COOPERATION

THEME 3

ICT – INFORMATION AND COMMUNICATIONS TECHNOLOGIES

Proposal full title: **Future Internet Impact Assurance**

Proposal acronym: **FI-IMPACT**

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Title: ***D4.3 FI-IMPACT Report on online Assessment environment***

Contractors:

Part No.	Participant Organisation Name	Part. Short Name	Country
1(Co)	International Data Corporation Italia	IDC	IT
2	International Data Group UK	IDG	UK
3	Bluegreen Strategy	BGS	IT
4	Sustainable Finance Consulting	SFC	DE
5	IIMC International Information Management Corporation Ltd	IIMC	IRL
6	Jozef Stefan Institute	JSI	SLO

Executive Summary

This document gives a complete technical overview of IT tools developed in the FI-IMPACT project. A brief description of all IT components is followed by the detailed architecture of the On-line Assessment Environment, report on the usage of tools in the FI-IMPACT framework and approach to ensuring long-term sustainability of project results. This deliverable is a starting point for anyone that would need to use the tools in their current deployment, re-use, or even enhance them, for the integration in another IT environment.

The Assessment and Benchmarking Reporting system has been published on a public repository with an open source license, giving opportunity to re-use, customize and integrate the reporting system into other IT environments.

Disclaimer

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1 Introduction

1.1 Context

FI-IMPACT[1] is focused on facilitating the measurement and forecast of potential take-up and socio economic impact of FI-PPP Phase 3 / FIWARE Accelerate Programme[2]. Based on Key Performance Indicators elaborated in the FI-IMPACT Impact Assessment Guidebook[3], FI-IMPACT developed two Impact Assessment tools[4] to collect empirical data from FIWARE sub-grantees and facilitate funded projects and other start-ups and entrepreneurs to benchmark their progress in relation to different business processes, identify areas where improvements are needed and measure progress.

The Impact Assessment tool was focused around funded FIWARE sub-grantees to facilitate mapping of this portfolio, to contribute to the overall impact assessment of the FI-PPP Phase 3 and assist in forecasting the potential impact of this intervention up to 2020. The Self-Assessment tool is open to all interested parties and the respondent can undertake the survey at different stages to measure their progress.

The Impact/Self-Assessment tools provides a start-up sanity check, by:

- Providing a check-list of the main steps that every start-up should follow based on good practice;
- Providing an assessment of the progress made by the company in relation to different business perspectives, measuring to what extent the business is being developed in line with state-of-the-art practices and principles, as defined in literature;
- Providing an instant feedback by benchmarking the respondent's scores with the average scores of his/her peers, based on self-assessment, or a group of most successful peers (High potential start-ups).

Following completion of the survey, the respondent has access to an online Impact Assessment Report which provides feedback on Innovation, Market Focus, Feasibility, Market Needs, Social Impact based on the data provided as well as Mattermark scores (Growth score, Total Funding, Employee Count, Estimated Monthly Uniques, Twitter Followers, Facebook Likes and LinkedIn Follows). Dynamic benchmarking against all respondents is also provided for each indicator to follow sub-grantees, entrepreneurs and their mentors to monitor progress and identify areas where additional support is required.

A set of scripts for statistical data processing was also developed for support the identification of accelerators best practices. This quantitative analysis was used in D2.4 to support, guide and strengthen the expert judgement of qualitative indicators of best performing accelerators.

[1] www.FI-IMPACT.eu
[2] https://www.fiware.org/fiware-accelerator-programme/
[3] www.fi-impact.eu/media/FI-IMPACT_D2.1_ImpactAssessmentGuidebook_v1.pdf
[4] http://www.fi-impact.eu/media/FI-Impact_D4.2_FI_ValidationWeb-basedInstruments_v1.pdf

1.2 Objectives

The overall objective of this deliverable is to:

- Explain the Assessment environment
- Provide a guide on how to use the components to rebuild the services
- Provide a guide on how to reuse components for other tasks
- Provide technical explanations of how the services operate to provide support for information interpretation

1.3 Overview of FI-IMPACT Impact Assessment Environment

Broadly, the FI-IMPACT IT environment consists of the FI-IMPACT website, the FIWARE Nanosite and the Assessment environment (Figure 1.1). The website provides access to Impact Assessment tools, Impact Assessment reports, support data collection and dissemination of FI-IMPACT results, FIWARE Success stories and infographics. The FIWARE Nanosite was disseminated via IDG online channels to raise awareness of FIWARE achievements and provide access to a cross section of FIWARE Case studies related to Agrifood, Energy and eHealth as an indication of the wide breadth of businesses that have leveraged FIWARE technology to support delivery of products and services. This deliverable is focused on providing an overview of the Assessment Environment.

Figure 1.1: FI-IMPACT set of IT tools

The Assessment environment has two specific purposes:

1. **A Learning Tool** for SMEs and Entrepreneurs: to determine strengths and weaknesses through assessing their initiative based on several key impact parameters (KPI/Mattermark) and learn about ways to improve and increase their impact. D2.2. provided elaboration criteria and mapping questions as well as KPI's to measure;
2. **A Monitoring Tool** for **the General FI-PPP/FIWARE Community**: to generate insights into strengths and weaknesses of Future Internet Public Private Partnership to detect which aspects of the FIWARE programme offer the highest potential and how initiatives are configured to exploit them. This has been achieved through benchmarking of different accelerator practices and

approaches through a set of performance indicators, which is explained in detail in Chapter 2.5.

The Self-Assessment tool is a living tool based on a growing corpus of data points entered directly by the initiatives themselves, from which the main indicators are calculated (KPI) or obtained from external sources (such as Mattermark). The Impact Assessment report provides projects with an immediate overview of their potential performance as compared to successful initiatives based on industry proven high-level indicators. Secondly, the initiatives can check over time to see how their performance is changing and to see what effect that may have on their potential. Finally, it indicates on any given axis, which initiatives have scored the highest in terms of potential and allow them to share their experiences (if willing) with other projects and interested stakeholders. Thus, it provides initiative managers with tools to improve their project performance based on their own judgment of the project and good practices from the field.

The FI-IMPACT Assessment Environment is composed of a set of interconnected tools shown in Figure 1.2. External data sources have also been integrated in order to support the assessment workflow. The survey system is fully automated, it supports data collection through questionnaires, reporting of KPIs for each user (sub-grantee or self-assessment), reporting of external performance indicators (Mattermark) and exporting of data for further analysis. The reporting system supports user management and different levels of access. Users with specific levels of access can, for example, import external indicators (Mattermark), export all data in CSV format, see all (or a subset of) impact assessment reports, and manage other users access rights. This functionality has been developed as support to long-term sustainability of the system. Furthermore, the reporting system is extensible in order to allow different types of external benchmarking indicators and interconnection with other (survey) collection systems. The detailed data-flow diagram and interconnection of different tools is provided in section 2. A separate set of tools for benchmarking of accelerator best practices has been developed as a set of “R” statistical tool scripts. Both the reporting environment and best practices analysis tool have been made available open source projects on GitHub.

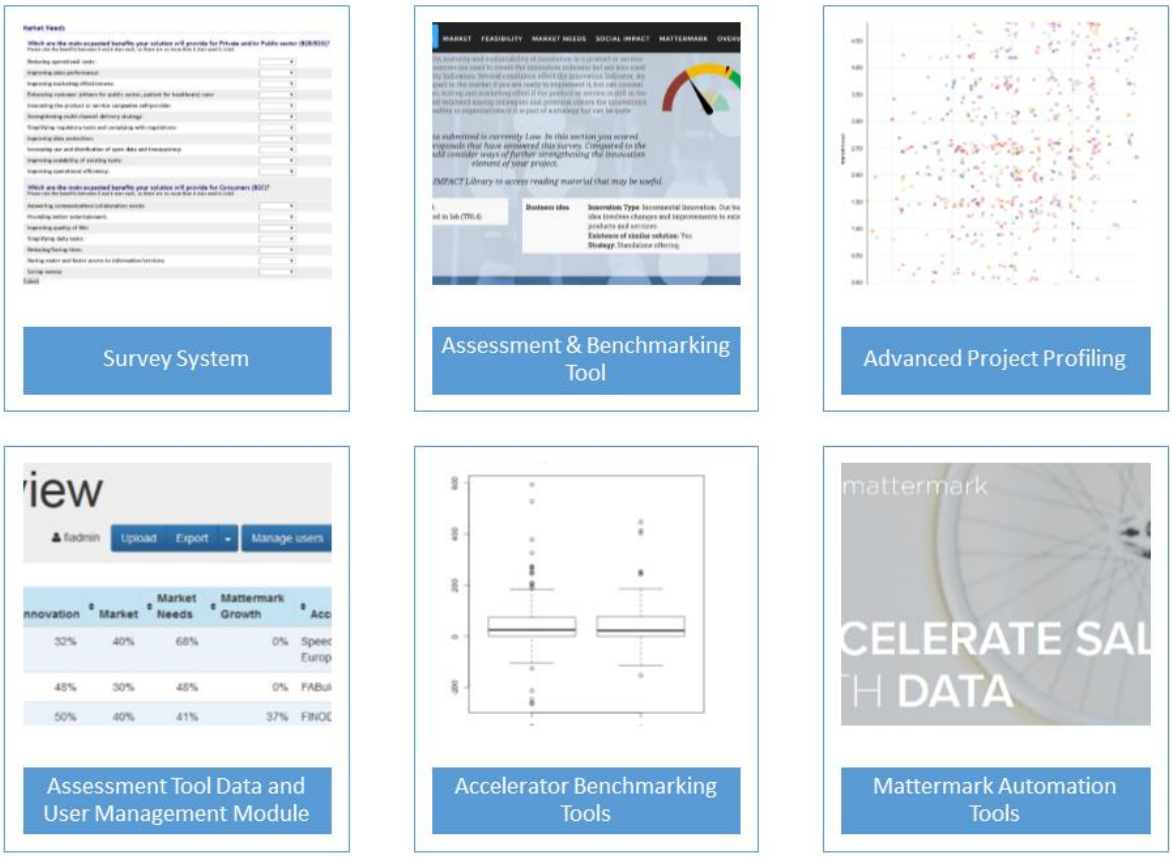


Figure 1.2: Online Assessment Environment Overview

During the FI-IMPACT project, the consortium actively collected and curated a heterogeneous set of data about accelerators practices, sub-grantees and their performance. In addition to performance indicators implemented by project partners there is also a possibility to integrate external indicators.

Five datasets as shown in Figure 1.3 have been defined.

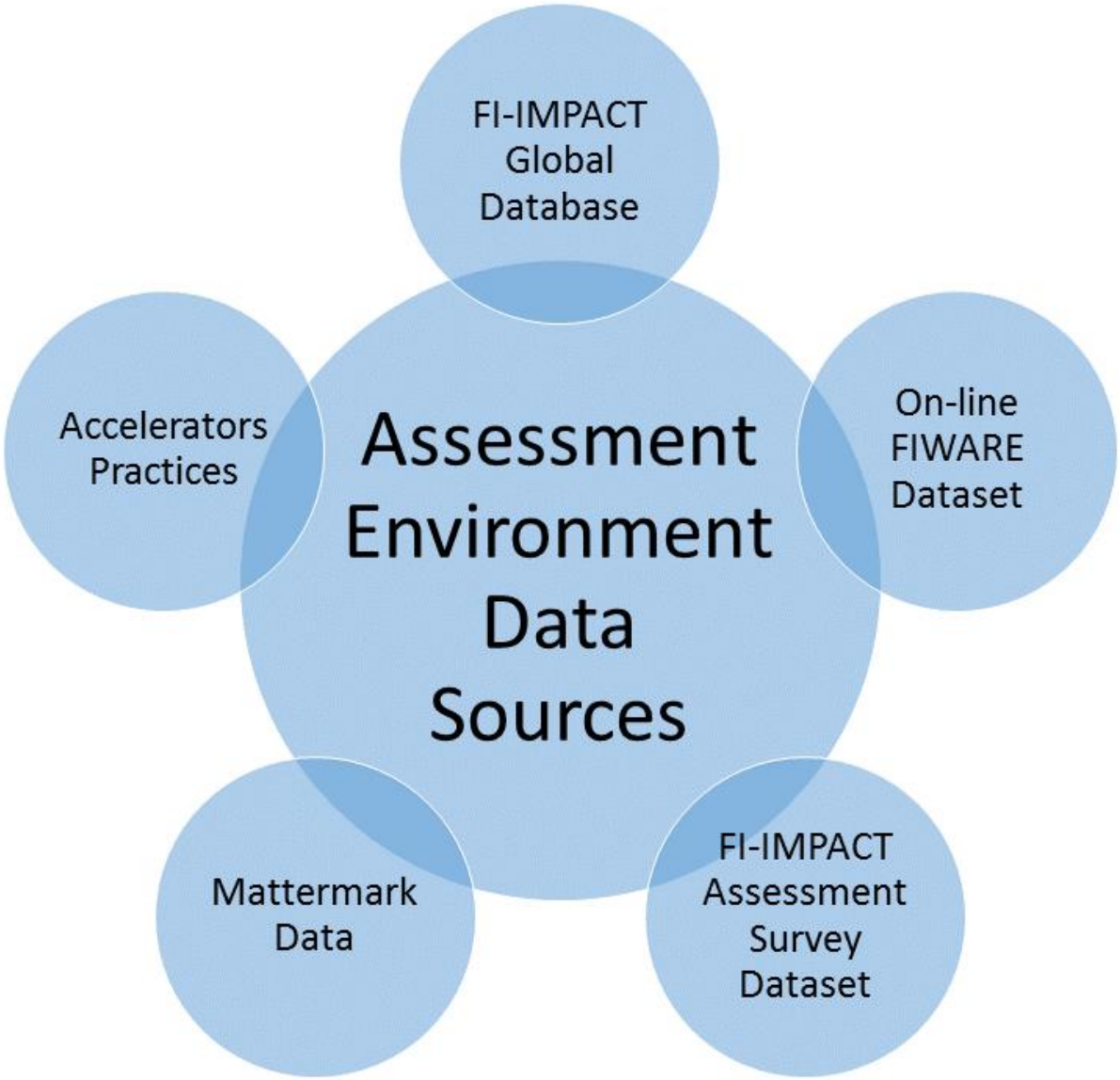


Figure 1.3: Assessment Environment Data Sources

To summarise, the main components of the Assessment Environment are:

1. Datasets leveraged and contributed to during the FI-IMPACT Project
    a. FI-Impact Global Database;
    b. On-line FIWARE Open Dataset;
    c. Accelerators Practices;
    d. FI-IMPACT Impact Assessment Survey Dataset;
    e. Mattermark data licensed from Mattermark.
2. FI-IMPACT Impact Assessment Survey
    a. User Management and administration
    b. Survey forms (Impact Assessment Survey / Self-Assessment Survey)

c. My Page for respondents and their accelerators to access historical data contributed and Impact Assessment reports on a log in basis

d. Ability for Accelerators to export aggregate data contributed by their sub-grantees per call

e. Online reports for FI-IMPACT partners to monitor surveys completed by Accelerator

f. Online statistics per Accelerator per call

g. Overviews per accelerator

3. Assessment & Benchmarking Tools

a. Impact Assessment Report

b. Benchmarking Report, addressing recommendations provided during the annual project review

c. User Access Management: Different levels of administrative user-access. Users with specific levels of access can, for example, import external indicators (Mattermark), export all data in CSV format, see all (or a subset of) impact assessment reports, and manage other users access rights. Initially, this type of access is granted to FI-IMPACT consortium partners and the European Commission.

d. Management console: Allows authorised users, based on their access rights, to view reports, import Mattermark data, export all available data and manage other users.

2 Technical Description

2.1 Architecture and Data flow

Figure 2.1 provides an overview the data collected during the FI-IMPACT project, how it was used, the software components leveraged and the main automatic/user actions that drive the system.

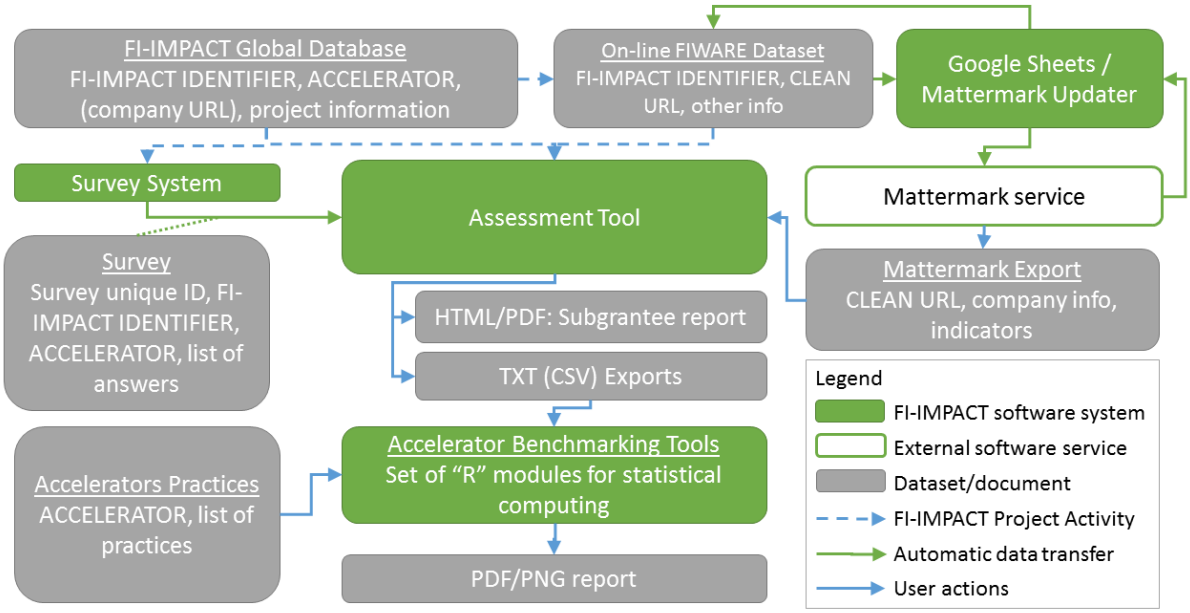


Figure 2.1: Data flow and tools of the online assessment environment

During the FI-IMPACT project and in collaboration with the FI PPP ecosystem, including accelerators, sub-grantees and other projects, several valuable datasets have been created. Their collection was partially automatic; however, it included lot of data curation and application of specific expert knowledge. Based on the level of "automation" some of those datasets are not going to be maintained beyond the project end, while others can be automatically updated with fresh data.

The "*Fi-Impact Global Database*" is a compilation of sub-grantees administrative and business information based on analysis undertaken with scores and other indicators from the Impact Assessment survey. It has been integrated with the assessment system, but further updates are not foreseen. The same holds for the "*Accelerators Practices*" dataset, which was used for benchmarking accelerator (best) practices. The "*FIWARE database*" that incorporates data from different stakeholders in the FI WARE community including FI-IMPACT can be updated with fresh Mattermark data using a set of scripts prepared by Project Partners. The *Survey dataset*, with corresponding KPI indicators is updated in real-time as new surveys are finalised by respondents. This dataset, through the Assessment Tool, is enriched with Mattermark indicators. Users with granted administrator roles and valid Mattermark license can use the Import functionality to import *Mattermark* data into the Assessment tool.

The information system is made of the following components:

- The *Survey System* manages the sub-grantees/projects accounts, impact-assessment survey collection and access to the resulting Impact Assessment Report. Completed data sets are automatically transmitted to Assessment Tool when finalised by the respondent. The Survey System is explained in detail in the Section 2.2.
- The *Assessment Tool* integrates the data received from various sources (see Figure 2.1), combines those datasets and calculates the performance indicators for sub grantees. The tool is composed of:
    - Self-Assessment Report
    - Advanced Benchmarking Reports
    - Management console consisting of:
        - User Management Module
        - Sub-grantees overview list
        - Import module (Mattermark and other external data)
        - Export module
- *Accelerator Benchmarking/Best Practices Reporting Tools* are written in "R". R is a programming language and software environment for statistical computing and graphics supported by the R Foundation for Statistical Computing. The R language is widely used among statisticians and data miners for developing statistical software and data analysis.[5] In FI-IMPACT, several R modules have been developed to produce automatically statistical reports about Accelerator Benchmarking and Best Practices based on FI-IMPACT databases. The databases are imported and merged into an R data frame. The tool then produces correlation heatmaps, practice scores with accompanying mean difference t-test results and FI PPP phase projects connectivity information. Most of the results are produced in final-form CSV files. The tool also outputs several sets of diagrams (boxplots for all categorical indicators, CDF diagrams for practice scores and score histograms). All the diagrams are produced in two versions - with all sub-grantees and per-Accelerator.
- *Mattermark Updater* is a tool to download Mattermark data automatically and match it with existing databases in a spreadsheet format, in particular for the FIWARE Sub-Grantee DataSet, which is available online in Google Sheets. The software can be integrated into Google Sheets and it can match FI-IMPACT IDs (and all its associated data) with Mattermark data and additionally integrates FI-IMPACT ID into exports of Mattermark company lists. The software is intended for usage over a longer time, i.e. not only to create a snapshot of the status of Mattermark data for a company, but create repeated snapshots so that a user can track progression over time. For those periods, it can also create graphs for a sub-set of sub-grantees (e.g. High Performance Initiatives) that shows progression and performance for selected Mattermark data entries over time.

[5] https://en.wikipedia.org/wiki/R_(programming_language)

2.2 Impact Assessment Survey

The primary collection mechanism for Impact / Self-Assessment data is the Assessment Survey tool incorporated within the functionality of the FI-IMPACT website. Detailed description, functionalities and usage scenarios are described in D4.2.

Data collected through surveys in sent, in real time through a REST interface, to the FI-IMPACT Assessment and Benchmarking System (See data flow on Figure 2.1).

2.3 External Performance Indicators

The Assessment Environment supports custom Key Performance Indicators that are implemented in the software module itself or inclusion of external indicators that can be obtained from external services.

The system can be customized, in principle, to import any data set provided in a tabular format (TXT/CSV) with some identified that can be linked to sub-grantees or surveys. Detailed technical steps to integrate a data source are given in the GitHub repository (see the Sustainability Chapter).

The system has already been set-up to include data exports from the Mattermark service, which is described in detail in D3.3. Chapter 2.4.3. Management Console describes the actual import procedure.

As an example, we provide below an extract from the Mattermark resource definition:

```
<list name="mattermark-export">

.....

<filed column="Growth Score" label="Growth Score" fieldid="MATTERMARK_GROWTH"
plot="indicator" graph="ignore" usage="indicator" transform="log" type="int"/>

.....
```

Column name in the export file

Used as performance indicator

Use a logarithmic scale

```
<filed column="Website" label="Website" fieldid="M06" usage="clean-url"
type="text"/>

.....
```

This is the link with the survey information (project website)

For each new external set of indicators, such a definition would have to be prepared, specific import procedures implemented and the HTML report customised.

2.4 Assessment and Benchmarking Tool

The Self-Assessment tool is developed on the basis of the KPIs and analysis framework described in D2.1. The data analysis framework is derived from ICT start-up business literature industry standard benchmarking indicators, participant data and summarises

the general parameters that projects need to achieve sustainable impact. The framework consists of Six General parameters that reflect the data collected through the survey, including:

1) Organisation Profile
2) Exploitation of FIWARE
3) Innovation Focus
4) Market Focus
5) Feasibility
6) Potential benefits and impacts including:
    - Potential user benefits
    - Potential economic impacts
    - Potential social and environmental impacts

Each of the six parameters are addressed as self-assessment survey categories, including an explanation of how measurement is performed and why the specific parameter is important to achieve impact. Parameters 1 to 2 have been extracted from the D2.1: FI-PPP Mapping template described in par.2.3.2. Parameters 3 to 6 correspond to the D2.1: KPIs identified in par.2.4.

Subsequently, best practices and methods for improvement based on building on comparative analysis, participant experiences, evaluation reports and FI-Impact and Accelerator project expert views were determined. This resulted in several iterations of refinement of data collection and KPI calculation. The final set of parameters and formulas used is provided as an annex to this deliverable.

In addition to FI-IMPACT specific KPI indicators, the system also supports integration of external performance indicators. A license for the Mattermark service was purchased and the system has been set-up to allow for import of Mattermark indicators. Indicators used in the report include Growth Score, Total Funding, Employee Count, Est. Monthly Uniques, Twitter Followers, Facebook Likes, and LinkedIn Follows.

All those parameters are combined in a self-assessment report described in Section 2.4.1.

In addition to the Self-Assessment report, a second approach to the assessment is made through mapping of the assessed project/product:

1. To a x-y graph showing the projects position in relation to other projects (including HPI and use-cases) across a selection of performance indicators and questionnaire attributes;
2. To a more complex network graph, as a visualized mapping of the assessed project/product within other sub grantees, helping to understand the market competitiveness, estimated effort to penetration, content diversity and identify nearest best practice events to check.

2.4.1 Self-Assessment Report

The Self-Assessment Report has been developed as a web-based application. After the Impact Assessment survey is finalised, the data is transmitted and the assessment triggered automatically. In this process, the collected data is analysed and compared against the baseline. Results are then presented as a compiled report that consists of scores, explanations, interpretations and graphs. A detailed specification of captured parameters and formulas used to calculate KPIs is provided in Annex 1 and Deliverable D2.2[6].

The report has the following sections:

1. *Title Page* states the type of report (Impact/Self-Assessment).
2. *Project Summary* provides key information about the project, sub grantee and FIWARE enablers used.
3. *Innovation* Indicator expresses the level of originality, maturity and sustainability of innovation to a product or service in an organization's go to market strategy.
4. *Market Focus* Indicator reflects the quality and relevance of sub-grantee's knowledge of customer needs in the target market(s), the extent of knowledge about customers in the target market, and if the initiative has a strategy and plan to reach the target market.
5. *Feasibility* Indicator that assesses to what extent project members assessed the economic viability of the business, and if they have already provided for the necessary funds for the start-up phase.
6. *Market Needs* Indicator reflects the extent to which perceived user benefits associated with a product or service are aligned with real-market needs, based on an analysis of FI-IMPACT Vertical Market Survey results.
7. *Social Impact* Indicator reflects the extent to which the project has social impact in 11 key areas. It focuses on identifying specific social benefits that the initiative will support and the contribution to quality of life for specific social groups.
8. *Mattermark* collects & organizes comprehensive information on the world's fastest growing companies. We show a set of selected indicators.
9. *Overview* section shows all project scores plotted against the average score calculated from all completed surveys. Scores are represented in a spider diagram so that users can easily identify their strengths and weaknesses compared to the average score.
10. The *"PDF"* action creates a printable PDF version of the report.

[6] http://fi-impact.eu/media/FI-IMPACT_D2.2_Mapping_InitialKPIMeasurement_v1.pdf

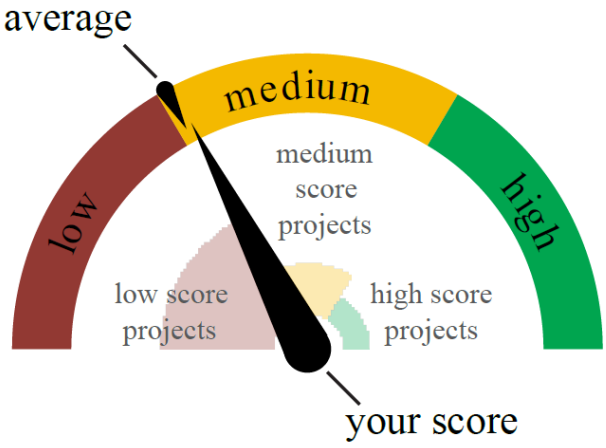


Figure 2.2: Scoring section speedometer

For each scoring section, the following information is provided:

- *An explanation of the score:* This explains what the indicator measures, how it measures it and for what purpose.
- *Textual interpretation:* States the score level for a sub-grantee (low/medium/high), the position in relation to other surveys and a general advice where to seek additional information.
- *User answers:* This part provides the answers user provided in the survey that were used or are relevant to the score.
- *Speedometer:* This is perhaps the most informative part of each scoring section (Figure 2.2). It is a synthesis of knowledge about the particular score, as it shows sub-grantee's performance against the average community performance. It also shows, in the background, the distribution of scores on the low/medium/high scale.

A typical report is shown in Figures 2.3 to 2.11.

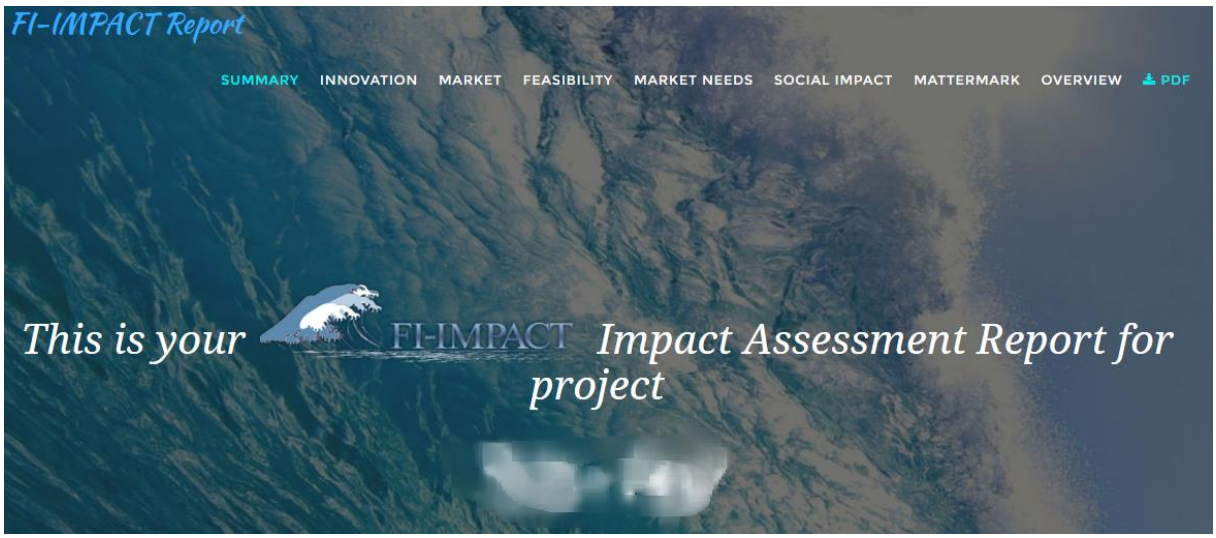


Figure 2.3: Self-Assessment Report, Heading Section

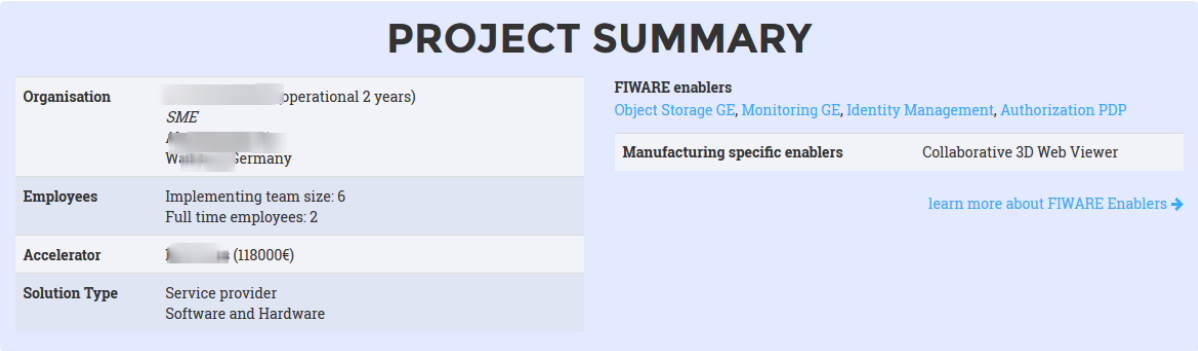


Figure 2.4: Self-Assessment Report, Project Summary

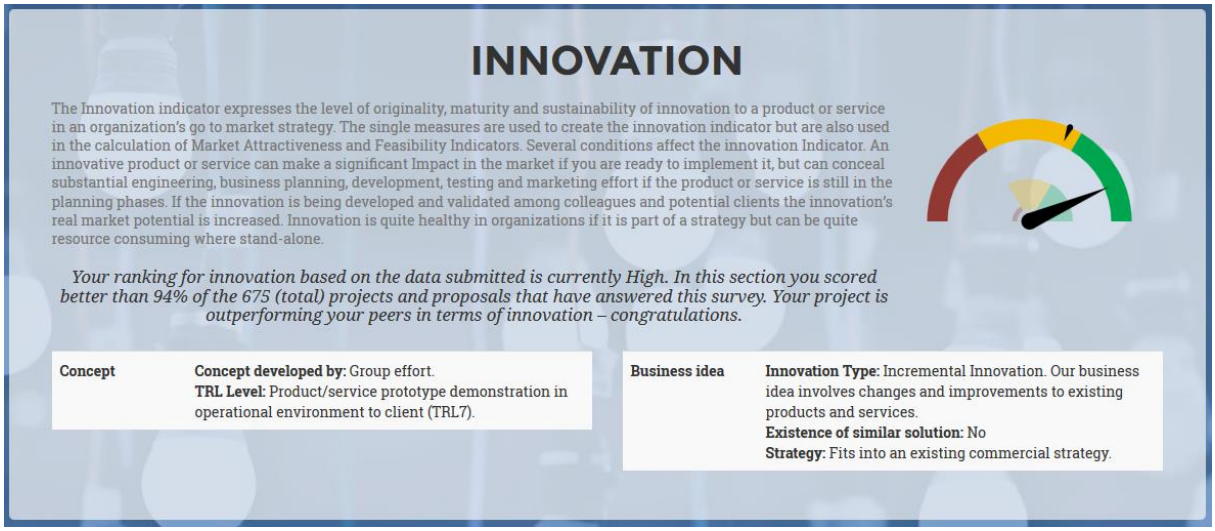


Figure 2.5: Self-Assessment Report, Innovation Focus

MARKET

The Market Focus indicator reflects the quality and relevance of your knowledge of customer needs in your target market(s), the extent to which you have gathered knowledge about customers in the target market, and if your initiative has a strategy and plan to reach the target market. This indicator measures the level of your "customer development" activities: whether you have already approached customers to collect feedback on your product, and to what extent you have developed a strategy to acquire them.

Your ranking for market focus based on the data submitted is currently High. In this section you scored better than 69% of the 675 (total) projects and proposals that have answered this survey. Your project is outperforming your peers in terms of market focus – congratulations.

Business model	**Model:** Transactions/Intermediation model, License model **Revenue Division:** 40% licenses, 50% subscriptions, 10% project fees
Customers	**Value Proposition Verification:** Our value proposition is validated through interviews and meetings with customers. **Commercial Strategy Status:** Sales materials available and channels activated.

Secondary Market Sectors	Manufacturing, Education, F, Business Services
Market	**Channel:** Sales agents, Personal website, Other external websites, E-mail/Phone-call marketing, App-stores **Target Market in Three Years:** Germany, Multiple Countries (Montenegro, Serbia, Austria, Ukraine, Switzerland, Slovenia, Russian Federation, Romania, Poland, Norway, Macedonia, The Former Yugoslav Republic Of, Lithuania, Latvia, Hungary, Estonia, Czech Republic, Croatia, Bulgaria, Bosnia And Herzegovina, Albania, United Kingdom, Sweden, Spain, Portugal, Netherlands, Italy, Ireland, Greece, Germany, France, Finland, Denmark, Belgium, Slovak Republic, Kazakhstan) **Entry into the Open Market:** 2015 **Level of competition:** Medium competition. **Market Strategy Status:** Early adopter customers acquired., Company positioned and sales strategy defined.

Figure 2.6: Self-Assessment Report, Market Focus

FEASIBILITY

The Feasibility indicator assesses to what extent you have assessed the economic viability of your business, and if you have already provided for the necessary funds for the startup phase. This indicator assesses whether you are aware of the funds required to start and grow your business, and whether you have secured sources for these funds.

Your ranking for feasibility based on the data submitted is currently Medium. In this section you scored better than 89% of the 675 (total) projects and proposals that have answered this survey. The level of feasibility of your project matches that of your peers. Still, you should consider ways of further strengthening the feasibility element of your project.

Capital	**Required investments until sustainable:** Capital requirements covered until self-sustainable. **Secured funding:** 30%
Growth rate	**Sales:** We are committed to a growth rate in the business plan. **Revenue (4 years):** 40%, 45%, 60%, 80%

Customer acquisition	We have verified customer acquisition cost and time through real sales.
Sales and marketing expansion	We have defined scale-up plans but have not yet launched them.

Figure 2.7: Self-Assessment Report, Feasibility

MARKET NEEDS

The Market Needs Indicator reflects the extent to which perceived user benefits associated with a product or service are aligned with real-market needs, based on an analysis of IDC Vertical Market Survey results. One set of indicators are outlined for business and government sectors (B2B and B2G) and a second set of indicators are outlined for consumer markets (B2C), based on different market needs.

MANUFACTURING

Reducing operational costs	
Improving sales performance	★★★
Improving marketing effectiveness	★★★
Enhancing customer care	
Innovating the product or service companies sell/provide	
Strenghtening multi-channel delivery strategy	
Simplifying regulatory tasks and complying with regulations	
Improving data protection	
Increasing use and distribution of open data and transparency	
Improving scalability of existing tools	
Improving operational efficiency	

TARGET MARKET NEEDS UNDERSTANDING

YOUR SCORE

1.10/5

TOP 5 business needs

(Source: IDC Vertical Market Survey)

1. Improving data protection
2. Improving operational efficiency
3. Reducing operational costs
4. Simplifying regulatory tasks and complying with regulations
5. Innovating the product or service companies sell/provide

EDUCATION

Reducing operational costs	
Improving sales performance	★★★
Improving marketing effectiveness	★★★
Enhancing customer care	
Innovating the product or service companies sell/provide	
Strenghtening multi-channel delivery strategy	
Simplifying regulatory tasks and complying with regulations	
Improving data protection	
Increasing use and distribution of open data and transparency	
Improving scalability of existing tools	
Improving operational efficiency	

TARGET MARKET NEEDS UNDERSTANDING

YOUR SCORE

1.16/5

TOP 5 business needs

(Source: IDC Vertical Market Survey)

1. Simplifying regulatory tasks and complying with regulations
2. Reducing operational costs
3. Improving data protection
4. Increasing use and distribution of open data and transparency
5. Improving sales performance

BUSINESS SERVICES

Reducing operational costs	
Improving sales performance	★★★
Improving marketing effectiveness	★★★
Enhancing customer care	
Innovating the product or service companies sell/provide	
Strenghtening multi-channel delivery strategy	
Simplifying regulatory tasks and complying with regulations	
Improving data protection	
Increasing use and distribution of open data and transparency	
Improving scalability of existing tools	
Improving operational efficiency	

TARGET MARKET NEEDS UNDERSTANDING

YOUR SCORE

1.98/5

TOP 5 business needs

(Source: IDC Vertical Market Survey)

1. Improving data protection
2. Enhancing customer care
3. Simplifying regulatory tasks and complying with regulations
4. Reducing operational costs
5. Improving operational efficiency

Figure 2.8: Self-Assessment Report, Market Needs

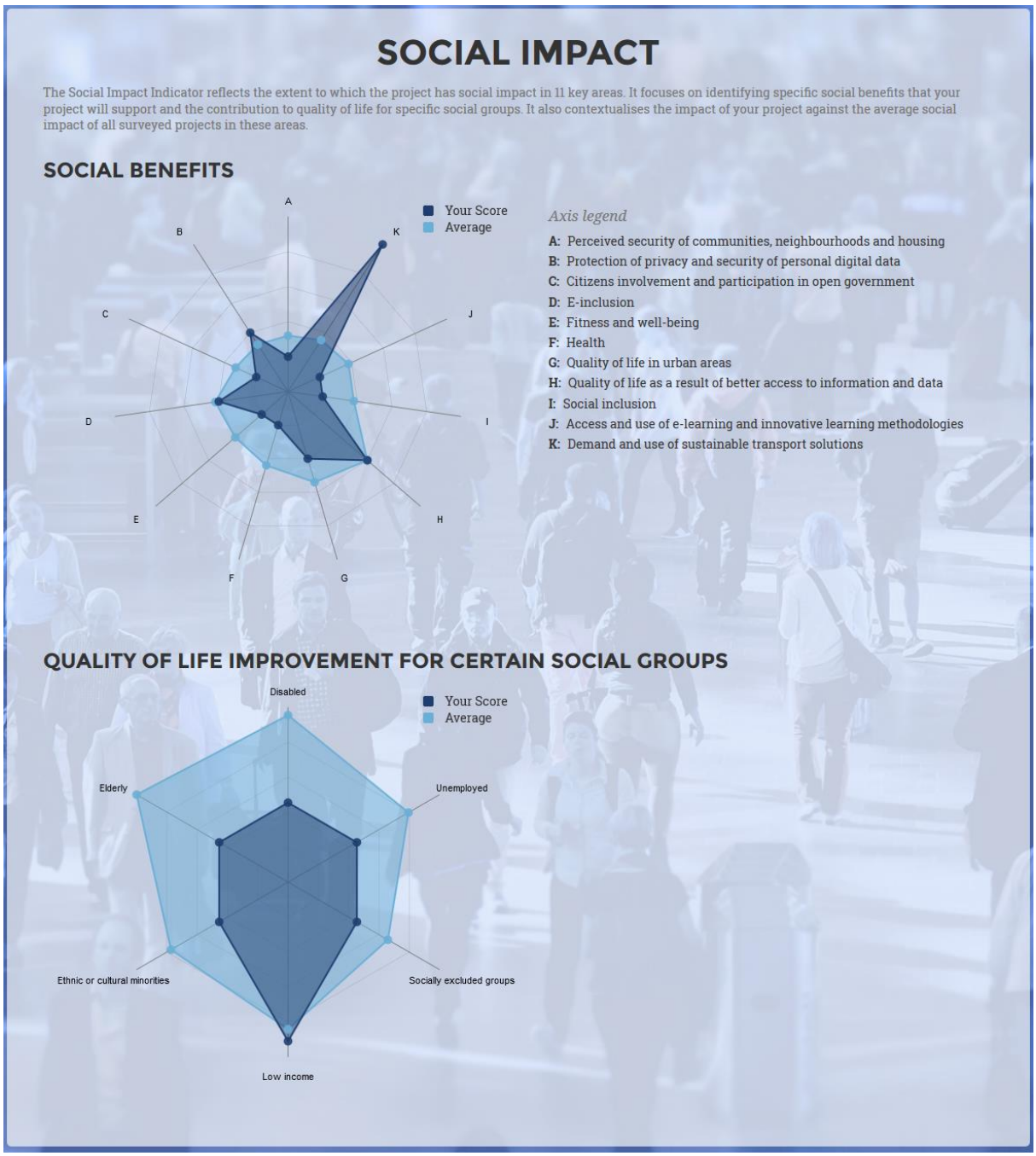


Figure 2.9: Self-Assessment Report, Social Impact

MATTERMARK SCORES SUMMARY

Mattermark collects & organizes comprehensive information on the world's fastest growing companies. In minutes, get actionable data that lets you pinpoint the companies and people you need to know or do business with.

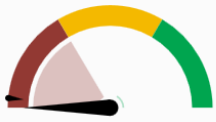
Growth Score

Mattermark's Growth Score is the default ranking for all companies in Mattermark. It measures how quickly a company is gaining traction at a given point in time.

Your Mattermark ranking for Growth Score is currently High. For this indicator you scored better than 71% of the 675 (total) projects and proposals that have answered this survey. Your project is outperforming your peers in terms of Growth Score – congratulations.

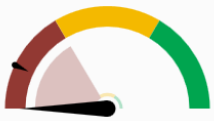
Total Funding

Your Mattermark ranking for Total Funding is currently Low. For this indicator you scored better than 97% of the 675 (total) projects and proposals that have answered this survey. The level of Total Funding of your project matches that of your peers. Still, you should consider ways of further strengthening the Total Funding element of your project.



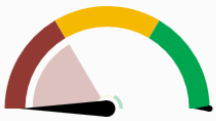
Employee Count

Your Mattermark ranking for Employee Count is currently Low. For this indicator you scored better than 87% of the 675 (total) projects and proposals that have answered this survey. The level of Employee Count of your project matches that of your peers. Still, you should consider ways of further strengthening the Employee Count element of your project.



Est. Monthly Uniques

Your Mattermark ranking for Est. Monthly Uniques is currently Low. For this indicator you scored better than 79% of the 675 (total) projects and proposals that have answered this survey. Compared to the average of current completed surveys, you should consider ways of further strengthening the Est. Monthly Uniques element of your project.

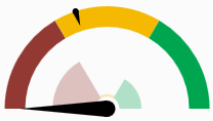


Twitter Followers

Your Mattermark ranking for Twitter Followers is currently Medium. For this indicator you scored better than 66% of the 675 (total) projects and proposals that have answered this survey. Your project is outperforming your peers in terms of Twitter Followers – congratulations. Still, you should consider ways of further strengthening the Twitter Followers element of your project.

Facebook Likes

Your Mattermark ranking for Facebook Likes is currently Low. For this indicator you scored better than 62% of the 675 (total) projects and proposals that have answered this survey. Compared to the average of current completed surveys, you should consider ways of further strengthening the Facebook Likes element of your project.



LinkedIn Follows

Your Mattermark ranking for LinkedIn Follows is currently Low. For this indicator you scored better than 87% of the 675 (total) projects and proposals that have answered this survey. The level of LinkedIn Follows of your project matches that of your peers. Still, you should consider ways of further strengthening the LinkedIn Follows element of your project.

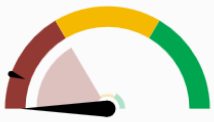


Figure 2.10: Self-Assessment Report, Mattermark Section

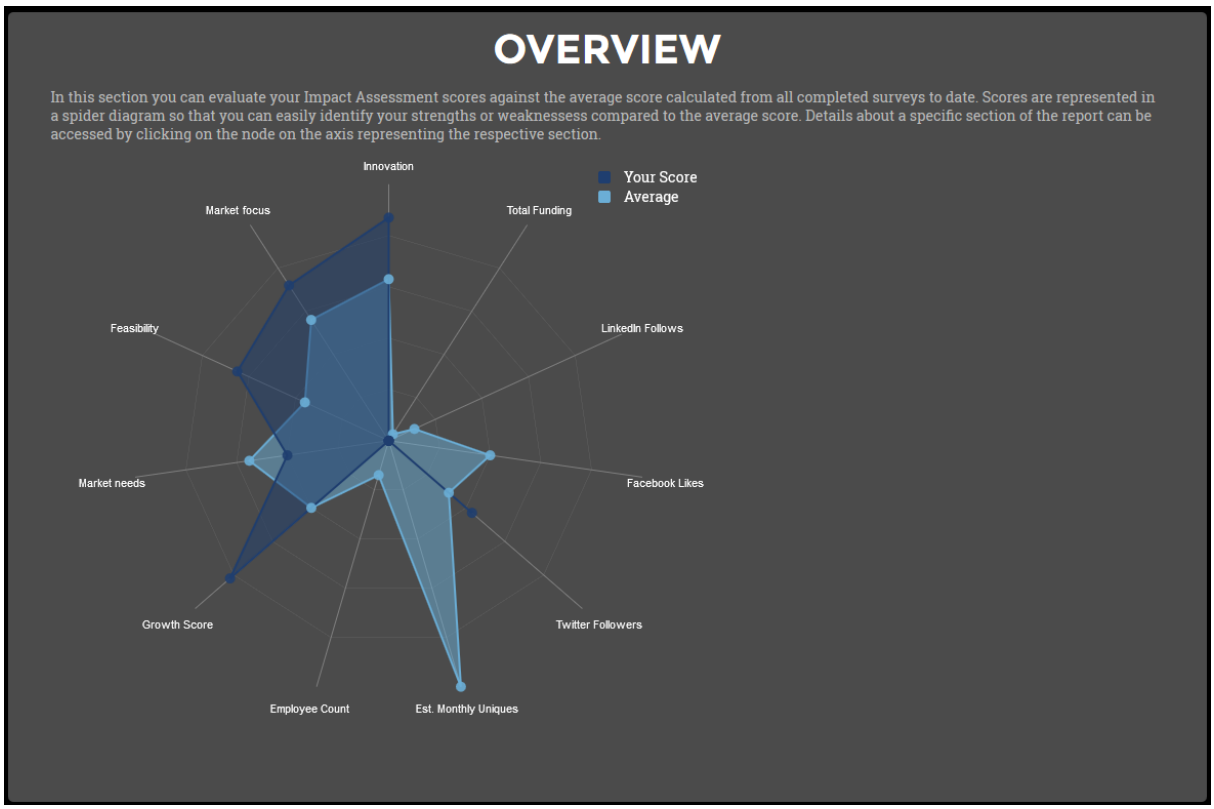


Figure 2.11: Self-Assessment Report, Overview

2.4.2 Advanced Benchmarking Reports

Advanced benchmarking reports are a unique opportunity to provide both the sub-grantees and accelerators better insight in project's performance by leveraging the data acquired during the FI-IMPACT project and the experience of the consortium in the market research and advanced analytics areas. For this purpose, two additional benchmarking tools have been developed. The first one, shown in Figure 2.12, shows the selected project's position in relation to other projects (including HPI and use-cases) across a selection of performance indicators and questionnaire attributes.

Along with those measurements, links to relevant Benchmark Success Stories are provided –FI-PPP Best Practice and selected proposals as Success Stories.

Figure 2.12: FI-IMPACT Performance Indicators Benchmark

The more complex network graph, shown in Figure 2.13, uses a complex approach to define a fuzzy "similarity" measure among projects. This similarity measure takes into account the project description (abstract), FI-WARE technology used, team competences, geographical distribution, market distribution/targeting and possibly additional content as well.

The similarity measure is then used to visualise project interrelation and distance with a network graph.

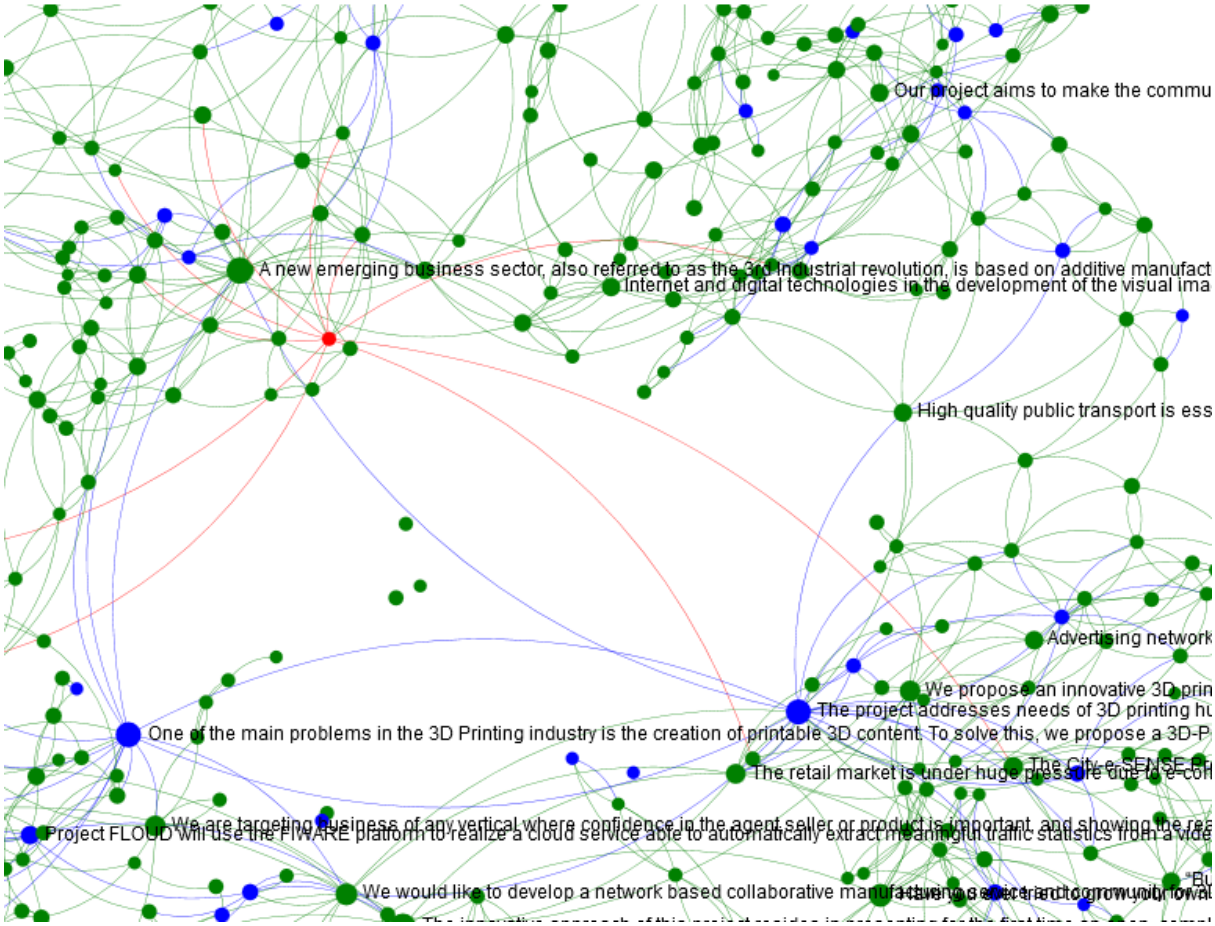


Figure 2.13: FI-IMPACT Similarity Benchmarking

Both approaches support several slicing and filtering methods through the data to define the analysis context (for example, "How would I perform in the selected market benchmarked over all known other projects in that market, targeting similar needs, geographically, etc.?".)

These smart visualisations enable sub grantees and their mentors/reviewers how they "compete" with other projects and ideas, identify possible similarities, find opportunity windows, search for possible "partners" etc.

The main conceptual difference between those two graphs is that the first one relies on performance indicators, which encompass different assumptions about a good performance. In a way, the first graph is expert's view and to some extent advice on the gap between "my project" and successful projects. On the other hand, the second graph finds similarities among project using a wide range of attributes and lets users make their own judgment about "good" or "bad" similarities.

2.4.3 Management console

2.4.3.1 User Management Module

Sub grantees are given access to their own report through the FI IMPACT portal. All other users that want to view reports or use other functionalities of the Assessment and Benchmarking Tool have to be registered in the system. They are granted a set of rights to perform actions. The actions are described in the table below.

Table 2.1: Assessment Tool Management Console Access Rights

Role name	Description
admin	Access to the admin console with view-only privileges.
export	Allows using the "Export" to text function.
upload	Grant to upload Mattermark data
upload-extended	Upload projects ('global DB') and mappings ('FIWare DB'). This functionality is available only to FI-IMPACT.
user-management	Grant to manage other users.

Users can also be restricted to view/export data only for one accelerator. This also means that they can only manage other users that have been assigned to that accelerator. A user can only grant its own privileges to other users.

User	Description	Accelerator	export	upload	upload-extended	user-management	Edit	Delete
admin-pioneers	European Pioneers Admin	European Pioneers	✔	✖	✖	✔		
ecadmin	EC Admin user		✔	✔	✖	✔		
fiadmin			✔	✔	✔	✔		

Figure 2.14: User Management Console

A typical example is shown in the figure above. In the example, the user *fiadmin* can perform all actions. The *ecadmin* users is not allowed to upload the Global DB and FIWARE datasets, while it can do everything else. The *admin-pioneers* user can only see and export data for the European Pioneers accelerator. It cannot upload any data not export data or manage users for other accelerators.

2.4.3.2 Sub-grantees overview list

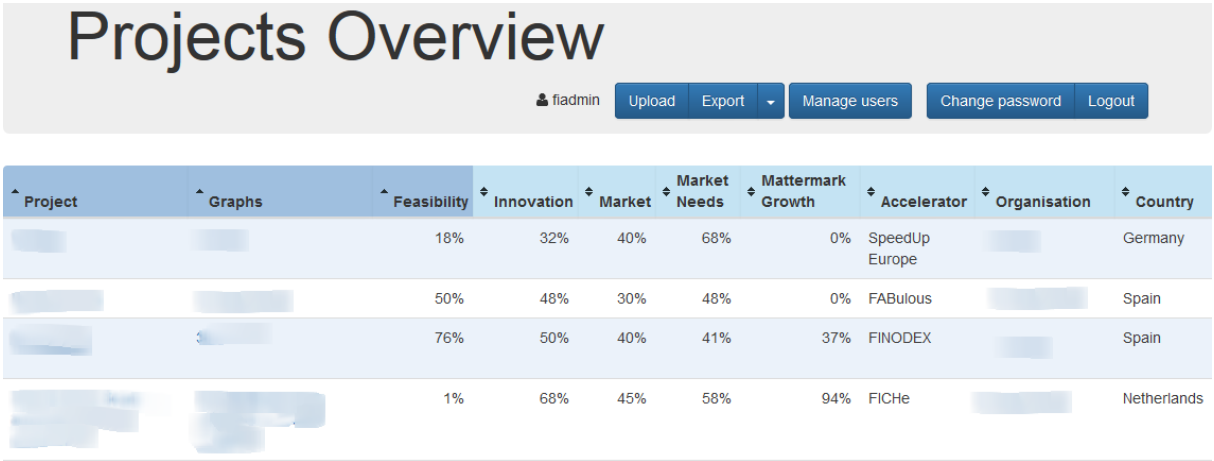


Figure 2.15: Projects overview and management actions

2.4.3.3 Import module (Mattermark and other external data)

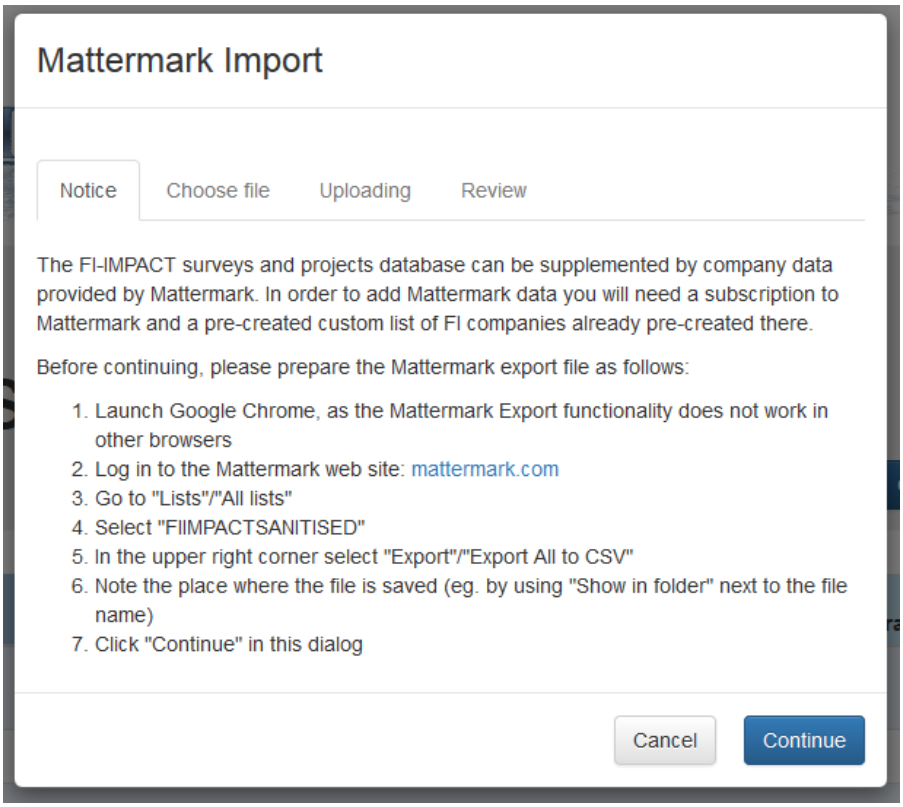


Figure 2.16: Import external indicators

The import module of the management console has a function to import data from Mattermark exports. The pre-requisite for this function is an active Mattermark account to perform the "Export to CSV" action of the FI-IMPACT list of companies defined in the Mattermark service. A detailed procedure about the management of the Mattermark service is provided in D3.3. After a successful export, the data is imported to the FI-IMPACT system with few clicks. After the import, all reports are re-calculated in order to reflect the new status of Mattermark performance indicators.

2.4.3.4 Export module

All data can be exported to a CSV (text) format with several options as shown in Figure 2.17. *Basic* export exports only the basic sub grantee information and the performance indicators, whereas *Full* export outputs all available data about sub grantees and surveys – from the FI-Impact database, surveys, KPIs and Mattermark. *Legend* export provides values of lookups. Exports *per accelerator* are a full export for sub grantees belonging to the selected accelerator.

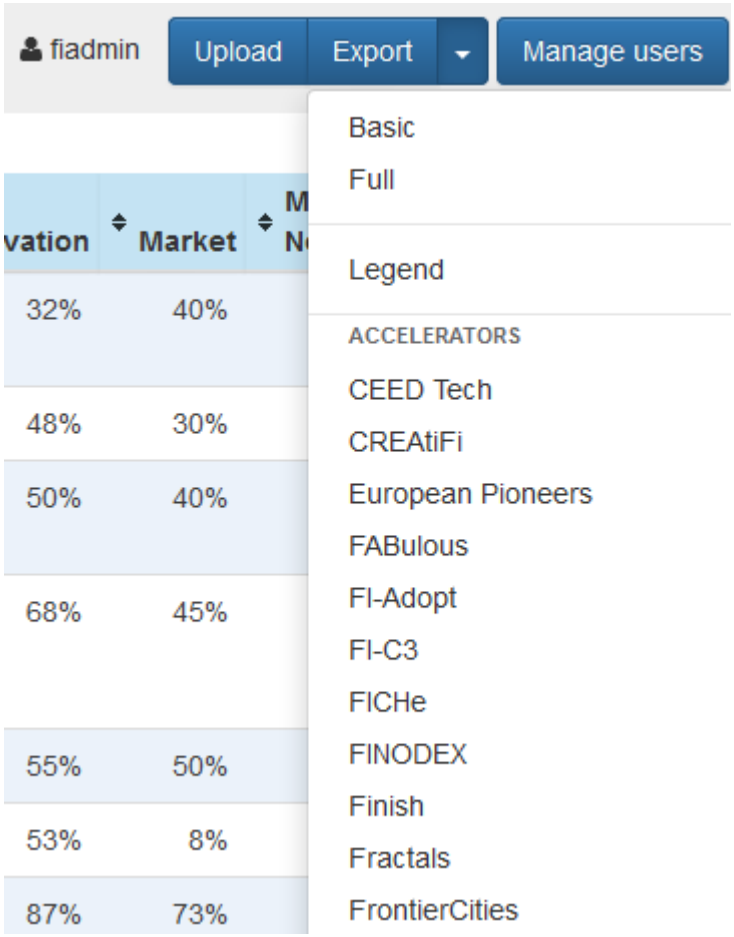


Figure 2.17: Full data export

2.5 Accelerator Benchmarking / Best Practices Reporting Tools

A set of tools were developed to measure the effectiveness of different practices put in place by phase three accelerators. Here, we would like to answer questions such as "Does investment business development support help the creation of high performance projects?"

FI-IMPACT identified a set of potential *Accelerator Properties* that may influence the performance of funded initiatives measured through several *Performance Indicators*.

Accelerator properties are either accelerator practices or some other properties defining a specific accelerator. Examples of accelerator practices include proposal phase support, selection approach, business support and organisation of workshops. Examples of other accelerator properties include the number of partners in the accelerator consortium, number of countries covered, % of professional accelerators on partnership and degree of connectivity with other projects in the FI-PPP Phases 1-3.

To measure effectiveness, we use *performance indicators*, such as the FI-IMPACT KPI scores, indicators provided by Mattermark and FIWARE usage scores.

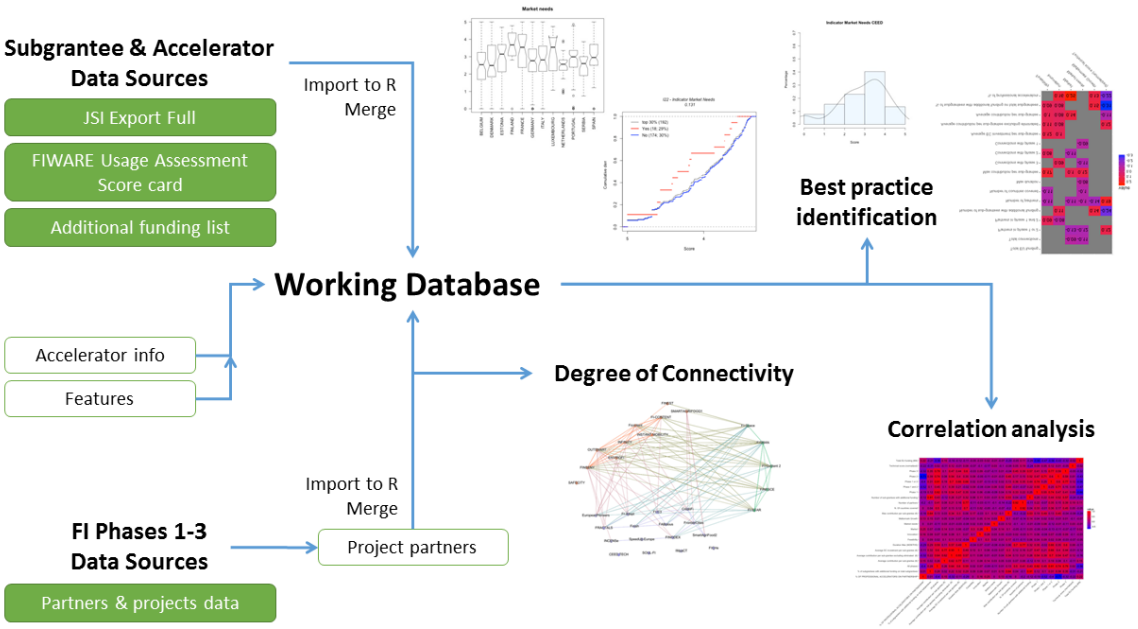


Figure 2.18: Accelerator Benchmarking / Best Practices Reporting Tools Workflow

The architecture of the best practices reporting tool is described in Figure 2.18. Most of the input files are processed automatically by the reporting tool. However, some information has to be prepared/edited manually. All the information is obtained from the raw input files. These are represented as green boxes in Figure 2.18 and listed in Table 2.2. Files edited and produced by hand are represented as white boxes and listed in Table 2.3.

The reporting tool outputs results of the analysis in several output types, as described in chapters 2.5.2, 2.5.3 and 2.5.4. These chapters describe each of the main output groups from the figure: degree of connectivity, best practices identification and correlation analysis.

The *degree of connectivity* includes counts of different types of connections. Each connection between projects is a partner that appeared in both. The results are represented as tables, which can then be used to produce a visualisation.

Correlation analysis is performed on all numerical accelerator properties and all numerical performance indicators by correlating each possible pair. The results include a heatmap of correlations, a table of correlations and a corresponding table with sizes of samples on which the correlations were computed.

Best practices identification produces notched box plots for categorical accelerator properties, CDF plots for binary accelerator properties, correlation outputs for numerical accelerator properties (heatmap and tables) and histograms for performance indicators.

2.5.1 Input data

The following table describes raw input files used by the best practices reporting tool.

Label	File	Type	Description
JSI Export Full	fi-impact-export	csv	FI-Impact Database, surveys, KPIs and Mattermark data (as defined in Chapter 2.4.3)
FIWARE Usage Assessment Score card	Final FIWARE Usage Assessment Scorecard (by coaches and FIWARE experts)	Excel	FIWARE usage scores
Additional funding list	Mapping accelerators database	Excel	Sub-grantees with additional funding
Partners & projects data	Mapping accelerators database	Excel	All FI-PPP projects, partners for each

Table 2.2: Raw input files

The database of FI-PPP Partners and projects needs to be cleaned up before importing. The resulting file (partners.csv, in the following table) is then used for merging into the main database.

Label	Files	Type	Description
Accelerator info	accelerators shorthand all indicators	csv	Accelerator properties, short hands for accelerator names.
Features	indicators scores	csv	Lists of performance indicators and accelerator properties with column names, types and labels
Project partners	partners	csv	All FI-PPP projects, partners for each

Table 2.3: Input files edited by hand

2.5.1.1 Accelerator properties used to identify best practices

Accelerator properties compiled from the Mapping Accelerators database are listed in Table 2.4. For each property, we list its ordinal number from the database, type and description. They are of three different types (binary, numeric and categorical) and are used in the analyses accordingly.

#	type	Description
1	numeric	Number of countries covered
2	category	Country coverage (coordinator country)
3	numeric	Maximum duration
4	numeric	Total EU funding
5	numeric	Number of partners
6	numeric	Partner connectivity • Number of connections with phase 1 • Number of connections with phase 2 • Number of connections with phase 3 • Number of partners which were participating in phases 1 **and** 2 • Number of partners which were participating in phases 1 **or** 2 • Total number of connections
7	numeric	% of professional accelerators on partnership
8	binary	Partner with FIWARE competence (FIWARE coaches)

9	binary	Proposal phase - online/offline support to applicants and communication activities
10	binary	Selection approach
11	numeric	Average EC investment per sub-grantee
12	numeric	Average contribution per sub-grantee
13	numeric	Average contribution per sub-grantee excluding eliminated
14	numeric	Max contribution per sub-grantee
16	binary	Business Innovation Support
17	binary	online/offline Workshop, Bootcamp, Living Labs Spaces (including Training Voucher, Welcoming Week, Demo Day)
18	binary	Gateways to further funding (Finance Support, Funding Services, Promoting to VCs)
19	binary	Matchmaking and Networking
20	binary	Business Development and Marketing Support
21	binary	FIWARE Technologies Support
22	binary	Technical Support
23	binary	Provision of physical spaces

Table 2.4: Accelerators properties used for benchmarking

2.5.1.2 Performance indicators

Indicators used as metrics to measure sub-grantee performance are listed in the table below. In addition to the FI-IMPACT Performance Indicators, the FIWARE Usage Total Score and Mattermark Growth Score are taken into account.

These two were selected for the final analysis from the FIWARE Usage Assessment Scorecard and from the company data provided by Mattermark, respectively.

Other indicators from these two sources were considered in the initial analysis, but were proven to be sufficiently well represented by the chosen two indicators.

Each performance indicator is listed in the Table 2.5 with its source, type, description and ordinal number in the Mapping accelerators database, where applicable.

Source	#	Type	Indicator
IDC		numeric	Feasibility
IDC		numeric	Innovation
IDC		numeric	Market
IDC		numeric	Market needs
FIWARE		numeric	FIWARE usage total score
Mattermark		numeric	Mattermark Growth
IDC		binary	Projects which obtained additional funding
IDC	24	numeric	Number of sub-grantees with additional funding
IDC	25	numeric	% of sub-grantees with additional funding on total sub-grantees

Table 2.5: Performance indicators

2.5.1.3 Connectivity of FI-PPP Phases 1-3

In the Mapping accelerators database, partners appear under several different names. The project partner sheet in the database is transformed so that each row represents a participation of a partner in a FI-PPP project in one of the phases. An example is provided in the Table 2.6 below.

Partner	Name of partner in database	Project	Phase
ATOS	ATOS	ENVIROFI	1
ATOS	ATOS	FI-Adopt	3
ATOS	ATOS; Spain	FI-Space	2
ATOS	ATOS Spain S.A.	FINSENY	1
ATOS	ATOS SPAIN SA	FITMAN	2
ATOS	ATOS (ES)	FRACTALS	3

Table 2.6: Example of project participation for partner ATOS

2.5.1.4 Working database

Information obtained from the input sources is merged into the working data frame in R. This means that for each sub grantee that compiled at least one survey there is there is one data row. Accelerator indicators are appended to each sub-grantee. Then accelerator indicators are paired with sub-grantee indicators for analysis.

Information about each sub-grantee is obtained from the latest survey they submitted.

Each row in the data frame thus contains the information as described in Table 2.7. This includes all the accelerator properties from Table 2.4 for the sub-grantee's accelerator and all performance indicators from Table 2.5.

Fields	Description
Survey ID	Id of the latest survey submitted by a sub-grantee
Sub-grantee performance indicators	FI-IMPACT KPIs (Feasibility, Innovation, Market, Market Needs), Mattermark indicators, FIWARE usage indicators
Survey answers	Answers provided by the sub-grantee for each question from the survey
Accelerator properties	Properties of the sub-grantee's accelerator

Table 2.7: Structure of the working database

2.5.2 Preliminary correlation analysis

Numeric accelerator properties from Table 2.4 and numeric performance indicators from Table 2.5 are used in the correlation analysis. For each possible pair of these, we compute the Spearman correlation. Moreover, we compute the statistical significance of each correlation.

All correlations are computed on a subset of those sub-grantees for which we have complete information for the pair of fields. The correlations are compiled in a heatmap,

where only statistically significant values are listed (i.e., p-value less than 0.05, as is standard practice).

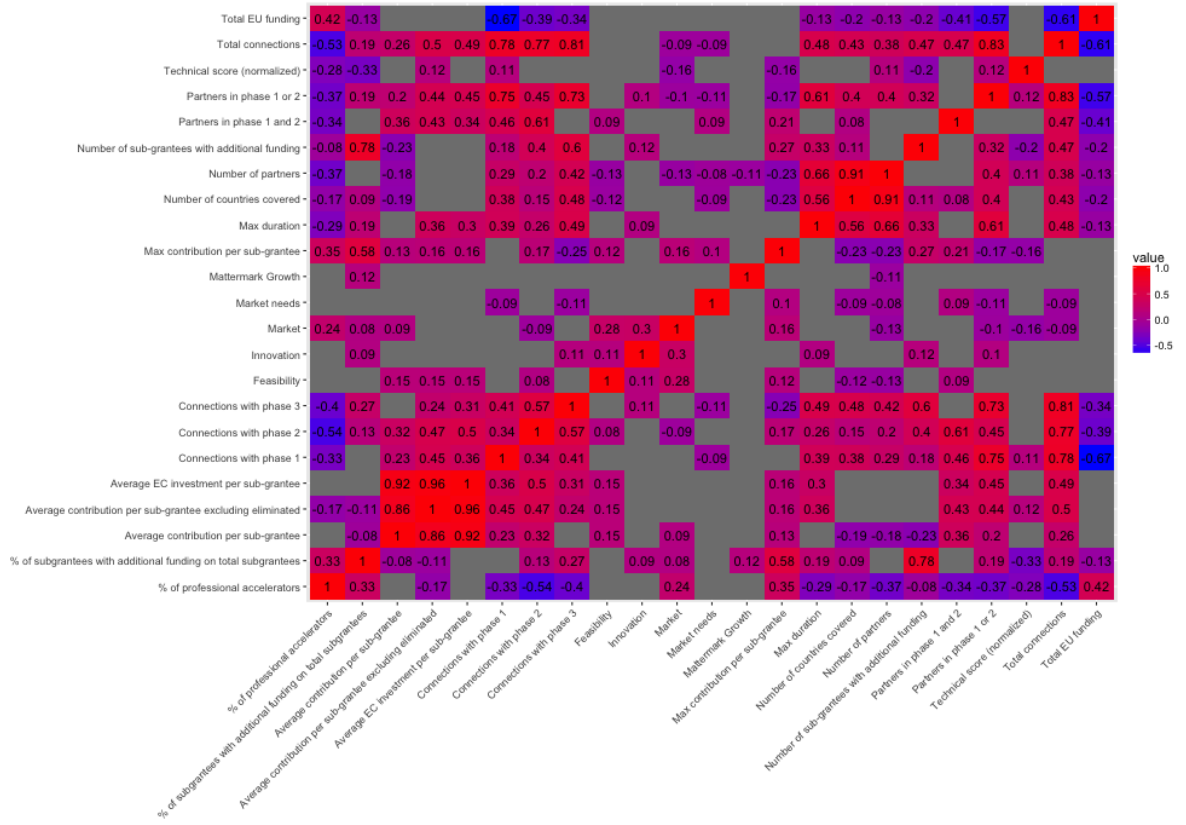


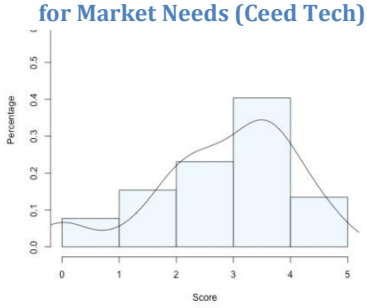
Figure 2.19: Correlation analysis

The best practices reporting tool then outputs the table of correlations and the corresponding table of sample sizes. The sample size for a pair of fields is simply the numbers of sub-grantees for which we have complete information for that pair.

2.5.3 Best practices identification

Best practices are extracted from an analysis by considering statistically significant results. Each such result is a pair of an accelerator property and performance indicator, together with an estimated impact. The impact is either positive or negative and has an estimate for strength.

Figure 2.20: Example histogram for Market Needs (Ceed Tech)



2.5.3.1 Performance indicators histograms

A simple estimation of performances of an accelerator's sub-grantees can be obtained visually from histograms of numeric performance indicators. The reporting tool outputs a five-bin histogram with a density curve for each accelerator and each numeric performance indicator. Additionally, it outputs histograms of the performance indicators for all sub-grantees.

The histograms are drawn for all sub-grantees of an accelerator (or all sub-grantees for the overview histogram).

2.5.3.2 Performance analysis for categorical accelerator properties

The reporting tool outputs notched box plots for all pairs of categorical accelerator properties (namely, coordinator country) and numerical performance indicators. Additionally, it outputs similar notched box plots for pairs of numerical performance indicators and accelerators. If the notches on two box plots do not overlap, it is a rough indication that there is a statistically significant difference in means for the corresponding samples.

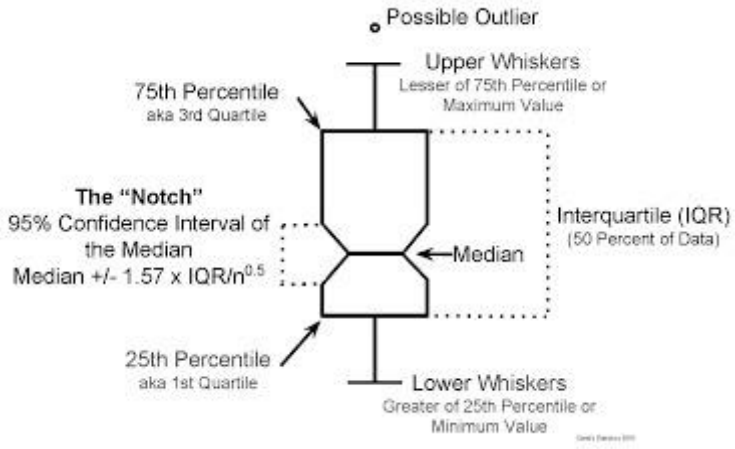


Figure 2.21: Notched box plot explanation

Information about all sub-grantees (all per accelerator) is used to produce the notched box plots.

2.5.3.3 Performance analysis for numerical accelerator properties

Numerical accelerator properties are paired again with numerical performance indicators to compute a different correlation analysis. To obtain a performance analysis for numerical accelerator properties, only the top performing 30% of sub-grantees with respect to the chosen performance indicator were taken into account when computing a correlation. As before, we assume complete information on a pair of property and indicator for a sub-grantee.

The reporting tool can compute the performance analysis for any lower and upper bound on the percent of sub-grantees with respect to a numerical indicator. The top 30% has been decided on since it provides the clearest results on the dataset.

2.5.3.4 Performance analysis for binary accelerator properties

For all pairs of one binary property and performance indicator, only those sub-grantees with complete information are used to compute the performance analysis. The analysis is based on dividing these sub-grantees into two samples with respect to the binary property.

The reporting tool makes several t-tests for difference in means of the samples is in addition to computing a practice-score described in 5.2.1. Briefly, a practice-score measures the difference between the cumulative density curves of the two samples.

The t-tests are performed for the top 20%, top 30%, top 40%, top 50% and all sub-grantees, while the practice-scores are computed for the top 30% and all sub-grantees.

The result of the performance analysis for binary accelerator properties is a table of results of t-tests (t statistic, degrees of freedom, p-value and estimated difference in means) and practice scores. The information is only listed for statistically significant pairs of property and indicator.

2.5.4 FI-PPP network analysis

For the visualisation, FI-PPP projects are used as nodes and each partner that participated in two projects is represented as a connection between the corresponding nodes. Because of the complex structure, the visualisation (Figure 2.22) was produced by hand in a graph-drawing tool Gephi.

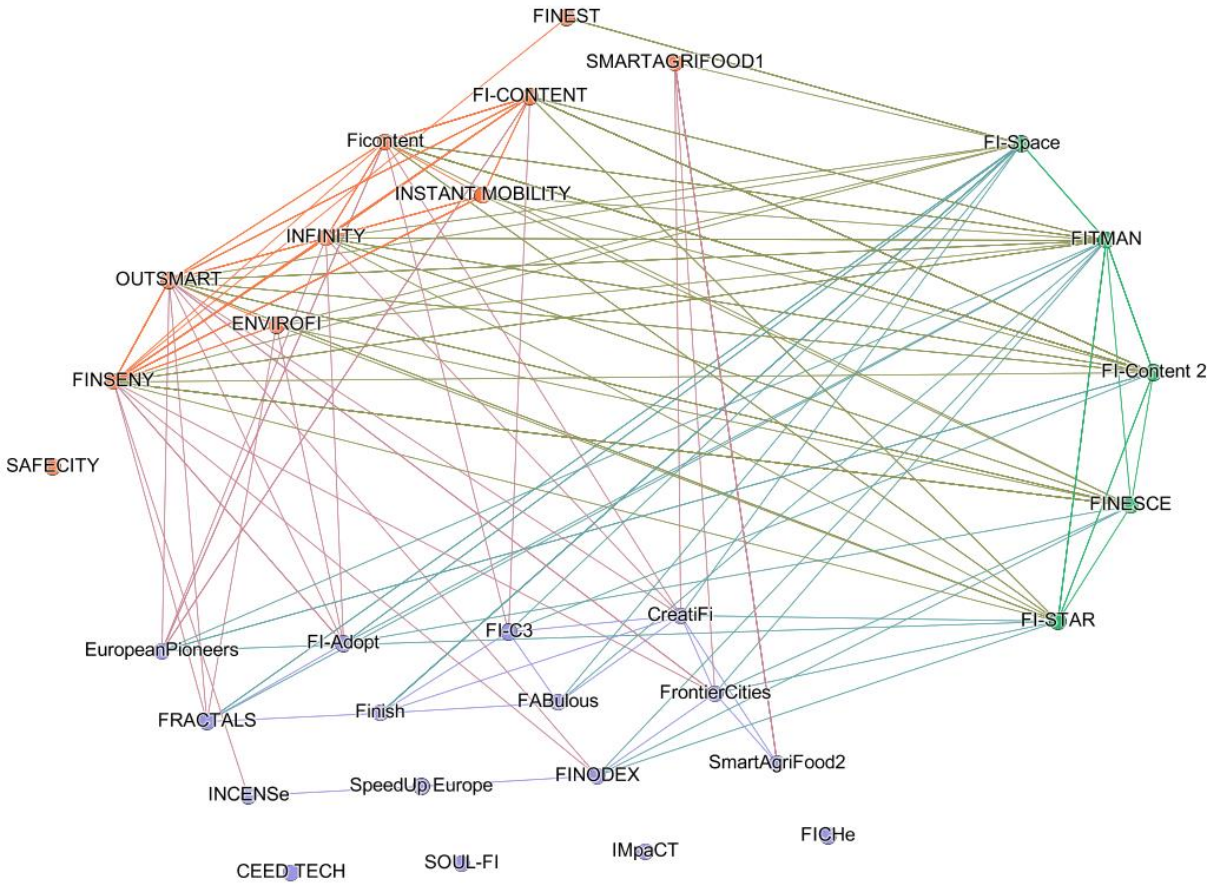


Figure 2.22: Connectivity of FI-PPP projects, Phases 1-3

In the visualisation, orange, green and purple nodes represent projects from Phase 1, Phase 2, and Phase 3, respectively. For greater clarity, connections are also coloured differently according to which Phases the nodes they connect to belong.

2.5.5 Using the best practices reporting tool

The reporting tool is written completely in R and all the modules are available on the project's GitHub repository. To use the tool, R needs to be installed with packages *data.table*, *ggplot2* and *reshape*.

The structure of data needs to be defined in features csv file; the one used for this analysis is also available on GitHub.

Finally, the source files in the correct format (as described on GitHub) need to be placed in the data folder of the project. To obtain the results, run the script run.R.

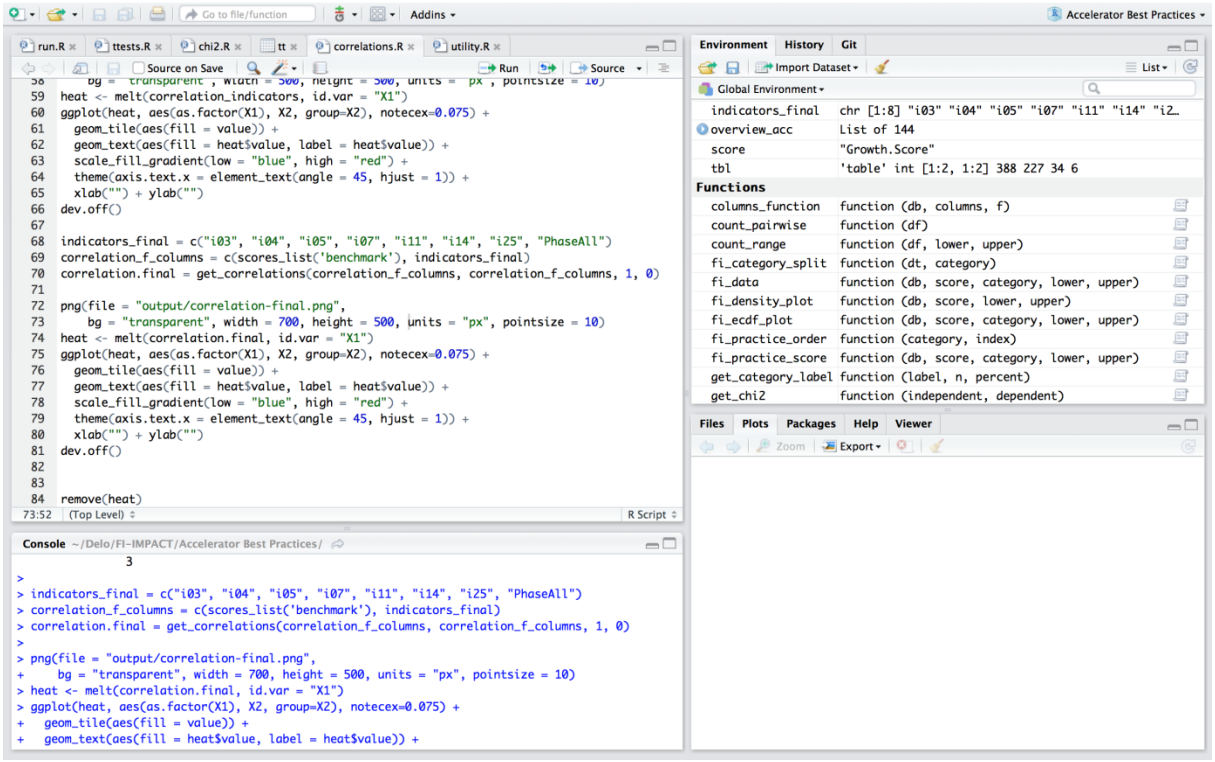


Figure 2.23: Usage of FI-IMPACT R modules in R Studio

2.6 Privacy & security

FI-IMPACT Assessment tools are using data collected through processes where a commitment to handle properly personal data is very important. Users of the system must therefore handle the collected data taking into account legislation that applies to data management. It is not the scope of this project to review and analyse this legislation. User management and access rules are defined in section 2.4.3. The single software components that are described in this document are accompanied by licenses provided in the code repositories described in section 4.

Data will be stored and accessible through FI-IMPACT tools for at least 12 months after the project end, possibly more if partners decide to support them for a longer period.

After the project end FI-IMPACT will grant administrative access to the data and tools also to EC representatives who from that point on take sole responsibility for further data usage or giving access to other stakeholders.

3 Usage Report

In this chapter, we report in actual use case scenarios and results of IT tools developed in the FI-IMPACT project.

3.1 Report on Impact Assessment for FI-PPP Phase 3 sub-grantees

Here, we provide a short technical overview of collected data, while the domain analysis and interpretation is given in relevant deliverables, thus for sake of simplicity we do not repeat the same analysis in this document.

The situation in this chapter is as of the surveys status on 15.05.2016.

The table below shows the dynamics of data collection from June 2015 to May 2016. This is directly linked with the timing of FI-IMPACT data collection with sub-grantees around specific Accelerator funding calls. As a result, most of the surveys were collected during summer 2015 and then again, in February 2016 to ensure that the data could be analysed for inclusion in D2.4.

Year, Month	2015							2016					
Accelerator	**06**	**07**	**08**	**09**	**10**	**11**	**12**	**01**	**02**	**03**	**04**	**05**	**Total**
SOUL-FI	16	48	10	1				3	21	16			115
FINODEX	35	10						4	29				78
SELF ASSESMENTS			2	2	3	3		10	48	2			70
SpeedUp Europe	43	22											65
FABulous	12	33						1	15				61
CREAtiFi	38	17							2				57
CEED Tech	22	4									28		54
FI-C3	10	1							6	20	2		39
SmartAgri Food2	4	32	2										38
Fractals	26	8											34
Finish	11	1								14			26
FI-Adopt	8	12										1	21
FICHe	6	13										2	21
IMpaCT	8	4							9				21
INCENSe	1	11							6		2		20
FrontierCities								5	12				17
European Pioneers		3										1	4
Grand Total	**240**	**219**	**14**	**3**	**3**	**3**		**23**	**148**	**52**	**32**	**4**	**741**

Table 3.1: Submitted surveys by month and accelerator

3.2 Report on Accelerator Best Practices Identification

Through several iterations, we performed the analysis as described in Chapter 2.5. Partners refined the algorithms and performed some data cleaning. The dataset used for the final version of the deliverable is summarised in Table 3.2.

Database property	Counter
Accelerator Properties	29
Performance Indictors	9
Accelerators	16
Sub grantee initiatives (surveys)	655
FI PPP phases	3
FI PPP Projects	31
FI PPP partners	325

Table 3.2: Summary of data used for best practices identification

In the following section, we provide some of the results obtained by applying FI-IMPACT Best Practices Identification tools to accelerators and sub grantees data obtained by FI-IMPACT project partners. Detailed results and interpretation of the analysis is extensively provided in other deliverables.

3.2.1 Examples of results obtained

One of the preliminary analysis performed was to find pairs of significantly correlated binary accelerator properties ("practices") and sub-grantee performance indicators. The table below gives an overview of performance of sub-grantees who had access to an accelerator practice to those sub-grantees who did not. The whole table resulting from the performance analysis is attached in the chapter 5.2.2.

	Feasibility	Innovation	Market	Market needs	Technical score	Mattermark Growth
Workshops	+	+	+	+		+
Technical support			-	+		
Provision of physical spaces	-	-		-	-	
Proposal phase support					+	
Matchmaking and networking			-		-	-
Gateways		+	+	+	-	
FIWARE technologies support		+		-		
FIWARE coaches		-		+		
Business innovation support	-	-	-		+	
Business development			-	-	-	
+) indicates that sub grantees that had access to the accelerator practice performed better						
-) indicates that sub grantees that did not have access to the accelerator practice performed better						

Table 3.3: Overview of binary accelerator properties and their relation to performance indicators

It appears at a first glance that according to the data, the presence of Workshops and Proposal phase support has a generally positive correspondence with performance, while the presence of Provision of physical spaces, Matchmaking and Networking and Business development has a generally negative correspondence with performance.

In the case of Selection approach (Table 3.4), it appears that Pipeline is in a slightly better general positive correspondence than Funnel.

	Feasibility	Innovation	Market	Market needs	Technical score	Mattermark Growth
Selection approach	pipeline	pipeline			funnel	

Table 3.4: Overview of accelerator selection approach and its relation to performance indicators

Another example is the performance analysis for the categorical property "Country of the project coordinator" and "Market needs" KPI given in Figure 3.1.

As stated in 2.5.3.4, means of scores are significantly different if the notches do not overlap. For example, it is possible to see such difference between the boxplots below for Finland on one hand and all countries except for Estonia, France, and Luxemburg.

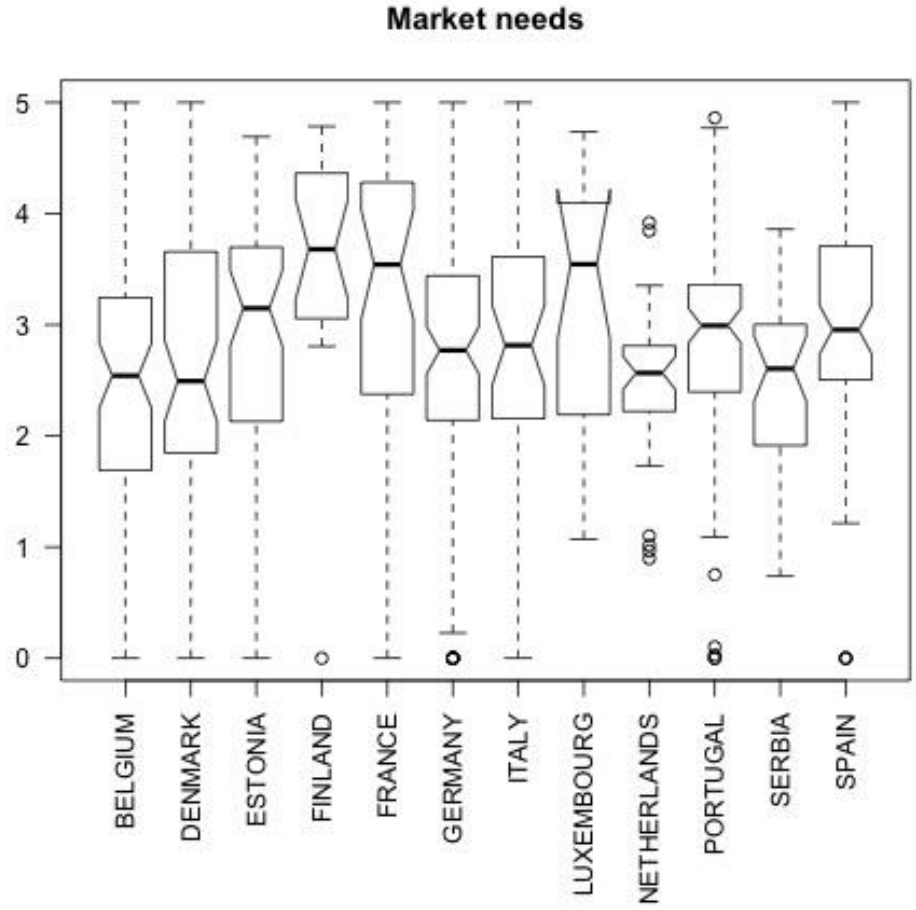


Figure 3.1: Example notched box plot for coordinator country and Market Needs

All results of the analysis include over 200 notched box plots, CDF diagrams, histograms, all the tables that were used in producing the plots, results of the correlation analyses, connectivity analysis and best practice identification analysis.

As stated earlier in this chapter, we provided only some examples, with the full-scale analysis provided in D2.4.

4 Sustainability

4.1 Approach

To ensure that FIWARE stakeholders have access to the FI-IMPACT website, self-assessment tool and impact assessment reports, FI-Impact partners have agreed the following sustainability measures:

1. *Maintenance of the current benchmarking system as-is.* The FI-IMPACT website, Self-Assessment tool and access to the Impact Assessment Reports will remain accessible for at least one year after the project conclusion to ensure that FIWARE stakeholders have continuity of access.
2. *Sub grantee data collection.* Sub-grantees and Accelerators will have access FI-IMPACT website and will be able to continuing accessing historical data, Impact Assessment Report and complete new Self-Assessment surveys.
3. *External performance indicators.* The system is set-up to integrate data exported from the Mattermark service for the duration of its license.
4. *Wide availability of the Self-Assessment Benchmarking tool.*
5. *Open Benchmarking tool.* FI-IMPACT has released the Assessment and Benchmarking tools developed in the context of FI-IMPACT as open source software. By following the installation instructions, anyone with sufficient technical knowledge can install and integrate the system in an existing environment that provides data in a specific format. This provides consortium partners, FIWARE stakeholders and the interested parties with a unique possibility to integrate and exploit the tool in their own business environments.
6. *Accelerator Benchmarking / Best Practices Reporting Tools:* FI-IMPACT has made publicly available all R scripts needed to replicate, or enhance, analysis performed in FI-IMPACT. Scripts, with installation instructions are available in github (https://github.com/JozefStefanInstitute/FI-Impact-R-analysis).

4.2 Open Benchmarking Tool, Technical Requirements

The tools developed by FI-IMPACT are available as Open Source on the GitHub repository (https://github.com/JozefStefanInstitute/fi-impact). In the repository, all the necessary information to install, integrate and use the set of tools is provided.

Technical requirements for *Survey Assessment and Benchmarking Tools* are:

1. "Standard" server configuration
2. Windows or Linux operating system. We tested the installation on Windows, but all components are Windows/Linux compatible.
3. Access to the internet
4. Apache Tomcat 7 web server: https://tomcat.apache.org/download-70.cgi
5. QMiner data analytics platform, developed by FI-IMPACT: http://qminer.ijs.si/

The system can be installed and integrated with new primary data sources by following the instructions provided. The complexity of integration depends on the structure of primary data sources the new user would like to integrate.

In cases where new sources have to be integrated, there is a need for customisation of reports or changing of KPI scoring algorithms a more advances knowledge is needed. Still we provide the full set of documentation to make this task feasible.

The set of tools for *Benchmarking Accelerator Practices* is provided in the same GitHub repository as a set of "R" scripts. Scripts are well documented and can be used with no additional effort to re-compute the data about accelerator practices.

For benchmarking Accelerators practices, we need two primary data sets:

1. Accelerator practices: A CSV table with a list of accelerators in rows and accelerator practices in columns.
2. Surveys: List of surveys with calculated KPIs or external performance indicators

The requirement for the usage of R scripts is installed the "R" Software for Statistical Computing available here: https://www.r-project.org/

4.3 Data Sources & Updates

As we have shown in the technical description, some data sources are "self-sustainable", while others were outputs of FI-IMPACT work packages and they would require to be updated manually by experts. The reason is mainly that those sources need expert knowledge to be applied and those tasks cannot be easily maintained. The self-sustainable sources are the Impact Assessment surveys (each time a questionnaire is finalised, it is sent automatically to the reporting system) and Mattermark data can be imported by a data manager that has a valid Mattermark account.

Other sources, most notably the FI-Impact Global database, can also be imported, but the import interface has not been exposed to the data manager, as there is no foreseen curator of the FI-Impact Global database after the project end.

5 Annexes

5.1 FI-IMPACT KPI Scoring

Main scoring table

ID	Question	Answer	List of answers	Scoring question
Q0	Section 0: Technical information			
Q0_1	Type	Single choice	I. Impact Assessment S. Self-Assessment	Default: I
Q0_2	Version	Single choice	1. Version 1 - initial draft version 2. Version 2 as of 6/2015 v3: 3. Version 3 as of 20/6/2016	Default: 1. Currently in use 3 (calculated, if Q3_8a exists then version = 3).
Q1	**Section 1: Profile**			
Q1_1	Which Accelerator is funding you?	Single choice	A. Ceedtech B. Creatifi C. European Pioneers D. Fabulous E. FI-Adopt F. FI-C3 G. Fiche H. Finish I. Finodex J. Fractals K. FrontierCities L. Impact M. Incense N. Smart Agri-food O. Soul-fi P. Speedup Europe	Impact Assessment Only
Q1_2	In which country is your organisation headquartered?	Single choice	(list of countries)	
Q1_3	What is the name of your organisation?	Free text		Impact Assessment Only
Q1_4	What is the name of your project?	Free text		
Q1_5	What is the mailing address of your organisation?	Free text		

ID	Question	Answer	List of answers	Scoring question
Q1_6a	Are you an SME (<250 employees)	Single Choice	A. Yes B. No	
Q1_6b	Are you a self-employed individual entrepreneur	Single Choice	A. Yes B. No	
Q1_6c	Is your organisation owned by a Large organisation (over 60%)?	Single Choice	A. Yes B. No	
Q1_7	How many people are in the implementing team?	Integer		
Q1_8	How many full time employees are in your organization?	Integer		
Q1_9	What was the organisation's annual turnover in the last complete financial year?	Euro value		
Q1_10	Does your proposal sell/offer an IT solution or a service?	Single choice	Choose one: A. Tech provider B. Service provider	
Q1_11	Is your solution based solely on software or does it include also a hardware component?	Only if answered A to Q1_10 - Single choice	Choose one: A. Purely software B. Software and Hardware	
Q1_12	Which FIWARE enablers are being used (or planned to be used) in the project?	Drop down with names of Enablers - Multiple choices	Big Data Analysis * Complex Event Processing (CEP) * Publish/Subscribe Context Broker * Stream-oriented * Backend Device Management * Configuration Manager-IoT Discovery * Configuration Manager-Orion Context Broker * Gateway Data Handling GE * IoT Broker * Protocol Adapter * 2D/3D Capture * 2D-UI * 3D-UI-WebTundra * 3D-UI-XML3D * Augmented Reality * Cloud Rendering * GIS Data Provider * Interface Designer * POI Data Provider * Real Virtual Interaction * Synchronization * Virtual	

ID	Question	Answer	List of answers	Scoring question
			Characters * Authorization PDP * Identity Management * PEP Proxy * Security Monitoring * Network Information and Control * Repository * Marketplace * Store * Revenue Settlement and Sharing System * Application Mashup * IaaS Resource Management GE * Monitoring GE * Object Storage GE * PaaS Manager * Policy Manager * Self-Service Interfaces * Software Deployment and Configuration * Content Based Security - CBS * Data Viz - SpagoBI	
Q1_13	How much funding has been received from the accelerator?	Euro value		
Q1_14	What is the name of the coordinator of your proposal?	Free text	Name, Surname	
Q1_15	Please provide up to 300 word abstract of your project?	Free text		
Q1_16	How many years has your organisation been operational?	Year		
Q1_17	City			
Q1_18a	Manufacturing specific enablers	Multiple choices		
Q1_18b	Media specific enablers	Multiple choices		
Q1_18c	eHealth specific enablers	Multiple choices		
Q1_18d	Energy specific enablers	Multiple choices		
Q1_19	The project being assessed is	Single choice	A. Project under preparation B. Running project	Self-Assessment Only
Q1_ 20	Does this project use or plan to use FIWARE enablers?	Single choice	A. Yes B. No	Self-Assessment Only
Q1_21	Please provide up to 300 word abstract outlining the focus and benefits of your project	Free text		Self-Assessment Only

ID	Question	Answer	List of answers	Scoring question
Q1_22	unique project ID	Free text		
Q1_23	Timestamp submitted	Timestamp	Format: 2015-06-29 19:18:09.651119+00:00	
Q2	**Section 2: Innovation**			
Q2_1	How near is your concept to being commercially exploitable?	Single choice	TRL1. basic principles observed TRL2. technology concept formulated TRL3. experimental proof of concept TRL4. product/service validated in lab TRL5. product/service validated in operational environment TRL6. product/service demonstrated in operational environment TRL7. product/service prototype demonstration in operational environment to client TRL8. product/service market ready TRL9. product/service sold in marketplace	S2_1 = case Q2_1 of TRL1: 1 TRL2: 1.2 TRL3: 1.3 TRL4: 1.4 TRL5: 1.5 TRL6: 1.6 TRL7: 1.7 TRL8: 1.7 TRL9: 1.7
Q2_2	Does your business idea provide an Incremental innovation or does it radically change existing products or services?	Single choice	Chose one: A. Incremental Innovation B. Disruptive innovation	**v2: S2_2** = case Q2_2 of 'A': 1.0 'B': 1.2 **v3: S2_2** = case Q2_2 of 'A': 0 'B': 2.5
Q2_3	Does a similar solution already exist in the marketplace?	Single choice	A. Yes B. No	**v2: S2_3** = case Q2_3 of 'A': 0.75 'B': 1.0 **v3: S2_3** = case Q2_3 of 'A': 2.5 'B': 0

ID	Question	Answer	List of answers	Scoring question
Q2_4	Is the original concept developed by a single person or is it a group effort?	Single choice	A. SingleB. Multiple	S2_4 = case Q2_4 of'A': 1.0'B': 1.2
Q2_5	Will your business idea create a new standalone offering or does it fit into an existing commercial strategy?	Single choice	A: Standalone B: Strategy	SQ2_5 = case Q2_5 of 'A': 1.0 'B': 1.2
S2	Section 2: Innovation Score			**V2: SCORE_INNOVATION** = S2_1*S2_3 + S2_2 + S2_4 + S2_5 Range: 3.75 - 5.3 Normalisation to 0..5: SCORE_INNOVATION_NORM=(SCORE_INNOVATION-3.75)*5/1.55 **V3: SCORE_INNOVATION** = S2_2 + S2_3 Range: 0..5 Normalisation to 0..5 (no need): SCORE_INNOVATION_NORM=SCORE_INNOVATION
Q3	**Section 3: Market**			
Q3_1	Select the Business Model that best reflects your idea?	Multiple choices	A. Production model B. Markup model C. Subscription model D. Usage fees model E. Rental model F. License model G. Advertising model H. Transactions/Intermediation model I. Freemium model J. Customer analysis model	
Q3_2(x)	How will your expected revenues be divided among the business models chosen above?	Number	Select all appropriate from list:show selection from 31 and provide box with %	Answers from a to k:% licenses Q3_2a (unchanged)% subscriptions Q3_2b (unchanged)% project fees Q3_2c (unchanged, but will not occur in new data)% production income Q3_2d (new)% markup income Q3_2e (new)% usage fees Q3_2f (new)% rental income Q3_2g (new)% advertising Q3_2h (new)% transactions income Q3_2i (new)% freemium income Q3_2j (new)% customer analysis income Q3_2k (new)
Q3_3	OLD Question: In which market sector(s) do you plan to sell your product or service? NEW Question: If you are targeting any secondary market sectors, please	Multiple choices	Select all appropriate from list: A Accommodation and Food Service Activities B Agriculture, Forestry and	Note: The Q3_3 contained all sectors selected by users, as the original field did not distinguish between primary and additional ones and allowed for multiple choice. And many users in fact have ticked more than one checkbox in that field. From now on the primary sector will go into Q3_3a, while only additional sectors (if any) will go into Q3_3.

ID	Question	Answer	List of answers	Scoring question
	select		Fishing C Arts, Entertainment and Recreation D Business Services E Construction F Consumer G Education H Financial Services I Government J Healthcare K Horizontal L Manufacturing M Mining and Quarrying N Retail and Wholesale O Telecom and Media P Transport and Logistics Q Utilities	
Q3_3a	In which primary market sector do you plan to sell your product or service?	single choice	Same selection as 3,3	
Q3_12	IF 3.3a="F" (Consumer): Which primary consumer market are you targeting?	single choice	A Health and wellness B Transport and logistics C Energy and home automation D Leisure and gaming E DYI and design F Shopping G Education and culture H Citizen Engagement I Environment and nature J Other	Used to score section 5B
Q3_12a	Why are you targeting this market sector?	Free text		
Q3_3b	Why are you targeting or prioritising this market sector?	Free text		
Q3_3c	Why are you targeting these additional markets?	Free text		
Q3_13	If you are targeting any secondary consumer market sectors, please	Multiple choices	Same as Q3_12	Used to score section 5B

ID	Question	Answer	List of answers	Scoring question
	select			
Q3_13a	Why are you targeting these additional markets?	Free text		
Q3_4	Through which Channel do you expect to sell your product/service?	Multiple choices	A App-stores B E-mail/Phone-call marketing C Other external websites D Personal website E Public tenders notices F Sales agents G Shops	Not scored.
Q3_5	In the next three years where do you expect to sell your product/service?	Multiple choices	A. My City or Region specify (select from EU cities list) B . My country specify (list of countries) C. Multiple Counties (select Countries from list) D. Global E. Other	S3_5 = Take the highest score from multiple choice: 'A': 1.0 'B': 1.5 'C': 2.0 'D': 2.5 'E': 1.0
Q3_6	When will (did) your Product/Service enter the open market?	Year		
Q3_7	What is the level of competition in your target market?	Single Choice	A. No competitionB. Medium competitionC. High competition	
Q3_8	**v2:** Have you verified your value proposition with the target customers? **v3: Question removed and replaced with Q3_8a**	Single Choice	A. No, value proposition based on vision and internal discussion B. Value proposition validated through surveys and market studies C. Value proposition validated through interviews and meetings with customers	S3_8 = case Q3_8 of 'A': 1 'B': 3 'C': 5
Q3_8a	**v3: New replaces Q3_8** Have you verified your value proposition with the target customers?	Single Choice	A. No, value proposition based on vision and internal discussion B. Value proposition validated through surveys	S3_8 = case Q3_8 of 'A': 1 'B': 3 'C': 4 'D': 5

ID	Question	Answer	List of answers	Scoring question
			and market studies C. Value proposition validated through interviews and meetings with customers D. Value proposition tested through usage in a real life setting	
Q3_9	What is the status of your commercial strategy to acquire customers?	Single Choice	A. Preparing sales materials and channels B. Sales materials available and channels activated C. First customers acquired through established channels	S3_9 = case Q3_9 of 'A': 1 'B': 3 'C': 5
Q3_1	If this is a new market what is the status of your market strategy?	Single Choice	Choose one: A. Defining a market strategy to create demand B. Started promoting the vision C. Early adopter customers acquired	S3_10 = case Q3_10 of 'A': 1 'B': 3 'C': 5
Q3_11	If this is market with many competitors what is the status of your market strategy?	Single Choice	Choose one: A. Defining the competitive position on the market B. Company positioned and sales strategy defined C. Executing sales strategy to gain market share	S3_11 = case Q3_11 of 'A': 1 'B': 3 'C': 5
S3	Section 3: Market	**Identify weights:** ----NEW MARKET---if Q3_7 = 'A' then --no competition means new marketW1 = 2.0; W2 = 0.0else if Q2_2 = 'B' and Q3_7 = 'B' --disruptive innovation but medium competitionW1 = 1.5; W2 = 0.5----STARTING MARKET--- else if Q2_2' = 'A' and Q3_7 = 'B' then --incremental innovation and medium competitionW1 = 1.0; W2 = 1.0 else if Q2_2' = 'B' and Q3_7 = 'C' then --disruptive innovation and high competitionW1 = 1.0; W2 = 1.0----CONSOLIDATED MARKET--- else if Q2_2 = 'A' and		**v2: SCORE_MARKET** = W1*(S3_8+S3_9)/2 + W2*(S3_10 +S3_11+S3_5)/2.5 Range: 2 - 10 Normalisation to range 0 - 5: SCORE_MARKET_NORM=(SCORE_MARKET-2)*5/8 **v3: SCORE_MARKET** = 0.7*S3_8+0.3*(W1*S3_9 + W2*(S3_10 +S3_11+S3_5)/3) Range: 0,94...8,00 Normalisation to range 0 - 5: SCORE_MARKET_NORM=(SCORE_MARKET-0,94)*5/7,06

ID	Question	Answer	List of answers	Scoring question
		Q3_7 = 'C' then --incremental innovation and high competitionW1 = 0.8; W2 = 1.2		
Q4	**Section 4: Feasibility**			
Q4_1	**v2:** Have you estimated and provided for the capital investments required until revenues can sustain your business? **v3:** Have you produced a detailed business plan, with clear break-even expectations and proper estimation of the market size, and have you provided for the capital investments needed until reaching break-even point?	Single Choice	A. In the process of estimating the investment required B. Capital requirements estimated and investors contacted C. Capital requirements covered until self-sustainable	S4_1 = case Q4_1 'A': 1 'B': 3 'C': 5
Q4_6	What is the % required capital you already have?	Percentage		
Q4_2	Have you estimated how much your sales will grow on a yearly basis?	Single Choice	A. Evaluating what the potential growth rate could be B. Committed to a growth rate in the business plan C. Validated growth rate with sales and market data	S4_2 = case Q4_2 'A': 1 'B': 3 'C': 5
Q4_3	What is your average expected growth rate of your revenue for the next four years	Percentage/year	Year1 --%-- Year 2 --%-- Year3 --%--	
Q4_4	Have you estimated the cost and time required to acquire a new customer in your target market?	Single Choice	A. Not yet analysed the customer acquisition processB. Estimated customer acquisition cost and timeC. Verified customer acquisition cost and time through real sales	S4_4 = case Q4_4 'A': 1 'B': 3 'C': 5
Q4_5	Have you planned for expanding your sales force and marketing activities to match the expected growth rate?	Single Choice	A. No plans for sales force hiring and increased marketing activities B. Scale-up plans defined but not yet launched	S4_5 = case Q4_5 'A': 1 'B': 3 'C': 5

ID	Question	Answer	List of answers	Scoring question
			C. Scale-up plans launched or set to start at a definite date, including hiring plan for salespeople	
S4		**Identify weights:** ----NEW MARKET--- if S3_7 = 'A' then --no competition means new market W3 = 2; W4 = 0 else if S2_2 = 'B' and S3_7 = 'B' --disruptive innovation but medium competition W3 = 1.8; W4 = 0.2 ----STARTING MARKET--- else if S2_2 = 'A' and S3_7 = 'B' then --incremental innovation and medium competition W3 = 1.2; W4 = 0.8 else if S2_2 = 'B' and S3_7 = 'C' then --disruptive innovation and high competition W3 = 1.1; W4 = 0.8 ----CONSOLIDATED MARKET--- else if S2_2 = 'A' and S3_7 = 'C' then --incremental innovation and high competition W3 = 1; W4 = 1		**v2: SCORE_FEASIBILITY** = W3*(S4_1 + (Q4_6 / 100)*5)/2 + W4*(S4_2 +S4_4 +S4_5)/3 Range: 1 - 10 Normalisation to range 0 - 5: SCORE_FEASIBILITY_NORM=(SCORE_FEASIBILITY-1)*5/9 **v3: SCORE_FEASIBILITY** = S4_1 + (Q4_6 / 100)*5 + S4_2 +S4_4 +W4*S4_5 Range: 3 - 25 Normalisation to range 0 - 5: SCORE_FEASIBILITY_NORM=(SCORE_FEASIBILITY-3)*5/22
Q5	**Section 5: Market needs**			
Q5A_1(x)	Business and Public sector (B2B/B2G) markets: Which are the main expected benefits your solution will provide in your target market(s)?	6 stars across the proposed items	When answering this question you should completely distribute a total of exactly 6 points (stars) across the following proposed benefits:A. Reducing operational costsB. Improving sales performanceC. Improving	see sheet "scoring business (5A)" map in correlation to answer Q3_3a<>F

ID	Question	Answer	List of answers	Scoring question
			marketing effectivenessD. Enhancing customer (citizen for public sector, patient for healthcare) careE. Innovating the product or service companies sell/provideF. Strengthening multi-channel delivery strategyG. Simplifying regulatory tasks and complying with regulationsH. Improving data protectionI. Increasing use and distribution of open data and transparencyJ. Improving scalability of existing toolsK. Improving operational efficiency	
Q5B_1(x)	Consumer (B2C): Which are the main expected benefits your solution will provide in your target market(s)?	6 stars across the proposed items	When answering this question you should completely distribute a total of exactly 6 points (stars) across the following proposed benefits: A. Answering communication/collaboration needs B. Providing better entertainment C. Improving quality of life D. Simplifying daily tasks E. Reducing/Saving time F. Having easier and faster access to information/services G. Saving money	see sheet "scoring consumer (5B)" map in correlation to answers Q3_3a=F and Q3_12
Q6A	**Section 6A: Social Impact**			
6A_1(x)	Please choose the background of product / service.	Give each answer, from A to K, a score	A. Perceived security of communities,	

ID	Question	Answer	List of answers	Scoring question
		from 1 to 5.	neighbourhoods and housingB. Protection of privacy and security of personal digital dataC. Citizens involvement and participation in open governmentD. E-inclusionE. Fitness and well-beingF. HealthG. Quality of life in urban areasH. Quality of life as a result of better access to information and dataI. Social inclusionJ. Access and use of e-learning and innovative learning methodologiesK. Demand and use of sustainable transport solutions	
Q6B	**Section 6B: Social Impact Details**			
Q6B_1(x)		Give each answer, from A to F, a score from 1 to 5.	A. Disabled B. Elderly C. Ethnic or cultural minorities D. Low income E. Socially excluded groups F. Unemployed	

Scoring section 5A

	Business Priorities Scoring	A	B	C	D	E	G	H	I	J	Q	L	M	N	O	P	K
		Accommodation and food service activities	Agriculture, forestry and fishing	Arts, entertainment and recreation	Business services	Construction	Education	Financial services	Government	Healthcare	Utilities	Manufacturing	Mining and quarrying	Retail and wholesale	Telecom and media	Transport and logistics	Horizontal
A	Reducing operational costs	1,43	1,18	0,96	1,39	1,24	1,23	1,43	0,98	1,01	0,81	1,53	1,20	0,97	0,62	1,18	1,23
B	Improving sales performance	0,82	1,14	1,42	1,12	0,88	0,83	1,00	1,00	1,20	1,11	0,78	1,51	1,67	1,22	0,73	1,28
C	Improving marketing effectiveness	0,76	0,22	0,27	0,40	0,34	0,20	0,26	0,72	0,71	1,54	0,21	1,20	1,05	0,27	0,28	0,48
D	Enhancing customer (citizens for public sector, patients for healthcare)	1,67	0,56	1,67	1,49	0,88	0,53	0,93	0,47	1,57	0,90	1,14	1,67	0,85	1,22	1,15	1,18
E	Innovating the product or service companies sell/provide	0,41	0,51	0,91	1,08	0,57	0,83	1,22	0,58	0,84	1,07	1,20	0,58	0,56	0,82	0,87	0,87
F	Strengthening multi-channel delivery strategy	0,73	0,46	0,20	0,21	0,41	0,17	0,58	0,92	0,17	1,20	0,23	1,20	0,17	0,17	0,18	0,17
G	Simplifying regulatory tasks and complying with regulations	0,71	1,67	0,93	1,46	0,88	1,67	1,49	1,53	1,21	0,56	1,23	1,67	0,67	1,07	1,67	1,39
H	Improving data protection	0,71	0,50	0,92	1,67	1,67	1,12	1,67	1,13	1,67	1,67	1,67	1,51	0,84	1,67	1,25	1,67
I	Increasing use and distribution of open data and transparency	0,17	0,17	0,18	0,17	0,17	0,86	0,17	1,67	1,20	0,17	0,17	0,17	0,17	0,26	0,17	0,18
J	Improving scalability of	0,32	0,22	0,17	1,11	0,27	0,38	0,75	0,17	0,77	0,54	0,72	0,41	0,17	0,77	0,62	0,34

	Business Priorities Scoring	A	B	C	D	E	G	H	I	J	Q	L	M	N	O	P	K
	existing tools																
K	Improving operational efficiency	0,73	0,71	0,22	1,13	0,87	0,53	1,20	0,94	1,07	0,77	1,55	1,36	0,85	0,72	0,93	1,25

Market Needs B2B, B2G scoring

1. If **Q3_3a not null** then calculate score for the primary market sector. Otherwise calculate scores for each market sector in Q3_3 and provide the max score obtained (this is for backward compatibility and does not include B2C).
2.: Market scores are calculated by multiplying assigned stars with factor from table
   a. Q3_3a!=F: "scoring business (5A)"
   b. Q3_3a=F: "scoring consumer (5B)" and answer 3_12

3. Normalised score:
   a. Q3_3a!=F: SCORE_MARKET_NEEDS_B2B_NORM=(SCORE_MARKET_NEEDS_B2B-1)*5/9
   b. Q3_3a=F: SCORE_MARKET_NEEDS_B2B_NORM=SCORE_MARKET_NEEDS_B2B

Scoring section 5B

	Q3_12	Health and wellness	Transport & logistics	Energy & home automation	Leisure/gaming	DIY/design	Shopping	Education/culture	Citizen engagement	Environment & nature	Consumer other
Question Q5B_1		A	B	C	D	E	F	G	H	I	J
Answering communication/ collaboration needs	A	0,39	0,14	0,10	0,35	0,00	0,14	0,21	0,83	0,56	0,14
Providing better entertainment	B	0,69	0,00	0,00	0,83	0,83	0,00	0,43	0,00	0,39	0,35
Improving quality of life	C	0,83	0,63	0,69	0,69	0,56	0,35	0,69	0,69	0,83	0,83
Simplifying daily tasks	D	0,49	0,83	0,83	0,04	0,69	0,44	0,00	0,56	0,14	0,56
Reducing/Saving time	E	0,00	0,28	0,39	0,00	0,28	0,83	0,36	0,42	0,10	0,00
Having easier and faster access to information/services	F	0,56	0,69	0,32	0,53	0,14	0,56	0,83	0,79	0,69	0,69
Saving money	G	0,21	0,44	0,56	0,10	0,42	0,69	0,56	0,21	0,00	0,25

5.2 Best Accelerator Practices Analysis

5.2.1 Computing the practice-scores

The practice-score of a binary accelerator indicator and sub-grantee metric is a score which estimates the difference between sub-grantee performance measured by the metric on the sample of sub-grantees which fall into a chosen interval with respect to the metric.

The difference in performance is measured with the cumulative distribution function, or CDF. Evaluated at x, it is the probability that a random variable will take a value less than or equal to x.

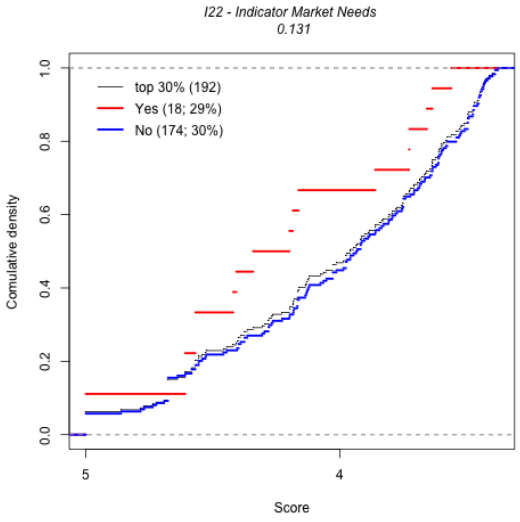
A soft assumption is: the ratios of sub-grantees from the two samples should be approximately the same for the chosen interval and all sub-grantees. While a significantly larger proportion of one sample in the chosen interval is itself a signal, it is not taken into account for this score for two reasons. On one hand, there is no natural unique way to do so and on the other, there was no need to do it based on the data.

- Choose a pair of a binary accelerator indicator and sub-grantee metric.
- Select all sub-grantees with complete data for the indicator and metric, whose metric falls into the chosen interval.
- Split the sample along the indicator into two samples.
- Compute the CDF for both samples obtained in the split and for the combined data.
- Compute the size of the surface between the CDFs from the split on the chosen interval and normalize.

In the case of Mattermark Growth score, the very dense close to zero and very thin elsewhere. Thus, a logarithmic transformation is performed before computing the CDF function and practice-score. The transformation is described by the expression below, where sign and zero are preserved.

$$\text{sign}(x)\log(|x|+1)$$

Example. Consider the Technical support indicator and the FI-IMPACT Market needs KPI score and suppose that we are interested only in the top 30% of sub-grantees with respect to the Market needs score. First, select all sub-grantees with complete data for these two indicators whose Market needs score is in the top 30%. Split them into two samples, so that one contains the sub-grantees, which had access to Technical support via an accelerator and those, who did not. Compute the cumulative distribution function on both the split samples and the whole sample. It is apparent from the plot that the sub-grantees



who had access to Technical support (red curve) performed better than those who did not (blue curve); the normalized surface between the curves is 0.13 (the area of the whole square is 1).

5.2.2 Performance analysis for binary accelerator practices, the table

		t-test results																practice scores							
		top 20%				top 30%				top 40%				top 50%				all				top 30% sub grantees				all sub grantees			
practice	score	t	df	diff	p-value	t	df	diff	p-value	t	df	diff	p-value	t	df	diff	p-value	t	df	diff	p-value	practice score	n	yes	no	practice score	n	yes	no
Technical Support	Market Needs													3,4	23	0,45	0,002					0,13	192	18	174	-0,05	639	62	577
Workshops	Market					2,14	145	0,14	0,034	2,19	234	0,17	0,029									0,11	197	121	76	0,03	655	399	256
Business Innovation Support	Technical Score	2,43	66	0,28	0,018	3,16	72	0,33	0,002									3,64	277	0,28	0	0,09	110	44	66	0,06	368	143	225
Workshops	Innovation					2,14	158	0,12	0,034									2,07	592	0,16	0,039	0,09	233	155	78	0,04	655	399	256
Proposal phase support	Technical Score					2,09	27	0,31	0,046													0,08	110	22	88	0,01	368	83	285
Matchmaking and Networking	Innovation																	-2	293	-0,17	0,046	0,06	233	171	62	-0,04	655	501	154
Workshops	Market Needs																	2,71	545	0,25	0,007	0,05	192	131	61	0,05	639	390	249
FIWARE Coaches	Market																	-3,21	458	-0,36	0,001	0,04	197	57	140	-0,07	655	233	422
FIWARE Coaches	Market Needs									2,06	188	0,14	0,041									0,04	192	77	115	0,03	639	228	411
Gateways	Innovation																	2,97	447	0,24	0,003	0,04	233	158	75	0,05	655	418	237
Workshops	Feasibility													2,06	248	0,19	0,041	2,94	579	0,26	0,003	0,03	204	141	63	0,05	655	399	256
Gateways	Market Needs									2,47	172	0,18	0,015	2,78	248	0,19	0,006					0,03	192	136	56	0	639	406	233
Matchmaking and Networking	Market																	-3,84	266	-0,46	0	0,03	197	135	62	-0,09	655	501	154
Business Development	Technical Score																	-4,42	125	-0,38	0	0,03	110	70	40	-0,08	368	289	79
FIWARE Technologies Support	Innovation																	4,16	293	0,36	0	0,03	233	77	156	0,08	655	165	490
Workshops	Growth Score																	2,32	176	0,84	0,022	0	102	68	34	0,07	340	231	109
Gateways	Technical Score													-2,21	178	-0,18	0,028	-7,06	196	-0,54	0	0	110	52	58	-0,11	368	258	110
Matchmaking and Networking	Growth Score																	-2,31	131	-0,83	0,022	0	102	74	28	-0,07	340	264	76
Provision of physical spaces	Innovation																	-2,91	234	-0,28	0,004	-0,02	233	44	189	-0,06	655	152	503
Gateways	Market																	4,08	457	0,45	0	-0,03	197	139	58	0,09	655	418	237
Business Development	Market Needs																	-2,96	455	-0,28	0,003	-0,03	192	124	68	-0,06	639	428	211
FIWARE Technologies Support	Market Needs																	-2,92	288	-0,3	0,004	-0,03	192	33	159	-0,06	639	161	478
FIWARE Coaches	Innovation									-2,1	182	-0,12	0,037					-2,69	512	-0,21	0,007	-0,04	233	65	168	-0,05	655	233	422
Technical Support	Market																	-3,48	73	-0,65	0,001	-0,04	197	11	186	-0,13	655	62	593
Business Innovation Support	Innovation													-2,08	276	-0,13	0,039					-0,05	233	80	153	-0,01	655	243	412
Business Development	Innovation																	2,03	390	0,17	0,043	-0,05	233	166	67	0,04	655	439	216
Business Innovation Support	Feasibility																	-3,1	528	-0,28	0,002	-0,06	204	68	136	-0,06	655	243	412
Matchmaking and Networking	Technical Score	-2,22	40	-0,29	0,032									-2,46	70	-0,26	0,016					-0,06	110	77	33	-0,03	368	281	87
Provision of physical spaces	Feasibility	-2,24	56	-0,27	0,029					-2,06	117	-0,21	0,042	-2,28	162	-0,21	0,024					-0,06	204	41	163	-0,02	655	152	503
Provision of physical spaces	Technical Score																	-2,45	78	-0,24	0,016	-0,07	110	17	93	-0,05	368	56	312
Provision of physical spaces	Market Needs									-2,44	130	-0,18	0,016									-0,08	192	45	147	0,02	639	148	491
Business Innovation Support	Market					-2,16	130	-0,15	0,033	-2,9	202	-0,23	0,004									-0,11	197	67	130	-0,04	655	243	412
Business Development	Market					-2,48	140	-0,16	0,014													-0,12	197	136	61	0,02	655	439	216