Internet Mobile ConTent

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# D5.3 Recommendations

# on the use of enablers

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# 1   Introduction

The main objective of this deliverable is to provide a set of recommendations on Enablers use and deployment. It gathers the expertise generated during the project implementation, mainly about Enablers technologies acceptation among technological entrepreneur's community & general market, results achieved by open calls beneficiaries regarding enablers' usage and means for maintaining public and private support to the Enablers use & promotion.

This task was included in Work Package 5 which main objective was to contact, coordinate and involve all stakeholders, both from inside and outside FI-PPP initiatives, in order to create a sustainable environment of interested parties around Internet Mobile Contents technologies, ensuring the foreseen impact of proposed project actions and guaranteeing the sustainability beyond FI-PPP funding. Buongiorno, with the active participation of IMPACT's technical manager has participated and collaborated with different FI-PPP initiatives (specifically FI-CONTENT) in order to provide recommendations and to contribute to pave the way for transferring the knowledge gained with the implementation of the open calls and the acceleration program regarding enablers use and potentialities. In this document, it is explained how IMPACT identified best practices and use cases to be used with regional governments and other stakeholder' communities in order to foster a rapid technology uptake around Internet Mobile Content enablers.

The final aim is to properly utilize the **know-how generated during the project's implementation**, with a focus on the take-up amongst the technological entrepreneur's community & the general market of the FIWARE technologies and the results achieved by open calls beneficiaries regarding enablers' usage and maintaining public and private support to the FIWARE use & promotion. IMPACT has already identified the most stable and generic Enablers, those which have been used by startups in real cases, and have come to a better understanding of the capabilities, strengths and weaknesses of the FIWARE technology.

**Finally, IMPACT will use the know-how generated within its new project IMPACT Growth to develop new products and services using FIWARE, contributing to the sustainability of the community and the market of FIWARE technologies.**

## 2   FIWARE Promotion during IMPACTs Open Call for Proposals

As one of the FI-PPP phase 3 projects, IMPACT promoted the creation of innovative products and services spreading the use of FIWARE technology among European Web Entrepreneurs [WEs] and SMEs. In particular, IMPACT contributed to the promotion and early adoption of FIWARE Technology, i.e. FIWARE generic enablers, specific enablers and/or domain specific platforms, **by providing premium acceleration support and services and  distributing up to 6.4 million euro to 63 start-ups around Europe.**

As stated in IMPACT's Guide for Applicants, *['..any project submitted is required to make use of FIWARE technologies. Lack of clarity on the use of FIWARE technologies will make the proposal not eligible].*

Moreover, IMPACT produced six webinars (two for each Open Call) in order to help Applicants better understand FIWARE technologies and organized three hackathons in Spain and Italy to further promote FIWARE technologies with a very appreciate learning approach. For more information about FIWARE technologies promotion, please see deliverables from WP2.

IMPACT has always promoted the use of all enablers. However before and during each Open Call, IMPACT has prioritized different enablers with the objective, to promote 'general enablers' that could be perfectly adapted to each mobile reality and to give SMEs and entrepreneurs the possibility to choose enablers that showed stability and high level of maturity in order to contribute to the development of potential beneficiaries.

As an example, for IMPACT's third and last Open Call the following enablers were prioritized:

### "CORE" ENABLERS

1.Data and Context management

♣Context Broker: **Orion**

♣Stream-oriented: **Kurento**

2.Internet of Things Services Enablement

♣Backend Device Management: **IDAS** (IoT agents)

3.Security

♣Identity Management: **KeyRock**

4.Advanced Web-based User Interface

♣**POI Data Provider S**


## SUPPORTING ENABLERS

1.Data and Context management

♣Complex Event Processing: **CEP**

2.Security

♣Authorization PDP: **AuthZForce**

3.Applications Ecosystems and Delivery Frameworks

♣Application Mashup: **Wirecloud**

4.Domain-Specific Enablers

♣FI-Content2 Enablers (http://mediafi.org/)


After submission of their applications, applicants that passed the external evaluation phase were also evaluated in **FIWARE technology**, which was expected to be a significant component of the proposed technical project, the advantages of using FIWARE must be highlighted in the proposals, and the technology map must be feasible and clear. The FIWARE Experts evaluated whether these three conditions were met, and provided their final assessment.

## 3   FIWARE Support during Acceleration Programs

Once in the acceleration program, IMPACT startups got FIWARE support from workshops and a specific training session organized by IMPACT team and IMPACT technical manager, Marcelo Royán. The session was addressed to all start-ups in training camp and was aimed to show participants a first look to FIWARE architecture and enablers and to explain which were IMPACT's requirements regarding FIWARE.

Goals of FIWARE Support:

- Organize IMPACT support to startups in the FIWARE architecture area
- Define process to establish FIWARE KPIs
- Define process to check KPIs along the acceleration period
- Define FIWARE -specific mentoring process and goals

Procedure:

1) Step one: **FIWARE architecture and KPIs**

1.1. Define which FIWARE enablers to use

1.2. Define the FIWARE architecture

1.3. Define the FIWARE KPIs

2) Step two: **FIWARE follow-up**

2.1. Define FIWARE-specific training session/s

2.2. Define FIWARE mentoring process

2.3. Define monthly checks and two milestones

**FIWARE mentoring**:

During the whole acceleration period, IMPACT beneficiaries had the possibility to book for FIWARE support from Specialized Mentors with specific knowledge and experience (Marcelo Royán and two

formers start-uppers from IMPACT's First Acceleration Program- Alex Dantart and Marzban Cooper). This FIWARE mentoring was integrated in the general IMPACT mentoring process and mechanism.

Before each Milestone check the IMPACT FIWARE team, managed to have a 'FIWARE check' that is to say an online call with every startup in order to better understand their FIWARE developments and improvements.
The IMPACT FIWARE team was composed by the FIWARE Coach provided by the European Commission Leandro Guillén and by the IMPACT Technology Leader, Marcelo Royán.

Prior to the "FIWARE Check" our technical manager, had helped each startup to better select the top enablers, giving them further support and mentoring. Therefore, the FIWARE Team had always had a clear overview of the development process, technology road map, challenges and efforts carried out during the acceleration program. After each "FIWARE Check" the IMPACT FIWARE Team met to agree on a startups´ final score, and provide a final feedback which would help the startups to continue developing FIWARE, heading towards improvement.

The Final evaluation of each Beneficiary was done according to the following criteria: **FIWARE compliance** and **Business potential**. Regarding FIWARE compliance, each Beneficiary was scored from 0 to 10, based on performance of the KPIs defined at the beginning of the Acceleration Program, where beneficiaries collecting more than 5 points, were allowed to continue the acceleration program and receive the correspondent payments; beneficiaries that did not meet the KPIs, were removed from the acceleration program. This approach of delivering the grant to startups in accordance with the achievement of the deliverables has encouraged our grantees to develop and use efficiently FIWARE. For more information regarding the acceleration program management, please see deliverables: **D.4.3 Report on Acceleration Program Results.**

**Some learnings and lessons learnt**

1) Implementing FIWARE in just six months has been a challenge, especially for those companies with a complex technology infrastructure; this is the main reason why IMPACT tried to make the process easier through a carefully designed and responsive support system.

2)  During the support programs, there was some lack of support in the implementation of some enablers, or a slow responsiveness, that affected negatively startups, especially in months close to a milestone-check.

3)  The maturity state of the enablers varies from one to another, while the catalogue is too broad. IMPACT considered that the technology should be concentrated on having less, but more mature enablers, ready for use and support.

4)  Results achieved by open call beneficiaries regarding enabler's usage.

    a)  **IMPACT's code repository**: it was created by Coffeestrap, Goalshouter, Inevio using the same FIWARE enabler Kurento, with the objective of creating a place for exchanging knowledge, and experiences. It is already open to the public. Our startups, successfully implemented FIWARE, by building a bottom-up code community

    b)  Our first batch start-up, Bastly developed a **new Orion functionality** recognized and appreciated also by FIWARE tech team

# 4   FIWARE Assessment

IMPACT technical manager, together with BUONGIORNO's coordinator carried out a questionnaire to assess the proper functioning of FIWARE enablers.

For each enabler used, the start-ups should answer the following questions:

1) How do you assess the technology readiness/maturity?
2) How do you assess the quality of the technologies?
3) Recommendations for the technology, what would you change?

The questionnaire was sent to startups in our acceleration programs. Startups from our first acceleration program experienced some lack of support in the implementation of some enablers, or a slow responsiveness, that affected negatively them. Support in implementation together with maturity/readiness of enablers increased during 2015, which helped start-ups of second and third batches.

## 4.1 IMPACT First Acceleration Program

**IMPACT First Batch Use of FIWARE in their architecture.** Completed the questionnaire in June 2015.

Here is a summary of the use of FIWARE for IMPACT's first acceleration program beneficiaries.

| | Project | |
|---|---|---|
| | **Name** | **FIWARE Enablers Use** |
| | | **Architecture Enablers** |
| 1 | **INTOINO** | - Orion GE<br>- IoT agent GE. First option: MQTT, second option: CoAP |
| 2 | **Onomondo** | - Object Storage GE<br>- Orion GE |
| 3 | **Bastly** | - Object Storage GE<br>- Orion GE |
| 4 | **Inevio** | - Object Storage GE<br>- Kurento GE |
| 5 | **Chronobook** | - Cosmos GE |
| 6 | **Notegraphy** | - Orion GE<br>- Cosmos GE |
| 7 | **CONDUCTR** | - KeyRock GE<br>- WStore GE |
| 8 | **GoalShouter** | - Kurento GE |
| 9 | **Healthia** | - Cosmos GE<br>- KeyRock GE |
| 10 | **Olaii Payments** | - KeyRock GE<br>- AuthZForce GE<br>- Wilma GE |
| 11 | **8fit** | - Orion GE |
| 12 | **Shopping Leeks** | - Cosmos GE<br>- KeyRock GE |
| 13 | **MIVOQ** | - KeyRock GE<br>- Wilma GE<br>- Orion GE |
| 14 | **CrowdFashion** | - Object Storage GE<br>- KeyRock GE |
| 15 | **BridgeMedia Service** | - Orion GE<br>- Cosmos GE<br>- WireCloud (optional) |
| 16 | **Njoy** | - Orion GE<br>- IDAS/IoT agent GE<br>- WireCloud (optional) |
| 17 | **Revisely** | - Cosmos GE |
| 18 | **CoffeeStrap** | - Kurento GE |
| 19 | **SmartSea** | - POI Data Provider GE |

| | Orion GE | Iot | Object storage | Kurento | Cosmos | wstore | keyrock | AuthZForce GE | Wilma | Wirecloud | POI Data Provider GE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **INTOINO** | x | x | | | | | | | | | |
| **Onomondo** | x | | x | | | | | | | | |
| **Bastly** | x | | x | | | | | | | | |
| **Inevio** | | | x | x | | | | | | | |
| **Chronobook** | | | | | x | | | | | | |
| **Notegraphy** | x | | | | x | | | | | | |
| **CONDUCTR** | | | | | | x | x | | | | |
| **GoalShouter** | | | | x | | | | | | | |
| **Healthia** | | | | x | x | | | | | | |
| **Olaii Payments** | | | | | | | x | x | x | | |
| **8fit** | x | | | | | | | | | | |
| **Shopping Leeks** | | | | | x | | x | | | | |
| **MIVOQ** | x | | | | | | x | | x | | |
| **CrowdFashion** | | | x | | | | x | | | | |
| **BridgeMedia Service** | x | | | | x | | | | | | |
| **Njoy** | x | | | | | | | | | | |
| **Revisely** | | | | | x | | | | | | |
| **CoffeeStrap** | | | | x | | | | | | | |
| **SmartSea** | | | | | | | | | | | x |

## First batch of start-ups assessment and recommendations of FIWARE Use:

○ **Orion**: Most of the startups from the First Open Call considered that the level of maturity was **mid-maturity** and **that final adjustments were needed but considered that the overall quality of the technology was good and worked**. Some recommendations/improvements for the technology were:

1) Need of reference manual and maintenance/administration guide (in particular for backup, monitoring and scalable deployment).
2) Security: the access security is very poor; a solution can be to fix it with some workarounds.
3) Deployment: full control of mongo dB is required
4) Usage: subscriptions are not tracked and it is easy to have many unused subscriptions.
5) It should support web sockets for NGSI notifications.

○ **Object Storage:** Most of the startups from the First Open Call considered that, the level of maturity **was mid-maturity and that final adjustments were needed but considered that the overall quality of the technology was good and work**ed.

o  **Key Rock:** Most of the startups from the First Open Call considered that, the level of maturity was mid-maturity and that final adjustments were needed but considered that the overall quality of the technology was good and works**.** Some recommendations/improvements for the technology were:

1)  To develop some kind of "platform" for quick widget/operator creation and testing.

o  **Wilma:** Most of the startups from the First Open Call considered that, the level of maturity was **LOW**. Some recommendations/ improvements:

1)  Need fixing integration it was considered to basic.

o  **Wirecloud:** Most of the startups from the First Open Call considered that, the level of maturity was **mid-maturity and that final adjustments were needed but considered that the overall quality of the technology was good and worked.** Some recommendations/ improvements:

1)  To develop some kind of "platform" for quick widget/operator creation and testing.

o  **IoT Agent:** The startup that used this enabler considered that the enabler level of maturity was **LOW**.  Some recommendations/improvements for the technology were:

1)  Use only the Orion CB and skip the IoT Agent for the moment.

o  **POI Data Provider:** The startup that used this enabler considered that the enabler level of maturity **was mid-maturity. They considered that although the system works, the API services do not seem to follow a clear, standardized structure.** In addition, the fact that two different databases (PostgreSQL and MongoDB) are needed it is not common for such a reduced set of services. Finally, creating a specific enabler for such a functionality

(storing and retrieving geo POIs) without adding a lot more functionalities doesn't seem to be justified, since the same type of features can easily be implemented with a generic backend/API and a good geospatial strategy, except maybe in cases where this is the only type of cloud-based functionality needed. Some recommendations/ improvements:

1) future versions of the system should show better structured web services, following standards like the ones provided in these recommendations:
   http://jsonapi.org/recommendations/

o **Openstack Keystone** the start-up that implemented this enabler considered it a viable alternative to Key rock that is currently used in FILAB however lacks of some features (e.g.: OAuth2 support, mongodb integration, possibility to have a completely SQL free installation). Some recommendations/improvements for the technology were:
   1) Implement OAuth2 plugin. Allow SQL free setup. Allow Mongodb backend instead of SQL or LDAP.

o **Steelskin Pep Proxy** the start-up that implemented this enabler considered **LOW MATURITY but is evolving fast.** Documentation is still scarce but covers some useful use cases. It is features rich and suitable to be used with Orion. It is usable with Open stack Keystone that is a much better alternative to Key rock. Some recommendations/ improvements:

   1) Improve configuration
   2) Proper log setup would also be desirable

o Regarding specific enablers, only **SmartTV, Flexible and adaptive text to speech and Security Monitor** were assessed, considered both **LOW maturity**. Regarding Flexible and adaptive text to speech, some features are still lacking (e.g.: only partial SSML is supported, Effects are not available yet, although styles exists).

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**Final Results for IMPACT's First Acceleration Program**

*All the startups have passed the FIWARE check, and 5 of them with scores 9 or 10. After auditing the FIWARE implementation, we can conclude that the IMPACT Startups are really developing their technologies using FIWARE as an important area of their technology infrastructure.*

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## 4.2 IMPACT Second Acceleration Program

**IMPACT Second Batch Use of FIWARE in their architecture.**

The startups completed the questionnaire in February 2016. Here is a summary of the use of FIWARE for IMPACT's second acceleration program beneficiaries.

| # | Project | Proposed Enablers |
|---|---------|-------------------|
| 1 | **Alpify** | - Cosmos<br>- Kurento |
| 2 | **AppAnalytics.io** | - Cosmos |
| 3 | **Back in Time** | - Cosmos |
| 4 | **Butano24** | - Orion Context Broker<br>- IDAS IoT Agents |
| 5 | **DNAPhone** | - Orion Context Broker<br>- Kurento<br>- IDAs |

| # | Project | Proposed Enablers |
|---|---------|-------------------|
| 6 | **Fueloyal Technology** | - IDAS (IoT Device Management)<br>- COSMOS (Big Data – History) |
| 7 | **GamePho** | - Orion Context Broker<br>- Wirecloud |
| 8 | **Gelt** | - Orion Context Broker<br>- Cosmos |
| 9 | **Glamping Hub** | - Docker Generic Enabler (1st)<br>- 2D UI (2nd) |
| 10 | **Klass Data** | - Orion Context Broker |
| 11 | **Kukua Weather Services** | - Orion Context Broker<br>- KeyRock<br>- Authorization PDP |
| 12 | **Measurence** | - Orion Context Broker<br>- SpagoBI |
| 13 | **Momentum** | - KeyRock<br>- FIWARE Docker<br>- Cloud Messaging GE |
| 14 | **Music Sense** | - Cosmos<br>- FIWARE Docker |
| 15 | **Prior** | - POI Data Provider<br>- POIProxy SE<br>- Complex Event Processing<br>- Orion Context Broker |
| 16 | **Quizlyse** | - Orion Context Broker |
| 17 | **Sellf** | - Hadoop As A Service (HAAS) engine<br>- Cosmos GUI and Cosmos REST APIs |
| 18 | **Sentinel** | - Orion Context Broker<br>- Complex Event Processing<br>- Gateway Data Handling GE - Cepheus<br>- Cygnus |
| 19 | **Syneidis SL** | - Cyber Security GE |
| 20 | **TabTrader** | - SpagoBI |
| 21 | **WelcoSystem** | - Complex Event Processing |
| 22 | **Wiffinity** | - Orion Context Broker<br>- Cosmos |
| 23 | **Worktoday** | - Orion Context Broker<br>- Monitoring GE<br>- SpagoBI |

- o **Orion**: Most of the start-ups from the Second Open Call considered that the level of maturity was very high and that the enabler **was ready for the market**. This represents an improvement regarding the maturity of the enabler for the start-ups of our second batch. Indeed, some recommendations/improvements for the technology were:

1) Improvement must be done to platform to solve start-ups doubts

2) The configuration was less straightforward than the other enablers were, as its development is less complete.

3) Documentation lacks of some basic information in certain sections like pattern subscriptions or data types range and the inclusion of a bigger numeric data type for integer numbers, because the actual integer type range is too low and does not work well with timestamp and some long numeric IDs.

4) As a future improvement, it would be interesting to add support for different storages as Cassandra or even more traditional MySQL.

5) Some important APIs are lacking, for example, in the current release it is not possible to list the all-existing subscriptions. Instead, bookkeeping has to be done manually.

6) Improve the documentation and unify it in a single document and a single place

Regarding the use of Orion, we would like to highlight the case of **Kukua**, which was proposed as FIWARE champion by our FIWARE team. Their experience with Orion was very positive. They tested that the Orion context broker was able to handle more than our required 40 requests per second. They said that it behaved very robust when tested both on their own servers, as well as on the servers of the Dutch FIWARE Lab. The results for these tests were that there were zero errors and zero timeouts in the CB. They use Orion for their device metadata as well as for the most updated weather record from every device. It is a long list of different data points, including GPS coordinates

and weather parameters. Moreover, the start-up **has built two of generic enablers**, which are highly recommended to all companies providing **IoT** products or services. These have been built in conjunction with FIWARE Lab NL, and have been tested using their node. They noticed that most of the work of the FIWARE enablers has been done centrally and for that purpose recommend that the community, who will tailor it towards their needs, **be allowed to modify and improve the enablers**. Potentially collective development could be done, or potentially linking the startups with FIWARE specialists.

Lastly, they also recommend to FIWARE that the focus of FIWARE technology implementation **be not on the use of the generic enablers, but rather on the use of the FIWARE nodes for processing**. These nodes could be the hubs for all internet startups if they were free to use any type of open source software that is more widely adopted.

- o **Key Rock:** Most of the startups from the Second Open Call that implemented this enabler considered that, the level of maturity was mid-maturity and that final adjustments were needed but considered that the overall quality of the technology was good and works**.** The enabler's guide is quite complete and the community is very active.

- o **Cosmos:** Most of the startups from this batch that implemented this enabler found that the level of maturity of this enabler was LOW. They had problems with the integration of it as the right documentation was hard to find and sometimes incomplete. We were reported of some problems with different server configurations, and especially with the installation of Cygnus (Apache Flume).
  Some recommendations/improvements for the technology were:

  1) Improve documentation, and a detailed "step to step" guide, would be helpful since there are many permissions to edit. The creation of a Docker container with some examples running (just like in Orion) would really ease the development.

- o **SpagoBi:** Most of the start-ups from this batch that implemented this enabler found that the level of maturity of this enabler was MID MATURITY. They considered that SpagoBI was good at visualizing data. Although, it could be more user friendly for making cockpits. Proprietary

solutions could serve as a nice reference for the developers. Some recommendations/improvements for the technology were:

1) Improve documentation, none documentation on FIWARE site, so startups had to rely on the official SpagoBI documentation for everything, which is not very complete.

o **Proton**: the start-up that use this enabler found the installation manual for Proton very comprehensive. The level of maturity of this enabler was MID MATURITY. Some recommendations/improvements for the technology were:

1) Proton video tutorial needs to be recorded again, this time making sure that no configuration steps are missed.

2) Docker image provided in their repository did not work due to tomcat path variables issues.

3) Documentation must be completed. It would be ideal to have every step and option of Authoring Tool explained with graphical examples. '*Some of the less used (or more advanced) features are barely mentioned in the documentation (ProtonUserGuidev4.4.1.pdf), and no explanation is provided on how some settings change the behavior of the rules (e.g. "Internal segmentation", "Reuse vs Consume"). The need to restart proton after each minor change to the rules (this takes between 10 and 15 seconds) has also slowed down the speed of experimentation. After having development almost a dozen rules I have started missing a centralized store of constants that are used within the rules.*

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**Final Results for IMPACT's Second Acceleration Program**

*Not all the startups have passed the FIWARE check, and 6 of them with scores 9 or 10. After auditing the FIWARE implementation, we can conclude that the majority of IMPACT Startups are really developing their technologies using FIWARE as an important area of their technology infrastructure.*

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## 4.3 IMPACT Third Acceleration Program

### IMPACT Third Batch Use of FIWARE in their architecture.

The start-ups completed the questionnaire in 2016.  Here is a summary of the use of FIWARE for IMPACT's third acceleration program beneficiaries.

| # | Project | Proposed Enablers 1 | Proposed Enablers 2 | Proposed Enablers 3 |
|---|---------|---------------------|---------------------|---------------------|
| 1 | Little Smart Planet | Orion Context Broker | SpagoBI | |
| 2 | LastMinuteSottoCasa | Orion Context Broker | Cosmos | SpagoBI |
| 3 | Lectios | Orion Context Broker | KeyRock | |
| 4 | WazyPark | Orion Context Broker | Cosmos | |
| 5 | Easystay | Orion Context Broker | Cosmos | |
| 6 | Antlos | Orion Context Broker | | |
| 7 | Sporty Heroes | SpagoBI | Orion Context Broker | Kurento |
| 8 | MultiDub | KeyRock | Orion Context Broker | Cosmos |
| 9 | Situm | Cosmos | Cygnus | Orion Context Broker |
| 10 | Everyride | POI Data Provider | Orion Context Broker | Docker |
| 11 | What a Space | Kurento | we just used one enabler | n.a. |
| 12 | TimeJoy | Orion Context Broker | POI Data Provider | |
| 13 | TaxiStartup | Orion Context Broker | wilma pep-proxy | |

| 14 | Bugfender | Kurento | Cosmos | |
| 15 | GloveOne | Orion Context Broker | Cygnus | KeyRock |
| 16 | Agora Voting | Orion Context Broker | | |

## Orion

Overall the startups from the Third Open Call have considered Orion Ge in an advanced stage of maturity. Few final adjustments are necessary before considering the product ready for the market. But in general, the technology works. Below you can find some recommendation and suggested improvements that we have collected:

1.  Improvements required during the implementation process. In particular, the technology works only on CentOS and could be useful to support more Linux distributions.
2.  Documentations should be explaining better and it is suggested to delete all v1 docs in order to make more visible the v2 documentation which is almost hidden. Also, it has been recommended to add "case studies and practical tips" in the documentation in order to make easier the use of the technology and speed the learning time.
3.  Group Rules should be simplified.
4.  Commands: quicker commands to query, subscribe, unsubscribe etc should be present.
5.  The technology performs well at 5K request/second but suffer at >10K request/second.

## Cygnus

Only two startups have used this technology but they have evaluated Cygnus at a high stage of maturity and almost ready for the market with only final adjustments needed. You can find them here:

1.  Few improvements needed due to minor issues such as the difficulty in restarting Cygnus in the version :

    [root@orion1 ~]# /etc/init.d/cygnus restart

    Stopping Cygnus 0...                                  [FAILED]

    Starting Cygnus 0...                                  [OK]"

## Docker

Docker has been considered ready for the market and perfectly working.

## Spago BI

This technology has been valuated as mid/low mature. The recommended improvements suggested by the user are:

1. Customization: it has been suggested to increase the possibility to customize.
2. Development Tool needs to be improved since it has been a struggle setting up connections between backend and the enablers. In this sense, a more dynamic integration is highly recommended.
3. Simplification required: achieving simple visualizations of data often requires too deep knowledge of SQL language.

## Kurento

Overall Kurento has been evaluated as a mid-mature technology. Recommendations and suggested improvements by the user were about playback functionalities missing and browser support did not cover all the needs. Also, documentation should be improved and implementation in other languages other than Java and Nodjes should be implemented. Finally, it has been found that the iOS toolbox is not working and it does not compile.

## Cosmos

Overall Cosmos has been considered as a mature technology with exceptions that evaluated it as low mature. We can conclude that Cosmos is mid-mature with the following important improvements that need to be done:

1. It should be easier to retrieve data.
2. It should be easier to debug map-reduce jobs when they are launched in production.
3. More user-friendly logging system and other Hadoop Tools.
4. Documentation should be improved.

## Keyrock

Overall Keyrock has been considered as almost mature technology. Even if most of the users have been satisfied with the technology adjustments are needed. In particular:

1. Better documentation is needed. And a single collector point for the documentation and Q&A could save a lot of time in the integration process.
2. Necessity to add the forgotten password functionality.

## Wilma

Even if Wilma was used only by one user, it has been considered as a satisfying technology that needs only minor adjustments.

## POI Data Provider

POI Data Provider has been considered a mature technology that needs only minor adjustments in order to be ready for the market. The improvements suggested by the users are:

1. It is possible to delete POI only by unique ID and could be useful deleting by categories
2. Improve the possibility to use more advanced searches. And it would be useful being able to "update and send to POI database only part of the POI-object data that was changed. It would have been great being able to save images directly from POI to database.

## 4.3 IMPACT Extension Acceleration Program

During IMPACT's extension program, before the Milestone, the IMPACT FIWARE team had a 15 minute call with each startup in order to better understand their FIWARE developments and improvements, in what we call the FIWARE Check.

The IMPACT FIWARE team is composed of the FIWARE Coach provided by the European Commission, Leandro Guillen.

Before the final selection of the IMPACT Extension startups, the IMPACT FIWARE team approved the use of FIWARE for each of the selected startups. Also prior to the FIWARE Check they helped each startup better select the efforts, developments and even enablers, giving them further support and mentoring to approve their final architecture. Therefore the FIWARE Team has a clear overview of the development process, technology roadmap, challenges and efforts carried out during the acceleration program.

Due to the compressed nature of the acceleration program, there was only one FIWARE Check. After the FIWARE Check, the IMPACT FIWARE team met to agree on the startups' final scores and provide final feedback to help the startups continue to develop FIWARE, heading towards improvement.

Learnings of this batch:

- On some occasions, a lack of support in the implementation of an enabler, or a slow responsiveness can negatively affect startups, especially in months close to the Milestone.

- The maturity state of the enablers varies from one to another, while the catalogue is too broad. We believe we should concentrate on having fewer, but more mature enablers, ready for use and support.

- It's not clear whether the specific enablers (verticals) are available for the startups to be used, and whether this implementation would make them FIWARE compatible.

- A few startups may be interested in publicly opening their technology developments and studying the possibility to deliver them as FIWARE enablers. A clear study process of this possibility could help ensure these developments, close the loop in FIWARE learnings, develop some technologies using FIWARE, reaching the development of entire FIWARE enablers, and expand the FIWARE catalogue.

- Before the program started, we realized that implementing a new full development or FIWARE enabler in just 3 months would be overwhelming and almost impossible for most of the startups that at the same time were also on a mature stage, selling and dealing with clients., Therefore, and because all the startups come from previous FIWARE accelerators, we asked them to at least maintain their previous FIWARE implementations, fine tuning and improving their solutions when possible.

- The startups did not have any major complication regarding the FIWARE technology. This has strengthened the position of FIWARE as a reliable solution.
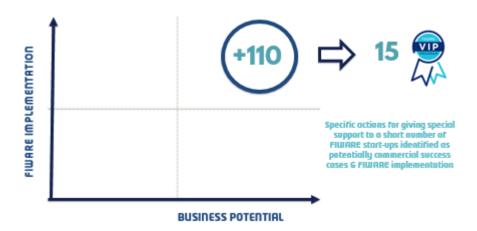
## 5   FIWARE Best Success Stories

In this sense, in the Event Net Futures 2015, two of the startups selected for our First Acceleration Program presented and pitch the use of enablers in their products in the Session "Start and grow your business with FIWARE. IMPACT's beneficiaries, **Onomondo** and **CoffeeStrap** were selected by the EC as panellists of the session.

IMPACT has presented a list of candidates for the **VIP FIWARE** Program that was fostered by the EC. The VIP Program is a set of specific actions for giving special support to a short number of startups identified by the external advisors as potentially commercial success cases and with a very good score in FIWARE technology assessed by each accelerator FIWARE Coach. These start-ups are intended to be FIWARE Champions in terms of company growth and visibility, i.e. companies interesting to the finance community.

The selection was done by the advisors from the set of companies in the **'upper right quadrant'** (that is to say very good business cases and good use of FIWARE technology). The VIP Program is supported by a design team, in which Simona Torre, b-ventures manager and IMPACT's coordinator leads the funding area.



The role of the design team is to develop a first set of concrete actions for the startups in collaboration with the advisors, gather input from the FIWARE accelerator community on recommended actions and best practices. Simona Torre as part of the design team organized the **VIP Bootcamp**, a 3 day high- class workshop that aimed to provide tailored/individual training and

coaching and networking opportunities for startups enrolled and selected in the VIP program. The event was organized to level up the best startups of the FI-PPP and to get them ready to approach early stage investors contributing to the sustainability of the FI-PPP project.

Federico Travella and Gianluca Dettori as advisors of the VIP Program selected two of IMPACT startups to be part of the program: **INTOINO and MEASURENCE**. Both startups were invited to participate in a slot in the FIWARE Community meeting in Milan in January, where they shared their experiences regarding FIWARE and the acceleration program with all A16, the EC and the support actions.

Another startup that presented outstanding results in terms of FIWARE implementation was **Kukua** that was presented as a candidate for the second batch of VIP startups.

In the first FIWARE Summit that took place in Málaga from Dec 13 to Dec 15 a startup accelerated by IMPACT in the extension program participated in the FIWARE Accelerate panel, Umanick. This startup together with Situm has been selected by the FIWARE Foundation to participate in the IoT Ready program.

# 6   Conclusions and Recommendations

Most of the startups choose to use a small set of enablers rather than the whole set of technologies offered by FIWARE. This is due, in part, to the fact that Enablers are generally wide in their functional range and therefore usually a project does not need to make use of a large number of them. Also, the majority of startups have a high level of maturity, i.e. their technology is already in place at a large extent and therefore their technology needs are narrowed.

The most used enablers are the most generic ones. In this sense, Orion Context Broker is by far the most used by all our startups, as it provides a set of features that are very useful in a wide range of applications and areas. Also, KeyRock is a choice of preference among many of our startups, for the same reason.

After 29 months of experience with FIWARE's enablers and after having collected several feedbacks, we have been able to get significative data. In particular,

1.  **Orion:** Orion has been by far the most used enabler. 34 startups have used it. According to the feedback received, the technology has reached a very high level of maturity but some improvements are still needed. In particular, the implementation process and the documentation are still a struggle for those who want to use this technology.
2.  **Object Storage:** has been used by only 4 startups who evaluated it as a mid-mature technology.
3.  **Key Rock:** this technology was one of the most used with a total of 10 startups using it throughout the program. It has been developed successfully during the 24 months' period of IMPACT and has reached an advanced stage of maturity but still needs few improvements in:
    a.  Better documentation is needed.
    b.  Necessity to add the forgotten password functionality

4.  **Wilma:** this technology was used by 3 startups and has passed from being evaluated as "low mature" to "mature"

5. **Wirecloud:** has been evaluated only by 1 startup as in a stage of mid maturity and final adjustments needed

6. **IoT Agent:** 4 startups have considered this FIWARE Technology in a low maturity stage

7. **POI Data Provider:**in total, 3 startups have given feedbacks about this enablers throughout the Program and it results that the technology has passed from being considered a mid-mature enabler to being consider a  mature technology with only few adjustments needed

8. **Steelskin Pep Proxy:** low maturity but evolving

9. **Cosmos:** this enabler has been evaluated 14 times. It has been able to improve its performances low maturity and finally getting to mid-maturity stage. But there are still important improvements needed:

    a. It should be easier to retrieve data
    b. It should be easier to debug map-reduce jobs when they are launched in production.
    c. Documentation should be improved

10. **Spago Bi:** with 6 startups evaluating the Spago Bi Technology, we have not seen any significant improvement. Overall it has been evaluated as a low/mid mature technology with important improvements needed in
    a. Customization: it has been suggested to increase the possibility to customize.
    b. Development Tool needs to be improved since it has been a struggle setting up connections between backend and the enablers. So, a more dynamic integration is highly recommended.
    c. Simplification required: achieving simple visualizations of data often requires too deep knowledge of SQL language.

11. **Proton:** has been evaluated as a mid-mature technology with the following recommendations:

12. **Cygnus:** has been used 3 times throughout the IMPACT Program. Startups have been satisfied with the product and considered it mature and ready for the market

13. **Docker:** after being utilized by 3 startups, this technology has been considered mature nd ready for the market

14. **Kurento:** this technology has been used by 9 different startups that have evaluated it as a mid-mature enabler that still needs improvements.

Orion, Cosmos, Kurento and Spago Bi have been the most used technology. Overall, the results collected show a slight improvement in most of the enablers with few cases of great development and other of no substantial change.

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**Final Conclusions and Considerations**

*We consider that a clear case of community creation around FIWARE represents a crucial need for its development and penetration in the ecosystem*

*FIWARE Technology is solid, usable and business-ready. IMPACT startups built their commercial applications using FIWARE*

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