   - Cloud Portal;
   - Blueprints;
   - Catalogue / Marketplace
   - Where you can find more
4. FIWARE Ops Overview (14:15 -14:45): Federico Alvarez, UPM
   - Monitoring services
   - Inter-cloud networking
   - Private node deployment
   - Join the federation
     - How you can attach a node to FIWARE Lab

<u>Summary</u>

Comprehensively, the feedback we received from the trainees was positive: 64% of trainees rated the training event "good and excellent" and 77% of trainees are interested- or quite interested- in participating in our future training sessions.

In this short report we summarize the results from the 37 questionnaire forms we collected and the feedback and suggestions from the trainers and the organizers.

Analysis of the results from the 37 questionnaire forms we collected:

Globally, the training event was rated as follows:
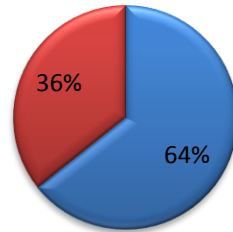
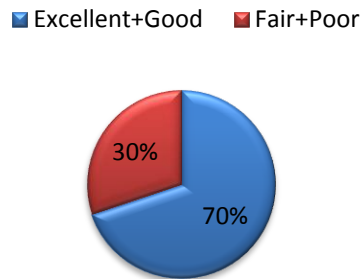*Figure 62: Training appreciation*

The skills of the trainers, their professional demeanour, preparation and their willingness were rated as follows:
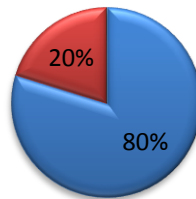
Figure 63: General skills of the trainers

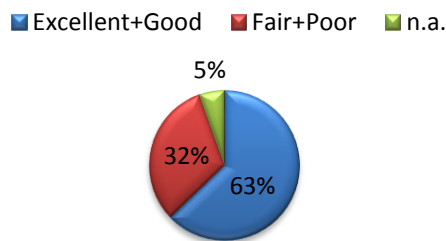The training materials, the equipment, the level and the length of the training were rated as follows:
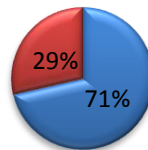
Figure 64: Training material appreciation

The overall organization of the training was rated as follows:
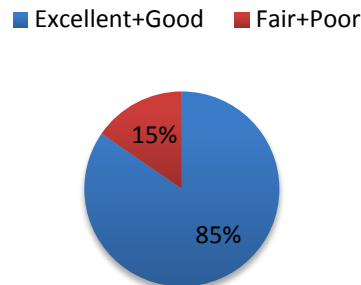
Figure 65: Overall training organisation

The Part A of the training " Introduction", the Part B "Online training resources", the Part D "FIWARE an FIWARE Lab service offer" and the Part E "FIWARE Ops overview" ware rated "Excellent and good" by 77% of the trainees.

The Part C "FIWARE Lab helpdesk" was the least favorite part of the training according to the trainees (46% rated this part "excellent and good").

The favorite parts of the training - according to the trainees - were:

- Deployment of VMs;
- FIWARE Ops overview;
- Online training resources.

The trainees did not underline in the feedback questionnaires their least favourite parts of the training.

The trainees, on their side, suggested to:

- Provide a better overview of entire process from registration to deployment experimentation with FIWARE Lab etc;
- Provide a more practical session with hands-on.

Conclusions

The feedback we received from the trainees was positive. In order to improve our future training sessions, we should provide trainees with more practical session and hands-on.

FIWARE TECHNOLOGY TRAINING

A guide to FIWARE for beginners – SMEs Developers Introductory training session

Feedback report

The XIFI team organized a training session dedicated to SMEs Developers on September 18, 2014 as pas of the ECFI-2 SMEs Training day in Munich.

More than 50 people (European SMEs, startups and web entrepreneurs) participated in the training.

This training covered the following topics:

Introduction (10:05-10:15): Maurizio Cecchi, Telecom Italia

- Introduction to FIWARE Global Offer
- The available infrastructure
- FIWARE benefits for: SMEs

Introduction to FIWARE Open Ecosystem (10:15-11:30): Fernando Lopez Aguilar, Fermín Galán Marquez and Sergio García Gómez, Telefónica

- Introduction to FIWARE, FIWARE Lab and description of the FIWARE Lab environment
- Introduction to GEs, SEs and Cloud Components
- Introduction to CB, Data Management and IoT (including their APIs)

Ecosystem and Support Services (11:30-12:00): Uwe Herzog, Eurescom

- E-learning
- Helpdesk and procedures

<u>Summary</u>

Comprehensively, the feedback we received from the trainees was positive: 70% of trainees rated the training event "good and excellent" and 91% of trainees are interested- or quite interested- in participating in our future training sessions.

In this short report we summarize the results from the 39 questionnaire forms we collected.

Analysis of the results from the 39 questionnaire forms we collected:

Globally, the training event was rated as follows:

Figure 66: Overall Phase III developers training appreciation

The skills of the trainers, their professional demeanour, preparation and their willingness were rated as follows:
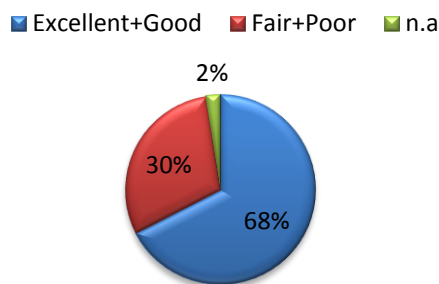
Figure 67: General Phase III developers trainers skills

The training materials, the equipment, the level and the length of the training were rated as follows:

Figure 68: Phase III developers training material appreciation

The overall organization of the training was rated as follows:
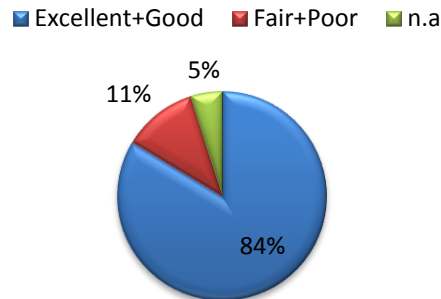
Figure 69: Phase III developers overall organisation

The Part A of the training "Introduction" was rated "Good+Excellent" by 71% of trainees; the Part B "Introduction to FIWARE Open Ecosystem" was rated "Good+Excellent" by 67% of trainees. The Part C "Ecosystem and Support service" was rated "Good+Excellent" by 55% of trainees.

The favorite parts of the training - according to the trainees - were:

- Overview of Ecosystem;
- Introduction;
- The part dedicated to cloud and data providers.

The second part of the training (Introduction to FIWARE Open Ecosystem) was judged "hard to follow" by some trainees.

The trainees, on their side, suggested to:

- Use cases scenarios showing the usage of Ges in a running application;
- Provide more practical examples on how to create an environment/application;
- Provide more practical and dynamic session for developers;
- Show a real start-up case.

Conclusions

The feedback we received from the trainees was positive. In order to improve our future training sessions, we should provide trainees with more practical and dynamic sessions, showing real use cases.

WEBINARS FOR INFRASTRUCTURE OWNERS AND OPERATORS

Feedback report

Webinar: Introduction to FIWARE Lab for Infrastructures

The first webinar "*FIWARE Lab for Infrastructures*" was organized on October 15[th,] and it covered the following topics:

- *Introduction to FIWARE Lab for Infrastructures*
- *Architecture and Federated Platform*

10 external infrastructure owners and operators (from Consortium GARR, Nova-Res, ImaginNew, RWTH, Roma Tor Vergata and Bremen Universities, HLRS, Heanet and Ubiwere) participated in this webinar.

In this short report we analyse the feedback received from our trainees.

We collected 8 questionnaires and the results were as follow:

Comprehensively, the feedback we received from the trainees was positive: 80% of trainees rated the training event "good and excellent" and 77% of trainees are interested- or quite interested- in participating in our future training sessions. The trainees appreciated the "Architecture and Federated Platform" part. The "Introduction to FIWARE Lab for Infrastructures" was also appreciated. The majority of the trainees also participated in additional webinars.

Webinar: How to join the Federation of Infrastructures

The second webinar "*How to join the Federation of Infrastructures*" was organized on October 30, 2014 and it covered the following topics:

- Introduction;
- Basic infrastructure requirements;
- Legal and administrative clearance;
- Deployment of the infrastructure and registration at the cloud portal

The same people who participated in our previous webinar also registered to this one and, at the end, 5 people (from Adral, Uni Bremen, Consortium GARR, GIPTA and ImagiNew) took part in this webinar.

Comprehensively, the feedback we received from the trainees was positive: 70% of trainees rated the training event "good and excellent" and 67% of trainees are interested- or quite interested- in participating in our future training sessions. The majority of the trainees also participated in additional webinars.

WEBINARS FOR DEVELOPERS
Feedback report

On the 23rd and 25th of February 2015, WP7 organized two successfully webinars dedicated to researcher/developers.

Webinar: FIWARE Lab Solution for Managing Resources & Services in Cloud Federation

The first webinar "FIWARE Lab Solution for Managing Resources & Services in Cloud Federation" – an intermediate/advanced webinar dedicated to researchers and developers who wanted to take advantage of the solution-concerned FIWARE Lab tools and components- covered the following topics:

- Introduction to FIWARE Lab;

- FIWARE Lab Solution for Managing Resources & Services in Cloud Federation;

- Q&A session.

76 people registered to this webinar, and at the end we had 72 participants from:

- Phase III accelerators SMEs;

- Universities;

- Companies;

- Research centres;

- European Infrastructures.

We collected and analysed 57 questionnaires and the results were as follow:

Comprehensively, the feedback we received from the trainees was positive: 90% of trainees rated the training event "good and excellent" and 90% of trainees are interested- or quite interested- in participating in our future training sessions. The explanation of Pegasus and the system architecture were very appreciated by our participants.

Webinar: XIFI for developers

The second webinar "XIFI for developers" – a basic/intermediate webinar dedicated to researchers and developers aiming to develop and deploy to the XIFI federation – covered the following topics:

Using the FIWARE Lab portal

Getting access, getting started, getting help

Setting up your tenant

Working with your tenant

Exploring the cloud

Using command line tools

Installing OpenStack client tools

Managing virtual machine images

Working with virtual machines

Working with volumes

70 people registered to this webinar, and at the end we had 54 participants from:

- Phase III accelerators SMEs;

- Universities;

- Companies;

- Research centres;

- European Infrastructures.

We collected and analysed 39 questionnaires and the results were as follow:
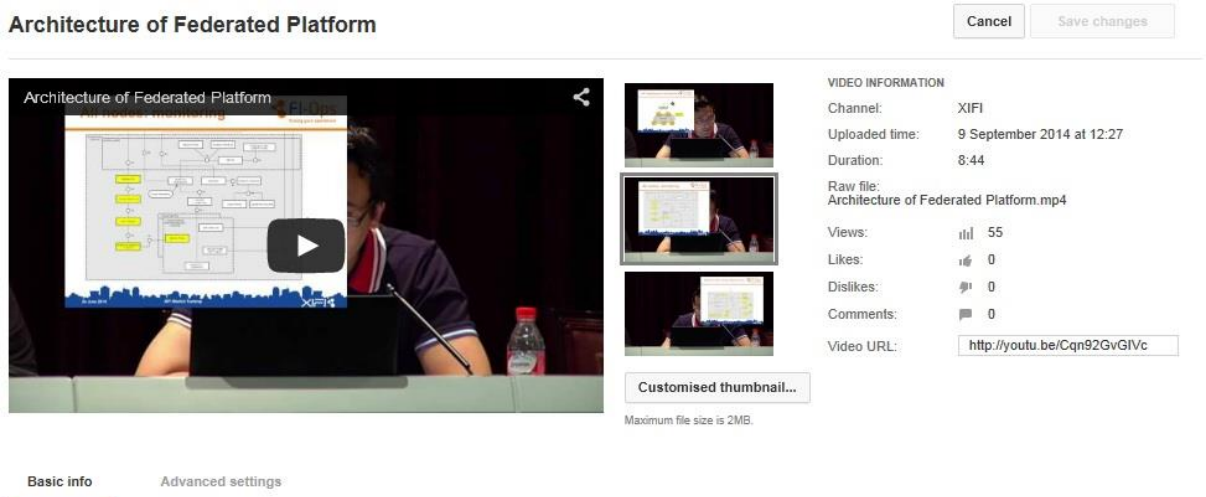
Comprehensively, the feedback we received from the trainees was positive: 90% of trainees rated the training event "good and excellent" and are interested- or quite interested- in participating in our future training sessions.

Except for a technical problem occurred at the beginning of the project, the webinar- especially the hands-on part, was judged very interesting by the trainees.

Appendix H: YouTube Reports for Training Videos

H.1 - "Architecture of Federated Platform" video

This training material was released to the XIFI YouTube TV channel and the Training Portal on the 9th September 2014.
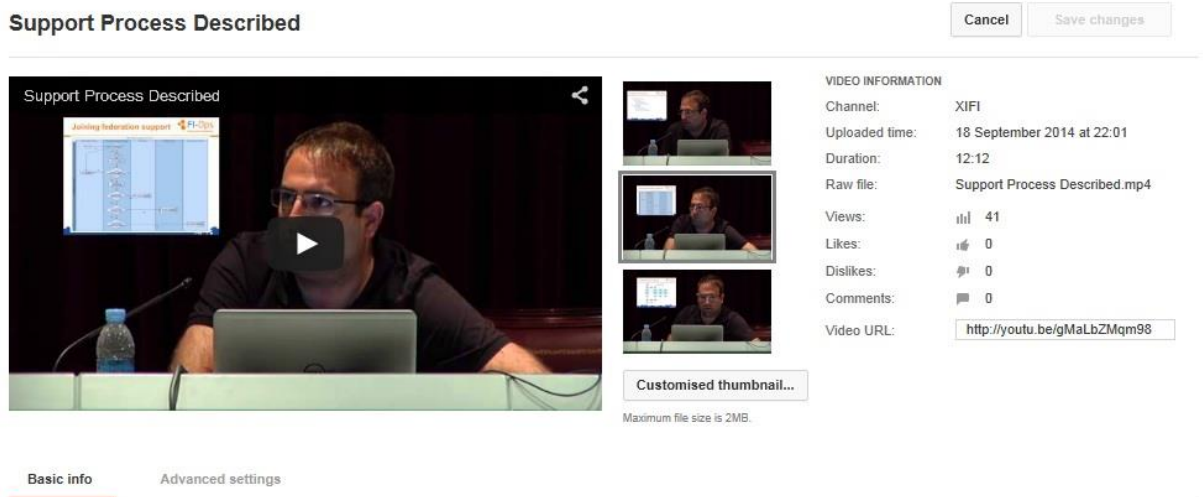

Figure 70: YouTube video statistics - Architecture of Federated Platform

YouTube Analysis Report:

- Performance had a total of 55 views

- Estimated minutes watched 91

- Demographics – top geographies:
  - Ireland
  - Germany
  - Poland
  - Italy
  - United States

- Discovery – top playback locations:
  - YouTube watch-page 100%

- Top traffic sources:
  - Direct 41%
  - External website 24%
  - YouTube channel page 13%
  - Other 2%

H.2 - "Infrastructure ToolBox (ITBox)" video

This training material was released to the XIFI YouTube TV channel and the Training Portal on the 13th September 2014.

Figure 71: YouTube video statistics - Infrastructure Toolbox (ITBox)
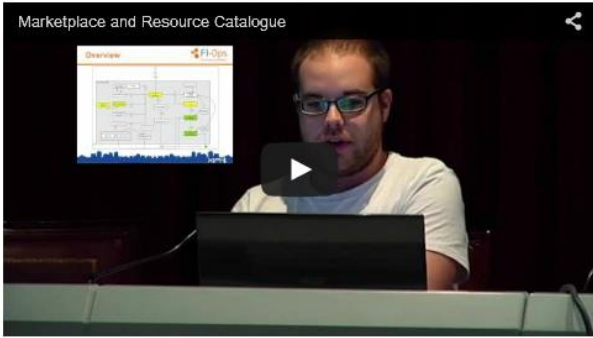
YouTube Analysis Report:

- Performance had a total of 65 views

- Estimated minutes watched 196

- Demographics – top geographies:

    - Brazil

    - Spain

    - Slovenia

    - Ireland

    - Greece

- Discovery – top playback locations:

    - YouTube watch-page 97%

    - Embedded player on other websites 1.5%

    - YouTube other 1.5%

- Top traffic sources:

    - External website 51%

    - Direct 14%

    - YouTube suggested video 14%

    - Other 21%

H.3 - "Marketplace and Resource Catalogue" Video

This training material was released to the XIFI YouTube TV channel and the Training Portal on the 14th September 2014.
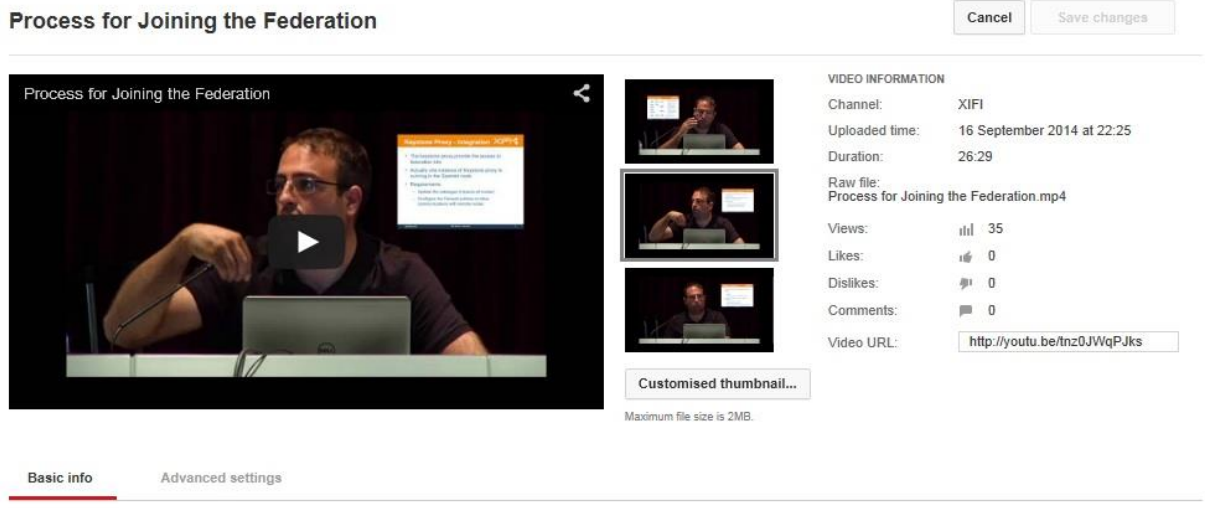
Figure 72: YouTube video statistics - Marketplace and Resource Catalogue

YouTube Analysis Report:

- Performance had a total of 31 views

- Estimated minutes watched 53

- Demographics – top geographies:

    - Ireland

    - Spain

    - Switzerland

    - Germany

    - India

- Discovery – top playback locations:

    - YouTube watch-page 97%

    - YouTube other 3%

- Top traffic sources:

    - External website 26%

    - YouTube search 23%

    - Direct 23%

    - Other 28%

H.4 "Process for Joining the Federation" video

This training material was released to the XIFI YouTube TV channel and the Training Portal on the 16th September 2014.

Figure 73: YouTube video statistics - Process for Joining the Federation
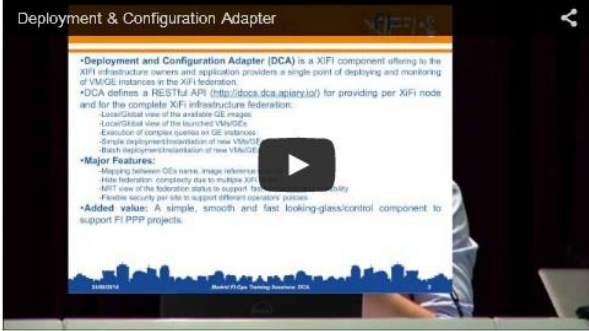
YouTube Analysis Report:

- Performance had a total of 35 views

- Estimated minutes watched 182

- Demographics – top geographies:

    - Ireland

    - Greece

    - Italy

    - Germany

    - United Kingdom

- Discovery – top playback locations:

    - YouTube watch-page 97%

    - Embedded player on other websites 3%

- Top traffic sources:

    - Direct 26%

    - External website 26%

    - YouTube channel page 20%

    - Other 28%

H.5 "Support Process Described" video

This training material was released to the XIFI TV channel and the Training Portal on the 18th September 2014.

Figure 74: YouTube video statistics - Support Process Described

YouTube Analysis Report:

- Performance had a total of 41 views

- Estimated minutes watched 64

- Demographics – top geographies:

    - Germany

    - Italy

    - Ireland

    - India

    - Greece

- Discovery – top playback locations:

    - YouTube watch-page 97%

    - YouTube other 3%

- Top traffic sources:

    - External website 33%

    - Direct 28%

    - YouTube channel page 20%

    - Other 19%

H.6 "Network Controller" video

This training material was released to the XIFI YouTube TV channel and the Training Portal on the 1st October 2014.

Figure 75: YouTube video statistics - Network Controller

YouTube Analysis Report:

- Performance had a total of 30 views

- Estimated minutes watched 89

- Demographics – top geographies:

  - Germany

  - Greece

  - Thailand

  - Poland

  - Georgia

- Discovery – top playback locations:

  - YouTube watch-page 97%

  - Embedded player on other website 3%

- Top traffic sources:

  - External website 37%

  - YouTube channel page 27%

  - Direct 13%

  - Other 23%

H.7 - "Deployment & Configuration Adapter" video

This training material was released to the XIFI TV channel and the Training Portal on the 2nd October 2014.
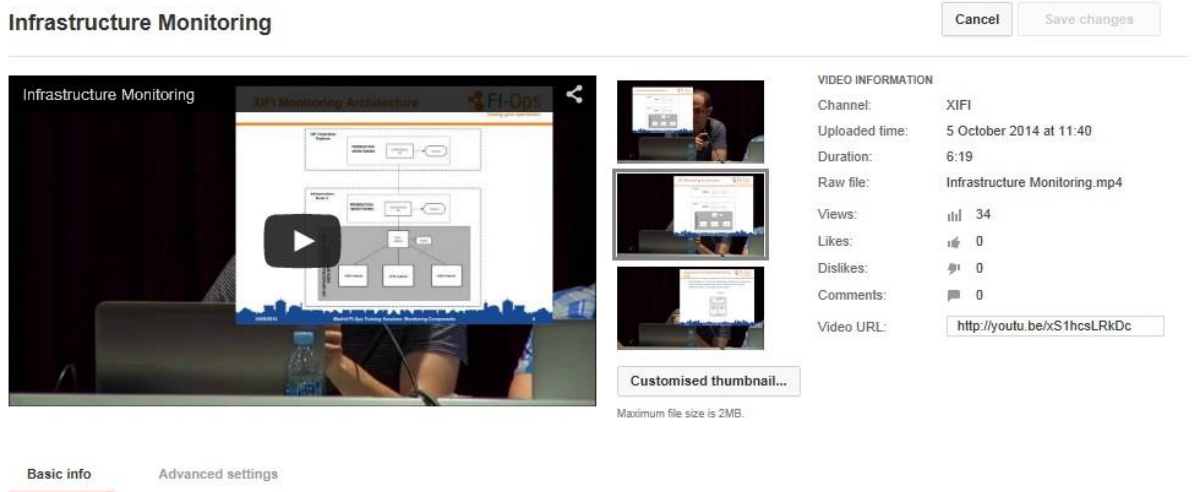

Figure 76: YouTube video statistics - Deployment & Configuration Adapter

YouTube Analysis Report:

- Performance had a total of 10 views

- Estimated minutes watched 13

- Demographics – top geographies:
    - Brazil
    - Greece
    - Spain
    - Germany
    - Ireland

- Discovery – top playback locations:
    - YouTube watch-page 90%
    - YouTube other 10%

- Top traffic sources:
    - External website 50%
    - Direct 30%
    - YouTube suggested video 20%

H.8 - "Infrastructure Monitoring" video

This training material was released to the XIFI TV channel and the Training Portal on the 5th October 2014.
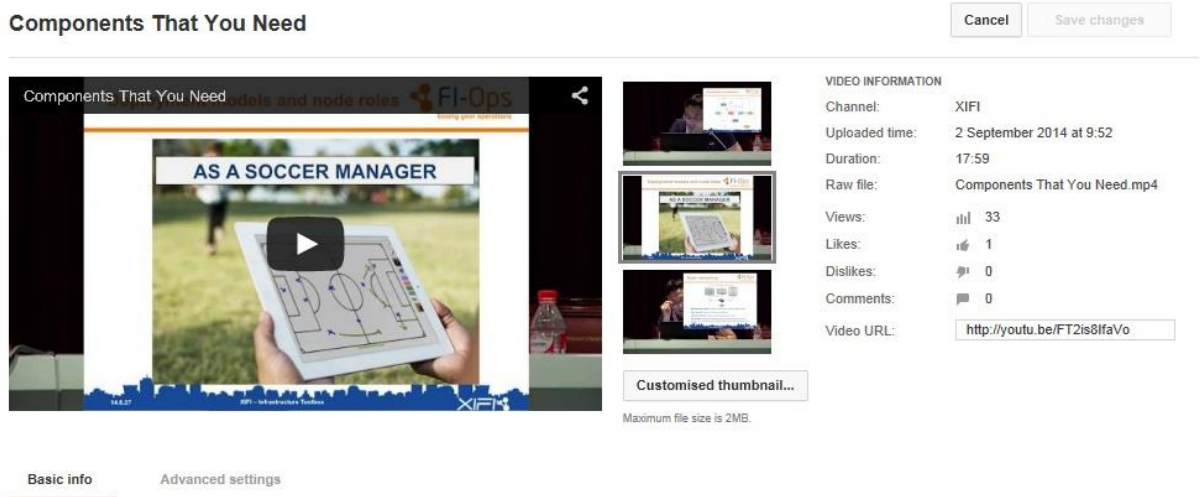

Figure 77: YouTube video statistics - Infrastructure Monitoring

YouTube Analysis Report:

- Performance had a total of 34 views

- Estimated minutes watched 70

- Demographics – top geographies:
    - Germany
    - India
    - United States
    - United Kingdom
    - Greece

- Discovery – top playback locations:
    - YouTube watch-page 100%

- Top traffic sources:
    - YouTube search 27%
    - External website 22%
    - YouTube channel page 18%
    - Other 33%

H.9 - "Components That You Need" video

This training material was released to the XIFI TV channel and the Training Portal on the 2nd September 2014.

Figure 78: YouTube video statistics - Components That You Need

YouTube Analysis Report:

- Performance had a total of 33 views

- Estimated minutes watched 93

- Demographics – top geographies:
    - Ireland
    - Poland
    - Italy
    - Germany
    - Spain

- Discovery – top playback locations:
    - YouTube watch-page 97%
    - YouTube other 3%

- Top traffic sources:
    - Direct 53%
    - External website 43%
    - YouTube Guide 4%

Appendix I: Local Communities

Below is a summary of the local/regional communities engaged by the XIFI partners. The results were collected as part of the exploitation survey done in the WP10.

Partner	Community	Members
Zhaw	Open Stack User Group switzerland - http://www.meetup.com/openstack-ch/	273
UPRC (University Piraeus)	End Users (Academic & Research Institutions, Associations, Providers - Operators & services, Equipment vendors, EU Project)	27
	Developers (Distributed management system & web developers, IoT developers & Arduino/Raspberry Pi developers, Phase III)	8
	Sponsors and/or Investors (Public Authorities, Business Angels) - http://www.aueb.gr/index_en.php; http://www.ntua.gr/;(others)	22
Trentino Net	Fuel and Openstack support - https://webchat.freenode.net/	65
Acreo	ICT Cluster for SMEs (Fiber Optics Valley) - http://fiberopticvalley.com/en/	100
	Enterprise Europe Network (support for SMEs) - http://een.ec.europa.eu/	15
	Swedish ICT nodes including cluster LEVEL-6 - http://enterpriseeurope.tillvaxtverket.se/omnatverket/inenglish.4.2cb8e50e12dc6ae84ae80001748.htmlhttps://www.swedishict.se/ https://www.sics.se/level-6	1000
NITOS-UTH	Academia - http://www.ict-fire.eu - http://www.upmc.fr/ - http://www.unina.it/index.jsp - http://www.inria.fr/	>30
	SMEs - Industry	>20
PSNC	Developers and Innovators	300
BTH	ETSI NFV ISG - http://www.etsi.org/technologies-clusters/technologies/nfv	250
Neuropublic	Greek Farmers - www.c-gaia.gr	100000
Com4Innov	End Users (Providers, Industry, Others)	20 -> 40
	Developers	5 ->15
	Intermediaries (Clusters, Incubators, Public Authorities) - http://www.incubateurpacaest.org/ - http://entrepreneurs.telecom-paristech.fr/ - http://en.pole-scs.org/ - http://www.regionpaca.fr/economie-emploi/innovation-et-recherche/strategie-regionale-dinnovation-sri.html	5 -> 10
I&R	I&R - http://www.images-et-reseaux.com/fr/annuaires/membres - http://www.images-et-reseaux.com/fr/le-pole/chiffres-clefs - http://visir.images-et-reseaux.com/#/partenaires/	256
WIT	Openstack Ireland - http://www.meetup.com/OpenStack-Ireland/	386

Table 9: Local/regional communities engaged by the XIFI partners