DataVaults

Persistent Personal Data Vaults Empowering a Secure and Privacy Preserving Data Storage, Analysis, Sharing and Monetisation Platform

D6.4
Demonstrators' Evaluation of Beta Platform Version

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Abstract	This deliverable reports on the evaluation of the Beta Version of the DataVaults platform, in accordance with the evaluation framework set out in D6.1.
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Executive Summary

This deliverable marks the second use of the Evaluation Framework as set out in D6.1.

The deliverable reports on the technical evaluation of all that was available for scrutiny following the release of the Beta Version of the DataVaults platform at M24, with the submission of deliverable D5.4.

It also checks that all the preparation work had been carried out at the demonstration sites, to smoothly proceed to the final phase of the project. Good progress has been made and the plan of action is in place for the final stage of the project.

The Evaluation Framework also emphasised "evaluation as a management tool" and in this capacity, we revisited our "Theory of Change" for DataVaults and incorporated some new insights into how the project should evolve in the final six months of the project.

The technical testing showed that the beta release of the platform built well upon the earlier introduction of the alpha version and the earlier feedback gained from that phase of the project. However, the large amounts of features released came with some issues that had an impact on the experience that users witnessed, at least upon the release of the beta version. Nevertheless, the agile development methodology used allowed the technical team to gradually improve the overall platform, resulting in a better rating towards the end of the evaluation, while big improvements have been implemented and tested internally, in order to be launched with the 0.5 version and cover all the performance and usability bottlenecks encountered.

As such, this deliverable paves the way for the Final Evaluation of the Platform (D6.5), which will include the collection of feedback from a broader community, based on the audience targets identified in D6.1.

Table of Contents

List of Figures

List of Tables

Terms and Abbreviations

API	Application Programming Interface
APP	Application
B2B	Business to Business
BDVA	Big Data Value Association
CO2	Carbon dioxide
CRM	Customer Relationship Management
D	Deliverable
DAA	Direct Anonymous Attestation
DoA	Description of Action
DLT	Distributed Ledger Technology
DPO	Data Protection Officer
DTU	Danish Technical University
EDPIA	Ethics and Data Protection Impact Assessment
EDPS	European Data Protection Supervisor
EFFRA	European Factories of the Future Research Association
EC	European Commission
EL	Ethical and Legal
EU	European Union
FAQ	Frequently asked question
GDPR	General Data Protection Regulations
GPS	Global positioning system
IEEE	Institute of Electrical and Electronic Engineers
IFIP	International Federation for Information Processing
IoT	Internet of Things
ISACA	Information Systems Audit and Control Association
ISO	International Organization for Standardization
KPI	Key Performance Indicator
MVP	Most Valuable Product
ODI	Open Data Institute
PIA	Privacy Impact Assessment
REST API	Representational State Transfer
SME	Small and Medium Enterprise
SoTA	State of the Art
TOC	Theory of Change
TPM	Trusted Platform Module
UI	User Interface
UX	User Experience
WP	Work Package

1 INTRODUCTION

1.1 INTRODUCTION

"DataVaults aims to deliver a novel framework and architecture that leverages personal data, coming from diverse sources, to help Individuals construct their unified personal data hub, collect at a single point all of their personal data in a secure and trusted manner, and retain ownership and control on what to share and with whom, also receiving compensation for the artefacts they place at the disposal of other third parties." [1]

This document, as set out in the DoA, covers: "Documentation of the demonstrators' operation and execution consolidating the input of Tasks 6.3-6.7." This report will evaluate the beta version of the platform. It is the second activity from T6.8-Demonstrators Evaluation and Impact Assessment, which commenced at M19 and runs through to M36. Figure 1 below indicates the overall timings for the stages of development and schedule of deliverables for the project.

Figure 1: Schedule for WP6

The evaluation framework of D6.1 has been set in operation now that the demonstration activities have commenced. Extensive data collection, regarding the experience of the demonstrator partners with the DataVaults platform, is continuing to be conducted and will continue through to the end of the project. The data collection is meeting the guidelines of the predefined evaluation framework and in accordance with the Evaluation Plan, in order to ensure the high quality of the feedback gained and consistency of the evaluation activities. It also serves a wider function of acting as a general guidelines document for the project. All the

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[1] DataVaults, "DataVaults DoA. Section 1 3.1, Project Concept."

activities scheduled for this phase of the project, which are covered in the Evaluation Plan, will be scrutinised.

The Evaluation Plan will continuously be updated as the project evolves as "*An effective evaluation plan is a dynamic tool, or a 'living document', that should be updated on an ongoing basis to reflect changes and priorities over time.*"[2] The evaluation framework will continue to be studied extensively and should lead to valuable observations and conclusions about the viability and the sustainability of the DataVaults platform. The current version of the Evaluation Plan can be found in Appendix 1 and this will evolve with the project's progress during the final months.

D6.1 set out to describe how we will evaluate both the pilots and the project as a whole. It provides the "Documentation of the evaluation framework and validation methodology, defining the various practices for recording feedback from the demonstration activities and including a set of test-cases to be executed by the demonstrator partners."

The demonstrations themselves commenced at M19 (July 2021). This document builds upon the initial evaluation of the alpha version of the platform, presented in D6.2 at M24 and will be built upon further for the evaluation of the final version of the platform at M36.

This beta evaluation will be constrained in relation to the final evaluation. But it will enable us to:

- Check that the technology being developed is going in the right direction and will work,
- Continue validating that assumptions made about the project were correct
- Check all the conditions are right and progress has been performed in alignment (or with small deviations) to the original execution plan, including whether the needs and requirements of the stakeholders and of the personal data market are being taken into account.

The final iterations of this deliverable will occur with "D6.5 Final Evaluation and Impact Assessment Report" [M36]

The beta version was made available in M24 of the project (end of December 2021). It includes all the "basic" functions, which were specified in D5.2, following the availability of the mock APIs and allows stakeholders to perform real-life tests with the platform being close to a stable prototype that is able to perform the majority of the core operations relevant to data collection and sharing.

This beta iteration evaluates in principle the core operations we had available by M24 of the project. D5.4 is the second release of the DataVaults platform (beta version), while it also provides the updated architecture, the APIs, the user stories and the plan for the next releases. It relies on the previously collected technical requirements and user stories presented in deliverables D5.1, D5.2 and D5.3. It also relies on the work performed in work packages WP3 and WP4, where the technical details of the components have been provided. As such, for the

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[2] United Nations Environment Agency, "evaluation-criteria-and-ratings," https://www.unenvironment.org/about-un-environment/evaluation-office/our-evaluation-proach/evaluation-criteria-and-ratings., [Accessed:21 Jan 2021]

purpose of this second evaluation stage, we will be focussing on evaluating the Beta release of the DataVaults platform and its components as provided in D5.4.

In this context, the work covered in the second evaluation phase embraced the creation of connectors and the testing of them, as well as the overall sharing lifecycle operation which starts with the collection of the data and goes till the sharing of the different datasets. The intention is to have as much of it as possible carried out before M31 and so the scheduling of the beta phase evaluation needed to be flexible. The intention was to evaluate and report the testing of the WP5 outputs forming the beta release in a controlled operation environment, and provide as much useful feedback (and not just debugging etc. but focus on user acceptance, perception of the service, feedback from the demonstrators regarding how DataVaults benefits them etc.), whilst identifying any necessary amendments that need to be performed in the scenarios or in the platform etc. In these lines, the overall evaluation presented in this deliverable includes also aspects that will be officially delivered in the 0.5 version of the platform, as the development team works following the agile development methodology, which means that the delivery of features is performed in different iterations, which are applied on the already working production environment (in our case, the beta version of the platform), till a major release is planned, which then will denote the introduction of the 0.5 version.

1.2 DOCUMENT STRUCTURE

The document reflects the structure of the previous deliverable, which evaluated the alpha version. Essentially it can be seen as having three sections.

The **first section** poses the question as to whether all the envisaged preparation work has been successfully carried out. This will embrace a wide range of questions, including:

- Whether the expected progress at this stage of the project has been achieved at all of the demonstration sites in accordance with what was planned in D6.2?
- Have the conditions for having an ethical and privacy situation in keeping with the prescriptions of WP2 and WP10 been met?
- Are the identified interactions with citizens capable of being carried out at each of the demonstration sites?
- Is there sufficient interaction with all the identified stakeholders?

This section is covered by chapter 2 to chapter 4.

The **second section** will concentrate on the evaluation of the technical work from WP3 and WP4, with WP5 acting as the conduit bringing it all together. The technical approach will be covered and the results from the technical evaluation of the beta version will be brought together. For this purpose, WP5 created specific tests to ensure quality of the code and the required test flows to cover the main aspects of the integration issues.

This section is embraced by Chapter 5.

And the **third section** will embrace progress made on a project level and will check whether the assumptions we have made remain valid. As referred to above, the whole evaluation

framework and evaluation process is a dynamic tool and a living document to be studied and be updated on an ongoing basis to reflect changes and priorities over time.

Questions posed include:

- Have we identified any changes or new requirements from any of the key stakeholders?
- Are we learning lessons regarding our "offering" or new emphasis required in terms of our roadmap?
- Does the DataVaults "Theory of Change" remain true?
- And have we any preliminary observations from the alpha evaluation and elsewhere, which we may learn from, in the beta demonstration phase of the project?

This section is embraced by Chapter 6 whilst with Chapter 7, we will draw out any early conclusions which we can make from the evaluation of the beta version of the platform.

Finally, Appendix 1 will provide an update on the activities to be performed by the demonstrators in the final phase of the project, based upon the plan, which was initially set out as an Appendix A. in D6.1.

2   LEGAL, ETHICAL, SECURITY, PRIVACY AND TRUST: STATE OF PLAY

2.1   OBJECT OF THE LEGAL, ETHICAL, SECURITY, PRIVACY AND TRUST EVALUATION

As in D6.3, this section dwells upon the evaluation of the legal, ethical, security, privacy and trust aspects of the DataVaults technology (platform and App) and of the demonstrators where such technologies are going to be validated and assessed against the requirements elicited in the previous stage of the project. In particular, in regard to the legal, ethical, security, privacy and trust requirements, they have been originally set out in D2.1 "Security, Privacy and GDPR Compliance for Personal Data Management" and then refined and updated in D2.3 "Updated DataVaults Security Methods and Market Design". Such documents also outlined the surrounding challenges regarding such topics, as well as providing guidelines and hints aimed at supporting their operationalization, both during the execution of the project and, to some extent, in the post-project adoption of DataVaults outcomes. In particular, the assessment is going to be focused, in this evaluation iteration, on:

- **Layer I: the DataVaults demonstrators' processes and operations** (Sect. 2.2), including the ethical procedures and the preparatory activities in view of the interaction with the citizens. The demonstrators themselves need to adhere to the Ethical and Legal requirements specifically set for them either within WP2 or in WP10 "Ethics Requirements", such as the need to follow ethical procedures (consent procedures, recruiting procedures, etc.) and to use adequate tools (such as the refined consent form and information sheet, the use of suitable inclusion/exclusion criteria for the involvement of volunteers in the demonstration activities, etc.).
- **Layer II: DataVaults technology (platform and app)** (Sect. 2.3.), encompassing the assessment of the components, tools and services under development in the project and which are validated (as in the previous evaluation iteration) in the demonstrators. This layer in this evaluation iteration relies on the <u>Ethics and Data Protection Impact Assessments</u> (EDPIAs). One EDPIA for each demonstrator has been conducted, as a key tool for the assessment of the legal, ethical, security, privacy and trust aspects of DataVaults technology in the different contexts. In addition to the update/refinement of these EDPIAs (if opportune), in the final evaluation phase the Layer II will be enriched with findings from the data owners in the demonstrators' environment: this assessment will focus on the citizens' perspective on aspects impacting the legal and ethical dimensions of the DataVaults technology (platform and app), gathered with dedicated questions in the final release of the TAM Questionnaire, together with the other non-functional requirements questions.

On the basis of these two layers, this mid-term EL evaluation (as well as the third one at the end of the project), is performed, with a focus on Layer II, which is the one more useful for the future development work and for the operationalization of the ethics-and-privacy-by-design-and-by-default approach. The evaluation addressed by Layer I can also be useful, besides for EC to monitor our compliance with H2020 ethical standards, also for the post-project phase,

for instance through the elaboration of lessons learnt or blueprints for DataVaults' uptake and operation in real-life environments.

2.2   ETHICAL PROCEDURES AND INTERACTION WITH CITIZENS PREPARATION

Evaluation Questionnaire on Ethical and Legal Aspects

#1 Your reason for using personal data

What is your primary purpose for collecting and using personal data in DataVaults?
For which use cases/scenarios do you need them?
Are you replacing another product or service as a result of DataVaults?

Olympiacos

Our primary purpose for collecting personal data and demographics data is to improve activity data, social media data and preferences from clubs' fans and members. In addition, we need to collect data from athletes to provide better management of statistical reports and better management of their results from ergometric tests and medical examinations.

These are reflected in our three scenarios.

With DataVaults platform we will replace some applications and documents from athletes' data. In addition, data seekers (e.g. Companies with sport equipment – club's sponsors) will create personalized products for fans/members in order to attract new customers.

Piraeus

No update since deliverable 6.3

Our primary purpose for collecting personal data is to :

a) improve mobility around sport venues at times of events
b) enhance the local commercial market, through the use of citizens commercial profiles
c) provide tailored cultural and touristic experiences to tourists and citizens

These activities are depicted in the three scenarios included in the demonstration activities of DataVaults.

Andaman7

No update since deliverable 6.3

The first main reason to collect data is to use them to provide new features to our users and improve the attractiveness towards our app to bring new users. The second reason is to be able to help build a better health system by sharing part of such data to B2B partners (with user consent) such as medical research companies. Data collection is needed in both scenarios. Whilst the 1st

scenario mainly concerns the collection for B2B partners, the second scenario aims to improve the Andaman7 application.

DataVaults will improve our existing product.

MiWenergia

Our main purposes for collecting energy consumption data are to be able to recommend energy-saving tips, design PV installations and generate energy demand prediction models.

These are reflected in our three scenarios.

We now use an external application to predict our client's energy demand, which could be substituted with our own model trained with information from DataVaults.

Prato

As Prato Municipality, the primary purpose is to access citizens' personal data for improving mobility services and contributing to enrich the cultural offer in the city, together with the involved museums. Use cases are related with mobility, cultural offer and exchange of personal certificates.

In the case of mobility and culture, DataVaults might substitute current approaches in the acquisition of citizens' personal data, based on the purchase from big data players.

#2 Recruitment procedures

Have you already followed the recruitment procedures, including the inclusion/exclusion criteria, described in D10.1 to identify/recruit research participants?

Olympiacos

Questionnaires have an important role in recruitment procedures. During this period (June – September) our fans and members renew their annual subscription and this help us to receive their answers. In addition, we will send an official invitation by email (newsletter) to our fans and members to participate on the DataVaults app.

Piraeus

No recruitment has been carried out so far. The recruitment procedures will happen in the next months. All the people involved in this phase are volunteers.

A small group of people within the Municipality have been identified in order to test the questionnaire module of the DataVaults app. These people are mostly employees of the Municipality of Piraeus and friends/family, all citizens of Piraeus and connected based on their profiles to the relevant pilot. All of them are volunteers.

Andaman7	We are currently testing internally the first version of the connector between Andaman7 and DataVaults. We already have some results but some improvements have still to be done before involving real users. As soon as we consider the integration mature enough, we will start the recruitment procedures.
MiWenergia	Yes, we have followed every criterion described in D10.1. Every participant has signed the correspondent informed consent and we have informed every participant that their participation is voluntary. We have not finished this process yet.
Prato	No recruitment has been carried out so far. The recruitment procedures will be applied in the following period of the project, when a more mature version of the tools will be available and real users will be involved.

#3 Informed consent procedures

Have you already followed the informed consent procedures described in D10.for the participation of humans? Have you already introduced any changes to simplify the informed consent and information sheets inserted in D10.1, in order to make them more intelligible to the research participants and/or to adapt them to the online environment?

Olympiacos	Informed consent procedure is now fully integrated in our registration process.
Piraeus	The informed consent procedure has not been applied yet, as the questionnaires have been tested by people working for DataVaults and no real data have been used. The informed consent procedure will be used even for the small group of people answering the TAM questionnaires. No changes have been made.
Andaman7	Informed consent procedure is now fully integrated in our registration process. For now, no changes to simplify them for the user is done but is to develop a mobile/user friendly version that contains a link to the full version.
MiWenergia	We have to change the contact person in the informed consent as the previous one is not working at MiWenergia anymore. The new contact person is ana.garcia@MiWenergia.com. All the participants have been informed of this change. No more changes have been done.

Prato

The informed consent procedure has not been applied yet, since no involvement of real users has been carried out. No changes are foreseen in the already provided form, which is ready to be published and accessible through the DataVaults platform.

#4 Security and privacy-preserving measures

Have you already taken the measures for data collection, handling, storage, protection, retention and destruction as described in D10.2, as well as for managing the rights of the users?

Olympiacos

Yes, we have handled and stored correctly all the information. Data of the platform will transfer to a larger storage and all the data are using under the GDPR. Since the platform at the moment doesn't store real data and no real usage has been carried out, such measures have not been refreshed yet.

Piraeus

We will handle and store all the information as described in D10.2.

Andaman7

No update since D6.3

All security and privacy-preserving measures were already integrated in our Andaman7 platform/app before the DataVaults project.

MiWenergia

Yes, we have handled and stored correctly all the information. We have not yet destroyed any documents because no user has claimed his right to do so.

Prato

We carried out an impact analysis on the basis of the platform details provided by technical partners. Since the platform at the moment doesn't store real data and no real usage has been carried out, such measures have not been applied yet.

#5 Profiling

In case in your demonstrator profiling is expected to occur, have you already informed or are you going to inform the data subjects on it, including also on its possible consequences, according to what planned in D10.2? And in such a case, have you already taken the mitigating measures described in D10.2 to safeguard their rights?

Olympiacos

Information on profiling is already available in the informed consent form that will be accessed by real users as soon as the platform status will allow it. No real profiling has taken place so far.

Piraeus

No update since D6.3

Information on profiling is already included in the informed consent form to be used.

No profiling has taken place so far.

Andaman7

Profiling is still not expected in our scenarios.

MiWenergia

Yes, we have implemented all the measures required.

Prato

Information on profiling is already available in the informed consent form that will be accessed by real users as soon as the platform status will allow it. No real profiling has taken place so far.

#6 Special categories of personal data

Have you planned and/or implemented proper safeguards for the special categories of personal data, if any in your demonstrator? Have you planned and/or implemented adequate measures to ensure that such special categories of personal data will not be used beyond the original purposes?

Olympiacos

All safeguards for the special categories of personal data were already integrated in our CRM platform before DataVaults project. Only anonymized/statistics data will be collected and stored.

Piraeus

No update since D6.3.

We have not planned any safeguards or measures as we are not collecting/processing special categories of data.

Andaman7

No update since D6.3.

Andaman7

All safeguards for the special categories of personal data were already integrated in our Andaman7 platform/app before DataVaults project. Only anonymized/statistics data will be collected and stored

MiWenergia

We have neither planned nor implemented any safeguards or measures as we do not have special categories of data.

Prato

We carried out an impact analysis on the basis of the platform details provided by technical partners. Since the platform at the moment doesn't store real data, there is no need for applying such measures above those currently in place.

#7 Participation to the DataVaults Ethics Board

Has a representative of your demonstrator taken part to the activities of the DataVaults Ethics Board (meetings, opinions on deliverables relevant to ethics and privacy, planning of adequate countermeasures, etc.) and brought the specificities of your demonstrators to the attention to the other members, as described in D10.3?

Olympiacos

Yes, we have attended the Ethics Board.

Piraeus

Yes, we have attended the Ethics Board.

Andaman7

Yes, specificities were communicated during Ethics meetings and through deliverables.

MiWenergia

Yes, we have attended all the Ethics Board.

Prato

Yes, one representative is member of the Board and actively takes part in the board discussions, for example as far as compensation methods for public administration are concerned.

#8 Positive impact on people

Have you considered the positive effects on people of the implementation of your demonstrator?

Are you making things better for society? How and for whom?
Which individuals, groups, demographics or organisations will be positively affected by it? How?
How are you measuring and communicating positive impact? How could you increase it?

Olympiacos

We have considered the positive effects for data owners and data seekers. The club will provide marketing campaigns and useful analytics.

Moreover, we assume that the demonstrator will contribute in arising members' awareness on personal data management risks and will empower users in maintaining the control on their data sharing.

We are planning to use survey tools to measure such impacts and to disseminate results through social channels and communication media.

Piraeus

No update since D6.3.

All scenarios are either targeting the improvement of the life of citizens and tourists (mobility and tailored touristic/cultural experiences) or the enhancement of local economy (empowering local shop owners and entrepreneurs). We are planning surveys in order to measure the expected positive impact, as described in the AF of DataVaults.

Andaman7

No update since D6.3.

Our main objectives are improving the app to help users to take care of their health and ease collection of data for companies that build a better healthcare system for the future. We then aim to have a positive effect on our users (patients), healthcare companies and ultimately the whole healthcare system.

The KPIs we are planning to measure should help having a sense of those positive impacts.

MiWenergia

Yes, we still have the intention to provide users with useful energy efficiency tips while educating them in awareness of renewable sources and efficiency use of resources. This will not only benefit the individual but will also be good for all society because we plan to reduce the impact on the environment.

Positive effects might arise both for all groups of citizens and data seekers (municipality, cultural institutions, and fiscal service providers) in the improvements of public and cultural services and

Prato in the facilitation in the management and sharing of personal certificates. Moreover, we assume that the demonstrator will contribute to raising citizens' awareness on personal data management risks and will empower users in maintaining the control on their data sharing.

We are planning to use survey tools to measure such impacts and to disseminate results through social channels and communication media active in the city.

#9 Negative impact on people

Have you considered the possible negative effects on people of the implementation of your demonstrator?

Who could be negatively affected by it?
Could the way that data are collected, used or shared, cause harm or expose individuals to risk of being re-identified?
How are limitations and risks communicated to people (both people whom the data are about and people potentially impacted by their use)?

What steps can you take to minimise harm?
How are you going to measure, report and act on potential negative impacts of your demonstrator?

Olympiacos

We do not foresee any negative impact on people, related to the three scenarios and the type of data collected.

Piraeus

No update since D6.3.

We do not foresee any negative impact on people, related to the three scenarios and the type of data collected.

Andaman7

The transparency policy described in previous deliverable is still valid and aims to reduce stress and fears related to sensitive data sharing. We do not foresee any other negative impact.

MiWenergia

We still do not consider the users will face negative effects from our collection and use of their data. They will be always aware of what kind of data are sharing with us and we will be supporting them to ensure transparency.

If any user reports any harm, we will take actions to fix and reduce any negative consequence.

Prato

We are not foreseeing any particular negative effects on people and the technical solutions put in place in the DataVaults tools will reasonably prevent the possibility of individuals' re-identifications.

Nevertheless, the survey tools that will be adopted in the open demonstration phase might possibly highlight negative impacts perceived by the users. Should this be the case, specific countermeasures will be put in place accordingly.

#10 People's feedback

Are you routinely building in thoughts, ideas and considerations of people affected in your demonstrator? How?
What information or training might be needed to help people understand data issues?
Are you going to establish proper interaction mechanisms with data subjects for communicating them their rights and notices, answering their questions and providing further information to them about the data processing?

Are you going to use some specific functionalities of the DataVaults platform and app?

Olympiacos

People's contribution might be taken into account by activating some feedback process related with the demonstrator activities, for example through specific surveys and questionnaires via email, in newsletters and from social media campaigns.

Piraeus

No update since D6.3.

We plan to ask for user's feedback via questionnaires, either standalone or through the DataVaults platform.

Andaman7

No update since D6.3.
Spontaneous feedback through email and regular feedback inquiries through DataVaults questionnaires are still planned.
Exact details are not yet known but should come soon as it needs to be determined before or soon after patient recruitment and the release of the app.

MiWenergia

We plan to ask for user's feedback via questionnaires. We will also be available for them to contact us via email or phone if they have any issues.

At some stage, we will carry out the questionnaires through the application itself.

Prato

People's contribution might be taken into account by activating some feedback process related with the demonstrator activities, for example through specific surveys but also social media campaigns managed by the administration.

The topic of personal data sharing is increasingly important and some specific communication and training actions could be carried out through social media and institutional channels. At the moment no specific communication tools are included in the DataVaults app/platform, but should this happen, we will consider this opportunity.

#11 Privacy-friendliness

Do you perceive DataVaults as a privacy-friendly technology?

Olympiacos

Yes, this is essentially the purpose of the DataVaults tools.

Piraeus

Yes, we consider DataVaults to be a privacy-friendly technology.

Andaman7

Yes, the platform still seems to be built with privacy at the heart of the project.

MiWenergia

Yes, the platform still seems to be built with privacy at the heart of the project.

Prato

Yes, this is essentially the purpose of the DataVaults tools.

#12 Societal Impact

From your point of view, what segments of society are expected to benefit most from DataVaults deployment?

Olympiacos

Potentially, the benefits provided by DataVaults are expected to be felt by a wide number of segments in society, since the topic of personal data management and sharing is currently increasing importance at all levels.

Piraeus

No update since D6.3.

From our point of view, benefits are expected for both the data users and data seekers as described in DataVaults. Data users, in our case citizens and tourists, may benefit directly from the compensation mechanism and indirectly through the improvement of their everyday life (mobility, touristic/cultural experiences), while data seekers, in our case the municipality or the local trade association will benefit in terms of having an extra tool to acquire much needed information for strategic planning.

Andaman7

No update since D6.3.

From the health point of view, the main segments that could benefit are both patients (to be empowered with their data and contribute to better care and research) and the medical research/medical care companies that run clinical trials. The DataVaults platform should bring a powerful tool that will ease recruitment and data collection for such trials. Given the fact that those are usually built to bring better health for everyone, the whole health system should ultimately benefit from it.

MiWenergia

From our energy point of view, people who are responsible for their homes and who are not very educated in energy efficiency and renewable sources will benefit greatly. Also, people interested in reducing their energy consumption and their environmental impact can be benefited from the DataVaults deployment. At the same time, if participants reduce their energy consumption or increase their consumption from renewable sources, it will have a positive impact on the environment, reducing CO_2 emissions.

Prato

Potentially, the benefits provided by DataVaults are expected for a wide number of segments in society, since the topic of personal data management and sharing is currently increasing importance at all levels. Of course, since DataVaults is a technological solution connecting digital data source, it will address those using digital devices and accessing digital services, who represent certainly an ever growing part of the population.

Table 1 Evaluation Questionnaire on Ethical and Legal Aspects

2.3   EVALUATION OF THE DATAVAULTS TECHNOLOGY

At the core of DataVaults is the provision of safe, secure, private, fair, legal and ethical mechanisms for handling personal data. Therefore, this aspect of the Evaluation Plan was designed to ensure that we conform to everything that has been promised in these respects. Table 2 below sets out how we propose to do this, indicating the metrics, success criteria and data collection process.

Objective	Metrics: Description of indicators towards assessing progress	Measures of change: Success criteria	Data Collection Methods and sources	Frequency of data collection	Beta phase evaluation
Citizen experience					
C.1 Improving Privacy Risk Exposure Awareness for Individuals when sharing Personal Data. **KPI**	currently zero	100% with introduction of new methods. Delivery of the Platform and of the Dashboard.	The privacy risk metrics dashboard will provide this information, as opposed to the current situation where no such data is available.	From date of availability of dashboard, as appropriate	Not available in beta version
C.2 Improve-ment of Individuals Know-ledge on Personal Data Safe-guarding.	Did this facilitate risk situational awareness?	Individuals engaged on the platform will understand better how to share and safeguard their data. Show an increase.	Verified through the AS-IS vs. TO-BE evaluation in the demonstrators through surveys, interviews etc.	Surveys and interviews as appropriate	This feature will be evaluated in the final iteration
C.3 To overcome reluctance to personal data sharing services via DataVaults	Did the DataVaults system contribute to build trust and overcome the data owners' reluctance in sharing their	Individuals will be educated on how their personal data can be used, while also enjoy remuneration for this, resulting in a trust building. Use of service	Verified through the AS-IS vs. TO-BE evaluation in the demonstrators through surveys, interviews etc.	Surveys and interviews as appropriate	This feature will be evaluated in the final iteration

	personal data?				
Did these facilitate both privacy and trust preservation and has there been an Improvement in Trust? And TOC1 Have we given improved control and awareness of how a citizen's data is shared and managed?			Observation from C1, C2 and C3.		
C.4 Increase of the value of personal data attributed back to owners **KPI** Are individuals receiving a fair share of their data value?	currently zero	100% with introduction of new methods. Currently no value is attributed to data owners, and with DataVaults this will change.	Verified through the DataVaults methodology and the AS-IS vs. TO-BE evaluation in the demonstrators through surveys, interviews etc.	Surveys and interviews as appropriate	This feature will be evaluated in the final iteration
C.5 To develop privacy metrics that are easy to understand for data subjects	Develop-ment of user-friendly privacy metrics, whose test will occur in the next phase of evaluation	100% with introduction of privacy metrics and information to the data owners through easy-to-understand privacy notices	Verified through citizen testing and AS-IS vs. TO-BE evaluation in the demonstrators through surveys, interviews etc.	Surveys and interviews as appropriate Privacy Measures to determine the susceptibility of data or a dataset to revealing private information. (https://arxiv.org/abs/1512.00327)	This feature will be evaluated in the final iteration
C.6 Has the personal app been successfully used by individuals for storing, collecting and sharing data and what was their experience here?	N/A	100% with the use of the personal app by individuals. Currently individuals do not feel fully-comfortable in sharing their personal data with personal data platforms. With DataVaults this will change, thanks to its functionalities for user control and the fair, transparent share of the value of data (trust building	Verified through citizen testing and evaluation in the demonstrators through surveys, interviews etc.	Surveys and interviews as appropriate	This feature will be evaluated in the final iteration

		and acceptance of DataVaults)		
C.7 Was the personal app consent mechanism clear and well-received?	N/A	The consent form and information sheet already provided for each of the demonstrators will be refined and updated in order to adapt them to the online environment, the layered approach for consent management described in D2.1 and the indications coming from the EDPS's Guidelines 05/2020 on consent under Regulation 2016/679Version 1.1 (2020)	Verified through citizen testing and evaluation in the demonstrators through surveys, interviews etc.	Surveys and interviews as appropriate	This feature will be evaluated in the final iteration
Legal, Ethical, Security and Privacy aspects					
R.1. "Personal data platforms shall ensure respect of prevailing legislation and allow data subjects and data owners to remain in control of their data and its subsequent use."		Is there compliance with list of requirements identified in WP2?	Section 2.3.3 hereunder shows the state of achievement of the requirements set in D2.2 and D2.3, including compliance with the applicable legislation.	The design of DataVaults technology is taking into account the requirements set in WP2.
R.2. "… Conditions of use and practical arrangements of data sharing should be regulated."		The approach and key choices related to the Smart for the fair and secure personal data management have been defined in T2.3 and is under implementation within WP3, WP4 and WP5	Section 2.3.3 hereunder shows the state of achievement of the requirements set in D2.2 and D2.3, including compliance with the applicable legislation.	YES. The Data Sharing configuration service has been developed and is integrated for this purpose
R.3. Has there been a contribution to the Basis for Privacy, Ethics and IPR?		This will be part of Lessons Learned.	This will be reported in D6.6	N/A

Do we contribute to and are we aligned with:			
R.4. Ethics driven guidelines and privacy & security standards	Several data ethics guidelines have been central to the design and ongoing development of DataVaults technology, such as the EDPB-EDPS Joint Opinion 03/2021 on the Proposal for a regulation of the European Parliament and of the Council on European data governance (Data Governance Act) Version 1.1 (March 2021), the EDPS Opinion 7/2015[3]), as well as an Open Data White Paper and ENISA's Privacy standards for information security.[4]	This will be further assessed and reported in D6.5.	YES. The current design and ongoing implementation of the DataVaults technological artefacts are aligned with the ethics-driven guidelines and privacy & security standards, as resulting in the WP3, WP4 and WP5 deliverables.
R.5. Fundamental Rights and Well-being	The design and ongoing implementation of the DataVaults technological artefacts are driven by Fairness & Privacy-by-Design-and-by-Default approach, enriched with the Protection Goals method, as described in D9.2 and in D2.1	This will be further assessed and reported in D6.5.	YES. DataVaults technologies already developed and under development are directed to uphold European values, for respecting fundamental right of the data owners and promote their well-being and empower-ment, as resulting in the WP3, WP4 and WP5 deliverables
R.6. Is the personal app compliant with EU regulations and national laws?	D2.1 and D2.3 provide the identification and description of the regulatory sources relevant to the DataVaults components, personal App and cloud-based platform, together with a series of mandatory and recommended legal requirements to be met	This will be further assessed and reported in D6.5.	YES. The DataVaults technologies already developed and under development took into account the relevant legal sources and are compliant with them. Further assessment of this aspect needs to be performed in the following stages of the project, once other outcomes will be finalized
R.7. Did we provide an Ethics monitoring framework?	D9.2, Sect. 2 describes the overall ethical policy of the project. Such a Policy, besides describing the	N/A	YES

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[3] "Meeting the challenge of Big Data. A call for transparency, user control, data protection by design and accountability" (2015
[4] https://www.enisa.europa.eu/news/enisa-news/privacy-standards-for-information-security

	Fairness & Privacy-by-Design-and-by-Default enriched with the Protection Goals Approach, comprises a snapshot of the ethical procedures and responsibilities, the definition of the oversight responsibilities (DataVaults Ethics & Data Protection Officer and DataVaults Ethical Board) and preliminary considerations for the elaboration of the comprehensive Ethical and Data Protection Impact Assessment methodology to be used within WP6, during the demonstrators' operations. Furthermore, D10.2 section 3.1.1 provides a comprehensive ethics risk evaluation table in relation to the pilot's activities. In addition, the Ethics Board has been set, including independent expertise, and is operating with strong interaction with the technical team.		
R.8. Did we successfully adopt novel trusted and security-by-design data mining, management, analysis and sharing techniques?	The approach and processes, were outlined in T2.2, where also the key technological choices were taken.	In line with the approach and techniques set in WP2, these aspects were initially covered by D3.1 and have been further addressed in D3.2 and D3.3, as well as in the WP5 deliverables	YES. The final architecture and component facilitate this need
R.9. Have privacy analytic methods been provided and tested?	Details on the approach and procedures for data collection, storage, protection, retention, and destruction to be implemented by the DataVaults tools (app and platform) are and will be further provided in the technical deliverables released by the DataVaults consortium in WP2, WP3, WP4 and WP5.	Next WP3, WP4, WP5 deliverables	This feature will be evaluated in the final iteration

Table 2: Overall evaluation of citizen experience and of Legal, Ethical, Privacy and Security aspects

2.3.1   Ethics and Data Protection Impact Assessments

This chapter reports the Ethics and Data Protection Impact Assessments (EDPIA) elaborated for each of the DataVaults Demonstrators, with a strong collaboration among the demonstrator partners and the technical supporting partners, besides the overall technical team of the project. They also referred to the legal and ethical requirements set in D2.1 and D2.3 and considering the specific DataVaults technologies (like services, components) relevant to their context, the data lifecycle and each use cases scenarios, as well as their own privacy and security policies/practices.

The EDPIA served as a tool for "the assessment of risks for individuals' rights, freedoms, and wellbeing, for ensuring compliance with the data protection law (GDPR5 and national regimes), and ethical mandates"[6.] As clarified in D6.3 and in D9.2, the assessment methodology regarding the risks for the personal data was conducted following the indications of Article 35 sec. 1 GDPR, taking into account the nature, scope, context and purposes of the processing operations in each demonstrator in view of evaluating their impact on the protection of personal data, to identify and reduce the data protection risk[7] and the likelihood of privacy harms to individuals, as well as to identify and put in place the appropriate technical and organisational measures to tackle with/mitigate such risks. For these purposes, the Consortium adopted a model inspired by the ISACA Model[8], mapping the fourteen ISACA privacy principles to the specific GDPR requirements.

The ethical dimensions of the personal data collection and processing and the assessment to what extent the principle of fairness has been operationalized in each of the demonstrator, this ISACA-inspired model was enriched with the Data Ethics Canvas, elaborated by the Irish ADAPT Centre for Digital Content Technology on the basis on the original Business Model Canvas by Alex Osterwalder. It consists in a useful tool giving a higher-level framework to develop ethical guidance that suits any context and to assess the ethical implications of any project, thereby allowing to be more trustworthy with data processing.

More information on the DataVaults EDPIA's model can be retrieved in D6.3, sect. 2.3.1.

The EDPIA was conducted for each demonstrator through a questionnaire, comprising elements coming both from the ISACA Model and from the Data Ethics Canvas. The following paragraphs contains the EDPIAs, notably one for each demonstrator: they could be refined/updated, if opportune, in D6.5 "Final Evaluation and Impact Assessment Report" at the end of the project.

2.3.1.1   Demonstrator #1 – Sports and Activity Personal Data

Introductory questions		
		Responses
1	Nature, scope, context and purposes of the processing (Recital 90)	We will collect activity data and personal preferences in sport departments, ergometric data from clubs' athletes and they will control their data from mobile phone. In addition, fans and members of the club will participate via questionnaires and online surveys about their preferences in the sport sector.
2	List of in-scope personal data items	Sport and activity personal data
3	List of key data sources	Olympiacos' CRM platform, Olympiacos Members' mailing list Data from clubs' athletes

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5 Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation)

6 DataVaults D9.2 Ethics and Data Management Plan.
7 The concept of risk is clarified in Recitals 75-79 of the GDPR.
8 ISACA, "GDPR Data Protection Impact Assessment", 2017

4	Limitation in data source: are there limitations that could influence your project's outcomes? Consider: - bias in data collection, inclusion/exclusion, analysis, algorithms - gaps or omissions in data - provenance and data quality - other issues affecting decisions, such as team composition	Bias in data collection: Maybe a small percentage of fans will not understand the positive values of data collection, especially under the GDPR law.
5	Recipients of personal data items. Are you going to be sharing data with other organisations in DataVaults and/or beyond? If so, who? Under what conditions?	Olympiacos SFP will not share private data without permission of the user. All data is under the control of the user and will be shared only between the user and who he is willing to share with. Data will only be shared between Olympiacos SFP and the DataVaults app and any extra exchange will be configured by the user through the interface of the DataVaults platform (under user consent).
6	Period for which the personal data will be stored (e.g. in hours, days, weeks or years, etc.)	Six months on the platform. Olympiacos will not store any data any longer than the time it needs to be exchanged between two pairs. (Olympiacos keep personal data from every member on CRM platform for one year, until May of every season.)
7	Functional description of the processing operation related to your pilot activities	Owners will provide data that they want to the DataVaults personal app through its API according to their preferences. The user's data are being anonymized (if the user selects to do so) based on the DataVaults Anonymiser, based on the anonymisation depth levels selected by the user. User Data can be part of anonymized aggregated "personas", if the user selects his data to be included in those Personas. There his data are merged with data from other people and provided as average data values of a "fictional" individual
8	What are your main use cases (please provide a summary and indicate the DataVaults deliverable where details can be retrieved)? Are you replacing another product? You can also simply list them (with one line description) and insert the reference to the DataVaults deliverable where the complete description can be retrieved	Scenario A: Club fans and members Personal Data Marketplace The main goal of this scenario is to collect information related to social media activity and the preferences/likes of individuals who are already fans and members of the club. A secondary goal would be to collect location data related to the position of the individual. Evidently, such information could help reorganize the marketing plan (new market segmentation, marketing campaigns for specific target groups, finding specific sponsors, etc.), attract new sponsors based on personas (collective profiles) extracted from DataVaults, improve the services offered to the fans and members and finally, increase the revenues and online presence of the club. Scenario B: Athletes Sports and Activity Data Sharing The principal type of data needs to be collected from athletes in the context of the current demonstrator are: • Athletic activity data (e.g., from wearable sensors during practice)

		• Ergometric and medical examination data (e.g., from club measurements recorded at the beginning of the season) At the level of athletes, Data Seekers could be an athletic equipment companies who are interested in searching through the athletic activity data of athletes of the club, in order to offer better customized and targeted products and services (e.g. depending on what sport each athlete does).
9	DataVaults technological assets (services, tools,…) involved in the data collection and/or processing in your pilot activities	• Data Fetcher • Edge Analytics Engine • Anonymiser • SEAS Analytics Engine
Choice and Consent	
10	How do you provide choices, when appropriate, to data subjects regarding use of their personal data? Is consent obtained before using personal information for specific purposes, as required by GDPR? How?	• Initial Consent is asked upon registration to the platform. However, NO data are shared with anyone at that stage. • Data Subjects have the option to delete their data and/or their account at any time by visiting their profile/account page and asking the system to automatically delete all their data (does not apply to data already acquired through a contract by a data seeker) • The Personal App of DataVaults allows users to fully manage their personal data by deleting it and revoking access to it (if not already acquired by a data seeker) • Upon sharing data, Users are provided by the Data Sharing configurator with a dialogue requesting them to verify their sharing options of those data.
11	Are consents (once obtained) appropriately documented and maintained? How?	The agreement is stored in the backend database of the Personal App.
12	What data subject's privacy harms might occur? What risk-mitigation measures have you in place?	In DataVaults the user is in total control regarding the sharing of owned data, while the Risk Management dashboard informs data subjects on their privacy exposure. In addition, prior sharing in the cloud platform of DataVaults, data are anonymized and encrypted; this is one of the benefits of DataVaults towards privacy. Sharing between Olympiacos CRM and DataVaults personal app is also encrypted. Also, as data is only stored temporarily on our backend only small parts of the entire personal record is available at a time so very little amount of data is available for an attacker. It considerably reduces the harms it may cause as only pieces of data are more difficult to interpret. At any time, the sharing can be controlled by the user.
Legitimate Purpose Specification and Use Limitation	
13	Are you going to collect only the personal data that are adequate, relevant and limited to what is necessary in relation to the purposes for which the data are processed, in support of data-minimization requirements? Is the personal data processing lawful and necessary given the purposes for which the data were collected? Please provide details.	Only relevant data are going to be collected with informed consent procedures, in full compliance with GDPR. We will only collect activity data and other data about their sport activities and preferences, hobbies and personal preferences through questionnaires in order to develop the scenarios of the project. In every case, the participant will decide which data want to share with us, giving us permission and will be always

		informed of what data is shared and with which purpose. The participant will be always in control of the data they share.
	Personal Information and Sensitive Information Life Cycle	
14	Are you going to keep personal data for no longer than necessary to support the purposes for which they were collected?	No, we will collect personal data for the project purposes, so only during its deployment.
15	Are you going to collect and/or process one or more of the following types of personal data? If yes, please provide details. a) data revealing racial or ethnic origin, political opinions, religious or philosophical beliefs, or trade-union membership b) genetic data c) biometric data for the purpose of uniquely identifying a natural person d) data concerning health e) data concerning a natural person's sex life or sexual orientation	No, we are not going to collect any of these types of data
16	How do you ensure that, by default, only personal data which are necessary for each specific processing purpose are actually processed?	The data subject chooses which data to make available over the platform. The user will also be able to choose what data can be upload on the platform.
	Accuracy and Quality	
17	How do you ensure that personal data are kept accurate and up to date, as necessary, and correct personal data errors without delay?	Data are updated following the command of the data subject. Once the connection to the platform is done, all updates are automatically forwarded to the platform (unless the user decides to stop the sharing).
	Openness, Transparency and Notice	
18	Are you going to process personal data fairly, transparently and in compliance with applicable legal requirements?	Yes
19	How do you communicate to data subjects their rights, notices, and answer their questions and provide information to them relating to data processing, in a manner that is clear, easy to understand, and age appropriate to the data subject? Are you going to provide the data subjects, at the time personal data are obtained from them, all necessary information elements? How do you restrict use of their associated personal data?	By default, NO personal data is shared, so this question does not apply. However, once data is shared, we cannot control this, as this is something that falls out of the scope of the project. Maybe we could have some smart contracts which could say something "generic" about to no harm, etc. but again this is not controllable by the system. Regarding the demonstrators, we said that for each demonstrators, its users will have a look and accept the terms of that specific demonstrators. But nothing more is expected. All relevant information will be provided at the sign-up /registration page, in the relevant terms/ An FAQ page will be delivered to answer most common questions and a functional mailbox will be provided for further questions.
	Individual Participation	
20	How are the data subjects allowed to withdraw consent to use their associated personal data at any time, as long as the withdrawal does not result in legal violations about which you have informed the data subjects?	By directly removing their data and/or their account. In addition, they also have to disable sharing of data to ensure no data stays available but is never retrieved by the DataVaults platform.

21	How do you ensure that a data subject can exercise his or her rights mandated by the GDPR? And do you have processes to provide documented reasons for denying requests?	Data Subjects can at any time delete their account and remove their personal data. No requests will be denied. Olympiacos already provides procedures to exercise their rights against GDPR.
22	How do you allow the data subject to obtain confirmation regarding whether or not personal data are being processed (including personal data used in partnership with other controllers), and when that is the case, to provide the data subject access to the associated personal data and related mandatory information (including, for instance, information concerning the purposes, the data categories, the recipients, the retention periods, the rights for deletion and registering complaints, etc.) in compliance with GDPR requirements?	Such information is stored in the blockchain where the data shared can be viewed by the data subject. This is provided as part of a dashboard for each user, where he can see: • The data he has already collected but he holds without sharing them. • The data he has already shared and under which terms. (E.g. anonymized or not, for how long, etc.) • The data that (after being shared) have been acquired by a data seeker and the relevant transaction ID. Data processing involved in the Olympiacos demonstration and their purposes are specified in the consent and information sheet related to the demonstration.
23	Are you able to provide to the data subject, upon request and without prejudice, a copy of his/her personal data? How? Can this copy be delivered in a commonly used digital format and for free or for a reasonable fee (where the fee is based on actual administrative costs)?	Yes. Data Subjects can download a copy of the data they have provided to the platform for free.
Accountability		
24	Have you established an appropriately qualified data protection officer (if applicable, according to the GDPR)? Can the data subjects contact him/her for any issue related to processing of their personal data or to the exercise of their rights under GDPR?	The Olympiacos' lawyer has been appointed and is available as imposed by the national and EU laws.
25	Which DataVaults tool in your demonstrator support accountability?	• Blockchain infrastructure for storing transactions • Access Policy Engine for safekeeping access
Security Safeguards		
26	How do you ensure that appropriate technical and/or organisational safeguards are implemented to secure personal data, including protections against unauthorized or unlawful processing and against accidental loss, destruction or damage? What DataVaults technologies/tools ensure a level of security for the personal data appropriate to the personal harm risk, including, as appropriate: a) pseudonymization and/or encryption; b) procedures to establish confidentiality, integrity, availability and resilience of processing systems and services, data backup and recovery; and c) Regular testing of associated security controls?	• Blockchain infrastructure for storing transactions • Access Policy Engine for safekeeping access • Anonymisation Engine • Data Encryption Engine • TPM Attestation for devices running DataVaults
27	How do you assess the privacy risks and/or the likelihood of privacy harms to data subjects, for instance in the event of unauthorised	Risk Management Dashboard can assess the privacy risks for the shared datasets of the user, based on the sharing policies applied while data are protected from

	access, sharing or use of personal data and/or unauthorised or accidental destruction, loss, or alteration of personal data?	unauthorised access within the platform. Also with the Blockchain infrastructure for storing transactions, we ensure that no unnoticed alternation, deletion or access will be performed.
	Monitoring, Measuring and Reporting	
28	Do you provide reports for data subjects (at specified times; upon their request as appropriate; and reflecting all components required by GDPR), including: a) personal data-breach notifications; b) reports regarding correction of personal data erasure and/or incorrect personal data; c) reports showing the content of personal data associated to the subject; d) reports showing the personal data associated to the data subject shared with others, including the reasons for such sharing; and e) Full digital copies of personal data transmitted directly to another data controller in support of data portability requirements.	a) These are provided upon requests via their Inbox page. b) These are provided upon requests via their Inbox page. c)Dashboard of collected data d) Transactions Dashboard e) Transactions Dashboard
29	How do you maintain a record of processing activities involving personal data that includes a) the name and contact details for your enterprise/institution; b) the purposes for processing personal data; c) a description of the categories of data subjects and of the categories of personal data involved in the processing; d) the categories of recipients to whom the personal data have been or will be disclosed; and where possible, the established time limits for erasure of the different categories of data?	There is a record showing which data seeker has acquired access to which data set, which is retrieved via the blockchain system and displayed to the user via his sharing dashboard page. Also information about the prospective categories of data seekers that can have access on each shared dataset is provided in the sharing configuration of each shared dataset, in the access policies lists defined by the data subject.
	Preventing Harm	
30	Do you allow the data subjects to request removal of their personal data from automated processing and profiling in situations that could result in adverse legal effects or harms to them?	Yes, in case their data is not already acquired by a third party (as then any data processing happens off the platform and cannot be controlled). See the first two questions under "Individual Participation"
31	How do you ensure that data subjects who exercise their rights (for changing how their personal data are used; request copies of personal data; and/or exercise other rights under GDPR) do not adversely affect the rights and freedoms of others or do not infringe a contract or a binding provision?	The exercise of rights concerns only data not already acquired by another party
	Third-party/Vendor Management	
32	Do you have documented third-party / vendor management policies (and supporting procedures) to specify the type of documented contract (in hard copy and/or digital form), or other legal act under union or member-state law, setting out key aspects, like the subject-matter and duration of the processing, the nature and purpose of the processing and the types of personal data and the categories of data subjects?	As regards the smart contracts, our policies rely on the DataVaults sharing configuration tool to set all the specific characteristics and features of the data sharing (including, for instance, the selection of the privacy/anonymization level, of the visibility level, of the access policies level, of the pricing and of the licensing). The Individual can share not only her/his personal data collected from the connected data sources, but also any stored results from the Analytics and Visualisation Phase. In this way, whenever an

		Individual decides to make data available to Data Seekers through the DataVaults platform, they are prompted to define various details regarding data sharing, enabling the construction of fine-grained policies. The various parameters of a data asset sharing configuration can be modified at a later stage by the Individual, who can also completely revoke access to the shared data asset, by appropriately configuring the bound access policies. For the enforcement of these changes, DataVaults shall take into consideration any contracts in effect and ensure that Data Seekers that have purchased these data can acquire access for the respective period.
Breach Management		
33	Do you have documented personal data breach policies and/or tools for: a) notifying appropriate supervisory authorities of the breach in a timely manner, and with reasons provided for any delays; b) notifying data subjects of high risk breaches (as defined by GDPR) no later than 72 hours after discovery of a breach, if it is determined (following documented procedures for performing harm risk analysis) that the personal data breach will result in privacy harm to the associated data subjects; and c) Including all items necessary, within the notice, as required by GDPR?	The policies will be developed for the V0.5 and V1.0 of the platform, so after v0.5 we will be able to support the notification of the data subjects in the case of breaches. Olympiacos does not have any specific documentation related to data breach policy or such tools but falls under its GDPR compliant policy. Tools are already in place if needed.
Security and Privacy by Design		
34	Have the security and privacy protections been embedded into the full lifecycle of automated decision-making processes involving personal data to safeguard the data subject's rights, freedoms and legitimate interests? Have you implemented appropriate technical security and privacy controls, supported by documented privacy principles (e.g., the ISACA Privacy Principles, and/or IEEE privacy standards, etc.), in order to appropriately mitigate harms to individuals to the extent possible in compliance with GDPR and to protect the rights of data subjects?	Yes, this is the main aim of the DataVaults project. Data subjects are able to on-board the platform and control which data they would like to take on-board, then decide if they want to share them, with which data seeker categories, under which provisions, and remove them if they want to (unless they have been engaged in a binding contract) Core to these processes are the following components: Data Sharing Configurator; Anonymiser; Access Policy Editor; Data Sharing and Confirmation Dashboard; Risk Management Dashboard; Blockchain Infrastructure; Smart Sharing Contracts Olympiacos also already provide privacy protections by design in its lifecycle and fully respect GDPR.
Legal, Ethical and Societal Implications		
35	Do people understand your purpose – especially people whose the data are about or who are impacted by their use? How have you been communicating your purpose? Has this communication been clear? How are you ensuring more vulnerable individuals or groups understand?	The user that wants to share its data to the DataVaults platform is first informed of all the consequences through an information sheet and an informed consent to sign before being able to configure any exchange of data. We try to present it in the most user-friendly way on the smartphone to ensure that it will be correctly read and understood by the majority. During the demonstration activities, participants will be selected according to certain criteria. If more vulnerable individuals are selected, we will ensure that a responsible person can help them during this process.

36	What existing ethical codes apply to your sector or project? Are there any legislation, policies, or other regulation shape how you use data, in addition to those listed in DataVaults D2.3? Are you in compliance with them (if applicable)?	GDPR regulation.
37	Positive effects on people. Which individuals, groups, demographics or organisations will be positively affected by your DataVaults pilot? How? How are you measuring and communicating positive impact? How could you increase it?	Our main objectives are improving the app to help users to take care of their activities and ease collection of data for companies that build a better management-marketing system for the future. The KPIs we are planning to measure should help have a sense of those positive impacts. The analysis of those as well as feedback received during the demonstration will help to improve any positive aspect. We are also communicating regularly and widely on our various social media about the positive impacts of our work.
38	Negative effects on people. Who could be negatively affected by your DataVaults pilot? How? Could the way that data is collected, used or shared cause any harm or expose individuals to risk of being re-identified? Could it be used to target, profile or prejudice people, or unfairly restrict access to some service? How are limitations and risks communicated to people? Consider: people whom the data is about, people impacted by its use and organisations using the data.	We do not foresee any negative impact on people, related to the three scenarios and the type of data collected.
39	Openness and transparency in the design process How open can you be about this project/DataVaults pilot? Are you asking the volunteer for feedback on the project and its outcomes? Are you building in thoughts, ideas and considerations of people affected by your project/DataVaults pilot? How? What information or training might be needed to help people understand data issues?	Any detail about the project will be communicated in the most transparent way at any time of the project. Feedbacks will be collected on a voluntary basis but also according to a predefined time frame in order to get as much feedback we can get to help us improve our communication and our services. Any feedback will be handled individually and in a transparent way.
40	Review and iterations Are you planning to measure, monitor and discuss the data ethics issues in the post-project phase and to review this EDPIA?	No plan is in place for measuring and monitoring data ethics issues in the post-project phase.

2.3.1.2 Demonstrator #2 – Strengthening Entrepreneurship and Mobility

Introductory questions	
	Responses
1 Nature, scope, context and purposes of the processing (Recital 90)	Mobility, cultural, commercial preferences information collected within the DataVaults app to be used in order to provide services to citizens, tourists and visitors

2	List of in-scope personal data items	- Mobility information (position, route) - Commercial preferences (where, how and what are people buying) - Cultural and touristic preferences (museum, music, food, entertainment preferences)
3	List of key data sources	DataVaults app
4	Limitation in data source: are there limitations that could influence your project's outcomes? Consider: - bias in data collection, inclusion/exclusion, analysis, algorithms - gaps or omissions in data - provenance and data quality - other issues affecting decisions, such as team composition	Limited availability of data might be an issue. Collection of GPS information regarding traffic routes and parking spots is challenging.
5	Recipients of personal data items. Are you going to be sharing data with other organisations in DataVaults and/or beyond? If so, who? Under what conditions?	The Municipality is the sole recipient of personal data. No sharing of personal data with others is foreseen. Only results will be shared.
6	Period for which the personal data will be stored (e.g. in hours, days, weeks or years, etc.)	6 months.
7	Functional description of the processing operation related to your pilot activities	The user's data are being anonymized (if the user selects to do so) based on the DataVaults Anonymiser, based on the anonymisation depth levels selected by the user. User Data can be part of anonymized aggregated "personas", if the user selects his data to be included in those Personas. There his data are merged with data from other people and provided as average data values of a "fictional" individual
8	What are your main use cases (please provide a summary and indicate the DataVaults deliverable where details can be retrieved)? Are you replacing another product? You can also simply list them (with one line description) and insert the reference to the DataVaults deliverable where the complete description can be retrieved	Scenario A - Smart Mobility Services for Individuals. Goal: To better schedule the mobility strategy and the relevant services within the city of Piraeus around sport venues at game time Scenario B - Empowering local entrepreneurship. Goal: To strengthen the local economy through activities that can be brought forward by the municipality, based on consumer behaviors and preferences Scenario C - Services for Personalized cultural and touristic experiences. Goal: To create services that target tourists and visitors in the city of Piraeus, based their individual interests
9	DataVaults technological assets (services, tools,…) involved in the data collection and/or processing in your pilot activities	- Data Fetcher - Edge Analytics Engine - Anonymiser - SEAS Analytics Engine
Choice and Consent		
10	How do you provide choices, when appropriate, to data subjects regarding use of their personal data? Is consent obtained before using personal information for specific purposes, as required by GDPR? How?	- Initial Consent is asked upon registration to the platform. However, NO data are shared with anyone at that stage. - Data Subjects have the option to delete their data and/or their account at any time by visiting their profile/account page and asking the system to automatically delete all their data. (does not apply

		to data already acquired through a contract by a data seeker)
		• The Personal App of DataVaults allows users to fully manage their personal data by deleting it and revoking access to it (if not already acquired by a data seeker)
		• Upon sharing data, users are provided by the Data Sharing configurator with a dialogue requesting them to verify their sharing options of those data.
11	Are consents (once obtained) appropriately documented and maintained? How?	The agreement is stored in the backend database of the Personal App.
12	What data subject's privacy harms might occur? What risk-mitigation measures have you in place?	In DataVaults the user is in total control regarding the sharing of owned data, while the Risk Management dashboard informs data subjects on their privacy exposure. In addition, prior sharing in the cloud platform of DataVaults, data are anonymized and encrypted; this is one of the benefits of DataVaults towards privacy.
Legitimate Purpose Specification and Use Limitation		
13	Are you going to collect only the personal data that are adequate, relevant and limited to what is necessary in relation to the purposes for which the data are processed, in support of data-minimization requirements? Is the personal data processing lawful and necessary given the purposes for which the data were collected? Please provide details.	Only relevant data are going to be collected with informed consent procedures, in full compliance with GDPR. The collection is therefore lawful.
Personal Information and Sensitive Information Life Cycle		
14	Are you going to keep personal data for no longer than necessary to support the purposes for which they were collected?	Yes, we store it only for the scope of the project
15	Are you going to collect and/or process one or more of the following types of personal data? If yes, please provide details. a) data revealing racial or ethnic origin, political opinions, religious or philosophical beliefs, or trade-union membership b) genetic data c) biometric data for the purpose of uniquely identifying a natural person d) data concerning health e) data concerning a natural person's sex life or sexual orientation	No to all
16	How do you ensure that, by default, only personal data which are necessary for each specific processing purpose are actually processed?	The data subject chooses which data to make available over the platform.
Accuracy and Quality		
17	How do you ensure that personal data are kept accurate and up to date, as necessary, and correct personal data errors without delay?	Data are updated following the command of the data subject.
Openness, Transparency and Notice		
18	Are you going to process personal data fairly, transparently and in compliance with applicable legal requirements?	Yes
19	How do you communicate to data subjects their rights, notices, and answer their	By default, NO personal data is shared, so this question does not apply. However, once data is

	questions and provide information to them relating to data processing, in a manner that is clear, easy to understand, and age appropriate to the data subject? Are you going to provide the data subjects, at the time personal data are obtained from them, all necessary information elements? How do you restrict use of their associated personal data?	shared, we cannot control this, as this is something that falls out of the scope of the project. Maybe we could have some smart contracts which could say something "generic" about to no harm, etc. but again this is not controllable by the system. All relevant information will be provided at the sign-up /registration page, in the relevant terms. An FAQ page will be delivered to answer most common questions and a functional mailbox will be provided for further questions.
Individual Participation	
20	How are the data subjects allowed to withdraw consent to use their associated personal data at any time, as long as the withdrawal does not result in legal violations about which you have informed the data subjects?	By directly removing their data and/or their account.
21	How do you ensure that a data subject can exercise his or her rights mandated by the GDPR? And do you have processes to provide documented reasons for denying requests?	Data Subjects can at any time delete their account and remove their personal data. No requests will be denied. Municipality of Piraeus has as main contact point its DPO (dpo@piraeus.gov,gr) but is also obliged by law to allow people exercise their rights against GDPR. Any request made through any channel available (telephone, email, official document or other) is received and forwarded to the responsible Directorate within the Municipality. A formal answer to any request must be provided within the timeframe set by Greek law.
22	How do you allow the data subject to obtain confirmation regarding whether or not personal data are being processed (including personal data used in partnership with other controllers), and when that is the case, to provide the data subject access to the associated personal data and related mandatory information (including, for instance, information concerning the purposes, the data categories, the recipients, the retention periods, the rights for deletion and registering complaints, etc.) in compliance with GDPR requirements?	Such information is stored in the blockchain where the data shared can be viewed by the data subject. This is provided as part of a dashboard for each user, where he can see: • the data he has already collected but he holds without sharing them • The data he has already shared and under which terms (e.g. anonymized or not, for how long, etc.) • The data that (after sharing them) have been acquired by a data seeker and the relevant transaction id.
23	Are you able to provide to the data subject, upon request and without prejudice, a copy of his/her personal data? How? Can this copy be delivered in a commonly used digital format and for free or for a reasonable fee (where the fee is based on actual administrative costs)?	Yes. Data Subjects can download a copy of the data they have provided to the platform for free
Accountability	
24	Have you established an appropriately qualified data protection officer (if applicable, according to the GDPR)? Can the data subjects contact him/her for any issue related to processing of their personal data or to the exercise of their rights under GDPR?	The Municipality of Piraeus DPO has been appointed and is available as imposed by the national and EU laws.

25	Which DataVaults tool in your demonstrator support accountability?	• Blockchain infrastructure for storing transactions • Access Policy Engine for safekeeping access
Security Safeguards		
26	How do you ensure that appropriate technical and/or organisational safeguards are implemented to secure personal data, including protections against unauthorized or unlawful processing and against accidental loss, destruction or damage? What DataVaults technologies/tools ensure a level of security for the personal data appropriate to the personal harm risk, including, as appropriate: a) pseudonymization and/or encryption; b) procedures to establish confidentiality, integrity, availability and resilience of processing systems and services, data backup and recovery; and c) Regular testing of associated security controls?	• Blockchain infrastructure for storing transactions • Access Policy Engine for safekeeping access • Anonymisation Engine • Data Encryption Engine • TPM Attestation for devices running DataVaults
27	How do you assess the privacy risks and/or the likelihood of privacy harms to data subjects, for instance in the event of unauthorised access, sharing or use of personal data and/or unauthorised or accidental destruction, loss, or alteration of personal data?	Risk Management Dashboard can assess the privacy risks for the shared datasets of the user, based on the sharing policies applied while data are protected by unauthorised access within the platform. Also with the blockchain infrastructure for storing transactions, we ensure that no unnoticed alternation, deletion or access will be performed.
Monitoring, Measuring and Reporting		
28	Do you provide reports for data subjects (at specified times; upon their request as appropriate; and reflecting all components required by GDPR), including: a) personal data-breach notifications; b) reports regarding correction of personal data erasure and/or incorrect personal data; c) reports showing the content of personal data associated to the subject; d) reports showing the personal data associated to the data subject shared with others, including the reasons for such sharing; and e) Full digital copies of personal data transmitted directly to another data controller in support of data portability requirements.	a) These are provided upon requests via their Inbox page. b) These are provided upon requests via their Inbox page. c) Dashboard of collected data. d) Transactions Dashboard. e) Transactions Dashboard.
29	How do you maintain a record of processing activities involving personal data that includes a) the name and contact details for your enterprise/institution; b) the purposes for processing personal data; c) a description of the categories of data subjects and of the categories of personal data involved in the processing; d) the categories of recipients to whom the personal data have been or will be disclosed; and where possible, the established time limits for erasure of the different categories of data?	There is a record showing which data seeker has acquired access to which data set, which is retrieved via the blockchain system and displayed to the user via his sharing dashboard page. Also information about the prospective categories of data seekers that can have access on each shared dataset is provided in the sharing configuration of each shared dataset, in the access policies lists defined by the data subject.
Preventing Harm		

30	Do you allow the data subjects to request removal of their personal data from automated processing and profiling in situations that could result in adverse legal effects or harms to them?	Yes, in case their data is not already acquired by a third party (as then any data processing happens off the platform and cannot be controlled). See the first two questions under "Individual Participation".
31	How do you ensure that data subjects who exercise their rights (for changing how their personal data are used; request copies of personal data; and/or exercise other rights under GDPR) do not adversely affect the rights and freedoms of others or do not infringe a contract or a binding provision?	The exercise of rights concerns only data not already acquired by another party.

Third-party/Vendor Management		
32	Do you have documented third-party / vendor management policies (and supporting procedures) to specify the type of documented contract (in hard copy and/or digital form), or other legal act under union or member-state law, setting out key aspects, like the subject-matter and duration of the processing, the nature and purpose of the processing and the types of personal data and the categories of data subjects?	As regards the smart contracts, our policies rely on the DataVaults sharing configuration tool to set all the specific characteristics and features of the data sharing (including, for instance, the selection of the privacy/anonymization level, of the visibility level, of the access policies level, of the pricing and of the licensing). The Individual can share not only their personal data collected from the connected data sources, but also any stored results from the Analytics and Visualisation Phase. In this way, whenever an Individual decides to make data available to Data Seekers through the DataVaults platform, they are prompted to define various details regarding data sharing, enabling the construction of fine-grained policies. The various parameters of a data asset sharing configuration can be modified at a later stage by the Individual, who can also completely revoke access to the shared data asset, by appropriately configuring the bound access policies. For the enforcement of these changes, DataVaults shall take into consideration any contracts in effect and ensure that Data Seekers that have purchased these data can acquire access for the respective period.

Breach Management		
33	Do you have documented personal data breach policies and/or tools for: a) notifying appropriate supervisory authorities of the breach in a timely manner, and with reasons provided for any delays; b) notifying data subjects of high risk breaches (as defined by GDPR) no later than 72 hours after discovery of a breach, if it is determined (following documented procedures for performing harm risk analysis) that the personal data breach will result in privacy harm to the associated data subjects; and c) Including all items necessary within the notice as required by GDPR?	The policies will be developed for the v0.5 and v1.0 of the platform, so after v0.5 we will support the notification of the data subjects for the case of breaches.

Security and Privacy by Design		
34	Have the security and privacy protections been embedded into the full lifecycle of automated decision-making processes involving personal data to safeguard the data	Yes, this is the main aim of the DataVaults project. Data subjects are able to on-board the platform and control which data they would like to take on-board, then decide if they want to share them, with which

	subject's rights, freedoms and legitimate interests? Have you implemented appropriate technical security and privacy controls, supported by documented privacy principles (e.g., the ISACA Privacy Principles, and/or IEEE privacy standards, etc.), in order to appropriately mitigate harms to individuals to the extent possible in compliance with GDPR and to protect the rights of data subjects?	data seeker categories, under which provisions, and remove them if they want to. (unless they have been engaged in a binding contract) Core to these processes are the following components: Data Sharing Configurator; Anonymiser; Access Policy Editor; Data Sharing and Confirmation Dashboard; Risk Management Dashboard; Blockchain Infrastructure; Smart Sharing Contracts.
Legal, Ethical and Societal Implications	
35	Do people understand your purpose – especially people whose the data are about or who are impacted by their use? How have you been communicating your purpose? Has this communication been clear? How are you ensuring more vulnerable individuals or groups understand?	The user that wants to share their data to the DataVaults platform is first informed of all the consequences through an information sheet and an informed consent to sign before being able to configure any exchange of data. We try to present it in the most user-friendly way on the smartphone to ensure that it will be correctly read and understood by the majority. During the demonstration activities, participants will be selected according to certain criteria. If more vulnerable individuals are selected, we will ensure that a responsible person can help them during this process.
36	What existing ethical codes apply to your sector or project? Are there any legislation, policies, or other regulation shape how you use data, in addition to those listed in DataVaults D2.3? Are you in compliance with them (if applicable)?	Only GDRP applies.
37	Positive effects on people. Which individuals, groups, demographics or organisations will be positively affected by your DataVaults pilot? How? How are you measuring and communicating positive impact? How could you increase it?	All scenarios are either targeting the improvement of the life of citizens and tourists (mobility and tailored touristic/cultural experiences) or the enhancement of the local economy (empowering local shop owners and entrepreneurs). We are planning surveys in order to measure the expected positive impact, as described in the DataVaults Action Plan.
38	Negative effects on people. Who could be negatively affected by your DataVaults pilot? How? Could the way that data is collected, used or shared cause any harm or expose individuals to risk of being re-identified? Could it be used to target, profile or prejudice people, or unfairly restrict access to some service? How are limitations and risks communicated to people? Consider: people whom the data is about, people impacted by its use and organisations using the data.	We do not foresee any negative impact on people, related to the three scenarios and the type of data collected.
39	Openness and transparency in the design process How open can you be about this project/DataVaults pilot? Are you asking the volunteer for feedback on the project and its outcomes? Are you building in thoughts, ideas and considerations	As a local government authority we are open about the project, if not in contrast with national and EU laws. A small group of volunteers are asked for feedback, in order to help pass on ideas regarding the project. Ideas and thoughts on training material and people affected will be considered after finalizing the pilots and testing the DataVaults app.

	of people affected by your project/ DataVaults pilot? How? What information or training might be needed to help people understand data issues?	
40	Review and iterations Are you planning to measure, monitor and discuss the data ethics issues in the post-project phase and to review this EDPIA?	No plan is in place for measuring and monitoring data ethics issues in the post-project phase.

2.3.1.3 *Demonstrator #3 – Healthcare Data Retention and Sharing*

Introductory questions		
		Responses
1	Nature, scope, context and purposes of the processing .(Recital 90)	Personal health and medical data collected in a personal mobile app to give patients control of their health data (gather all health data about them and their family). Ease running clinical trials. (discover patients, collect answers to questionnaires, …)
2	List of in-scope personal data items	Health and medical data. Those can be in the context of a clinical trial (fake during demonstration activities)
3	List of key data sources	Andaman7 application that can gather data from other sources. Any connected device that can provide health/medical data. Official health care services and facilities that want to provide data to a specific patient.
4	Limitation in data source: are there limitations that could influence your project's outcomes? Consider: ● bias in data collection, inclusion/exclusion, analysis, algorithms ● gaps or omissions in data ● provenance and data quality ● other issues affecting decisions, such as team composition	Data analysis and calculation algorithms should be done with great care and provided to the user with explanations to prevent any bad understanding of such data. Completeness of data is always a challenge as the health situation of a person evolves all the time. So this is more of a "best effort" nature. Producers of data (doctors, hospitals etc.) are sometimes reluctant to share the data they generate about patients, sometimes for good (but not always) reasons. All data should contain the exact source of data to be able to identify data quality and provenance. The user will be responsible for data exclusion depending on its quality.
5	Recipients of personal data items. Are you going to be sharing data with other organisations in DataVaults and/or beyond? If so, who? Under what conditions?	All data is under the control of the user and will be shared only between the user and who he is willing to share with. In the special use case of clinical trials, data will be shared with the care facility/facilities that run the clinical trials. The user will be informed and will sign a consent before entering the trial. In any other use case, data will only be shared between Andaman7 and the DataVaults app (under user consent) and any extra exchange will be configured by the user through the interface of the DataVaults platform (under user consent).

6	Period for which the personal data will be stored (e.g. in hours, days, weeks or years, etc.)	Six months on the DataVaults platform. Andaman7 will not store any data any longer than the time it needs to be exchanged between two pairs.
7	Functional description of the processing operation related to your pilot activities	The user's data will be transferred from its Andaman7 application to the DataVaults personal app through its API according to their preferences. Only exchange and storage is involved in this phase. The user's data are being anonymized (if the user selects to do so) based on the DataVaults Anonymiser, based on the anonymisation depth levels selected by the user. User Data can be part of anonymized aggregated "personas", if the user selects his data to be included in those Personas. There his data are merged with data from other people and provided as average data values of a "fictional" individual.
8	What are your main use cases (please provide a summary and indicate the DataVaults deliverable where details can be retrieved)? Are you replacing another product? You can also simply list them (with one line description) and insert the reference to the DataVaults deliverable where the complete description can be retrieved	Main use cases are : ● Sharing of Andaman7 collected data to the DataVaults platform to backup data and allow external exchange configuration. ● Running clinical trials with data storage on the DataVaults platform. ● Collecting medical/health data from new source through the DataVaults platform. ● Aggregation of some basic health data to improve content of the health record. Details can be found in deliverable 1.4
9	DataVaults technological assets (services, tools,…) involved in the data collection and/or processing in your pilot activities	● Data Fetcher ● Anonymiser ● SEAS Analytics Engine
Choice and Consent		
10	How do you provide choices, when appropriate, to data subjects regarding use of their personal data? Is consent obtained before using personal information for specific purposes, as required by GDPR? How?	For now, all data is transferred from Andaman7 to the DataVaults personal app (under consent) but it is planned to allow configuration of sharing to send only parts of the medical records. Initial Consent is asked upon registration to the platform. However, NO data is shared with anyone at that stage. Data Subjects have the option to delete their data and/or their account at any time by visiting their profile/account page and asking the system to automatically delete all their data. (does not apply to data already acquired through a contract by a data seeker) The Personal App of DataVaults allows users to fully manage their personal data by deleting it and revoking access to it. (if not already acquired by a data seeker) Upon sharing data, Users are provided by the Data Sharing configurator with a dialogue requesting them to verify their sharing options of those data.
11	Are consents (once obtained) appropriately documented and maintained? How?	The agreement is stored in the backend database of the Personal App. Andaman7 also stores consent related to specific activities in its backend database.
12	What data subject's privacy harms might occur? What risk-mitigation measures have you in place?	In DataVaults the user is in total control regarding the sharing of owned data, while the Risk Management dashboard informs data subjects on their privacy exposure. In addition, prior sharing in the cloud

		platform of DataVaults, data is anonymized and encrypted; this is one of the benefits of DataVaults towards privacy. Sharing between Andaman7 and DataVaults personal app is also encrypted. Also, as data is only stored temporarily on our backend, only small parts of the entire medical record is available at a time so very little amount of data is available for an attacker. It considerably reduces the harm it may cause as just pieces of data are more difficult to interpret. At any time, the sharing can be controlled by the user.
Legitimate Purpose Specification and Use Limitation		
13	Are you going to collect only the personal data that are adequate, relevant and limited to what is necessary in relation to the purposes for which the data are processed, in support of data-minimization requirements? Is the personal data processing lawful and necessary given the purposes for which the data were collected? Please provide details.	Only personal medical and health data related to users asking for connection will be collected. The user will be able to configure what data he is willing to share. Processing is limited to storing, forwarding and basic calculation on health data. (Only less sensitive health data such as activities, sleep etc.) At any time, the user can check what data is collected. It is therefore lawful.
Personal Information and Sensitive Information Life Cycle		
14	Are you going to keep personal data for no longer than necessary to support the purposes for which they were collected?	Data will be stored only on the smartphone of the user and on the Personal DataVaults App. Andaman7 server won't keep data any longer than the time it needs to be transferred to its final destination. Data stored in the mobile app and in DataVaults will be under the control of the user / citizen. They can delete all the data at any time.
15	Are you going to collect and/or process one or more of the following types of personal data? If yes, please provide details. a) Data revealing racial or ethnic origin, political opinions, religious or philosophical beliefs, or trade-union membership. b) Genetic data. c) Biometric data for the purpose of uniquely identifying a natural person. d) Data concerning health. e) Data concerning a natural person's sex life or sexual orientation.	Data from those five categories may indeed be part of a health record. But as said, it will be collected for the purpose of providing it to the concerned patient or to a healthcare facility (study trials), in all cases after patient consent.
16	How do you ensure that, by default, only personal data which are necessary for each specific processing purpose are actually processed?	The data subject chooses which data to make available over the platform. As mentioned earlier, the user will also be able to choose what data can be exchanged between Andaman7 and the platform.
Accuracy and Quality		
17	How do you ensure that personal data are kept accurate and up to date, as necessary, and correct personal data errors without delay?	Data is updated following the command of the data subject. Medical data can come from various sources in Andaman7. Most are trusted platforms (hospitals for example) and provide accurate and up-to-date data. For less trusted sources, it's under the responsibility of the data owner to update its data accordingly. Once the connection to the platform is done, all updates are automatically forwarded to the platform (unless the user decides to stop the sharing).
Openness, Transparency and Notice		

18	Are you going to process personal data fairly, transparently and in compliance with applicable legal requirements?	Yes.
19	How do you communicate to data subjects their rights, notices, and answer their questions and provide information to them relating to data processing, in a manner that is clear, easy to understand, and age appropriate to the data subject? Are you going to provide the data subjects, at the time personal data are obtained from them, all necessary information elements? How do you restrict use of their associated personal data?	By default, NO personal data is shared, so this question does not apply. However, once data is shared, we cannot control this, as this is something that falls out of the scope of the project. Maybe we could have some smart contracts which could say something "generic" about to no harm, etc., but again this is not controllable by the system. Regarding the demonstrators, we said that for each demonstrator, its users will have a look and accept the terms of that specific demonstrators. But nothing more is expected. All relevant information will be provided at the sign-up /registration page, in the relevant terms. An FAQ page will be delivered to answer most common questions and a functional mailbox will be provided for further questions.
Individual Participation		
20	How are the data subjects allowed to withdraw consent to use their associated personal data at any time, as long as the withdrawal does not result in legal violations about which you have informed the data subjects?	By directly removing their data and/or their account. In addition, they also have to disable sharing of data from the Andaman7 to ensure no data stays available but is never retrieved by the DataVaults platform.
21	How do you ensure that a data subject can exercise his or her rights mandated by the GDPR? And do you have processes to provide documented reasons for denying requests?	Data Subjects can at any time delete their account and remove their personal data. No requests will be denied. Andaman7 already provides procedures to exercise his or her rights against GDPR. They simply contact us via support@andaman7.com and we will answer as best as possible to their request.
22	How do you allow the data subject to obtain confirmation regarding whether or not personal data are being processed (including personal data used in partnership with other controllers), and when that is the case, to provide the data subject access to the associated personal data and related mandatory information (including, for instance, information concerning the purposes, the data categories, the recipients, the retention periods, the rights for deletion and registering complaints, etc.) in compliance with GDPR requirements?	Such information is stored in the blockchain where the data shared can be viewed by the data subject. This is provided as part of a dashboard for each user, where he can see: ● The data he has already collected but he holds without sharing them ● And the data he has already shared and under which terms (e.g. anonymized or not, for how long, etc.) ● The data that (after sharing them) have been acquired by a data seeker and the relevant transaction id. Data processing involved in the Andaman7 demonstration and their purposes are specified in the consent and information sheet related to the demonstration.
23	Are you able to provide to the data subject, upon request and without prejudice, a copy of his/her personal data? How? Can this copy be delivered in a commonly used digital format and for free or for a reasonable fee (where the fee is based on actual administrative costs)?	Yes. Data Subjects can download a copy of the data they have provided to the platform for free. Andaman7 can also provide a copy of data they have upon email request.
Accountability		

24	Have you established an appropriately qualified data protection officer (if applicable, according to the GDPR)? Can the data subjects contact him/her for any issue related to processing of their personal data or to the exercise of their rights under GDPR?	Any question or request addressed to support@andaman7.com, will be processed by a member of our support team and transferred to the most appropriate member of the team. Our DPO can be directly contacted via dpo@andaman7.com.
25	Which DataVaults tool in your demonstrator support accountability?	Blockchain infrastructure for storing transactions Access Policy Engine for safekeeping access.
Security Safeguards		
26	How do you ensure that appropriate technical and/or organisational safeguards are implemented to secure personal data, including protections against unauthorized or unlawful processing and against accidental loss, destruction or damage? What DataVaults technologies/tools ensure a level of security for the personal data appropriate to the personal harm risk, including, as appropriate: a) pseudonymization and/or encryption; b) procedures to establish confidentiality, integrity, availability and resilience of processing systems and services, data backup and recovery; and c) Regular testing of associated security controls?	Blockchain infrastructure for storing transactions Access Policy Engine for safekeeping access. Anonymisation Engine. Data Encryption Engine. TPM Attestation for devices running DataVaults. A copy of all data is kept locally on the Andaman7 application.
27	How do you assess the privacy risks and/or the likelihood of privacy harms to data subjects, for instance in the event of unauthorised access, sharing or use of personal data and/or unauthorised or accidental destruction, loss, or alteration of personal data?	Risk Management Dashboard can assess the privacy risks for the shared datasets of the user, based on the sharing policies applied while data are protected by unauthorised access within the platform. Also with the Blockchain infrastructure for storing transactions, we ensure that no unnoticed alternation, deletion or access will be performed. Andaman7 doesn't allow any data modification on the smartphone, only addition of data. History is always available. Any exchange of data is encrypted and therefore protected. (altering encrypted data will lead to unreadable data)
Monitoring, Measuring and Reporting		
28	Do you provide reports for data subjects (at specified times; upon their request as appropriate; and reflecting all components required by GDPR), including: a) personal data-breach notifications; b) reports regarding correction of personal data erasure and/or incorrect personal data; c) reports showing the content of personal data associated to the subject; d) reports showing the personal data associated to the data subject shared with others, including the reasons for such sharing; and e) Full digital copies of personal data transmitted directly to another data controller in support of data portability requirements.	a) These are provided upon requests via their Inbox page. Andaman7 will report any breach to their system by email as soon as it is detected. b) These are provided upon requests via their Inbox page or via email. c) Dashboard of collected data. Andaman7 can provide data reports upon request but almost no personal data is stored on Andaman7 backend. Medical data is only available on their smartphone. d) Transactions Dashboard and Andaman7 app. e) Transactions Dashboard. Andaman7 cannot provide a full copy of data transmitted as we don't store any data. We can only provide some information about the time lapse the sharing occurs. It's up to the user to associate it with data stored on their smartphone.
29	How do you maintain a record of processing activities involving personal data that includes	There is a record showing which data seeker has acquired access to which data set, which is retrieved

	a) the name and contact details for your enterprise/institution; b) the purposes for processing personal data; c) a description of the categories of data subjects and of the categories of personal data involved in the processing; d) the categories of recipients to whom the personal data have been or will be disclosed; and where possible, the established time limits for erasure of the different categories of data?	via the blockchain system and displayed to the user via his sharing dashboard page. Also information about the prospective categories of data seekers that can have access on each shared dataset is provided in the sharing configuration of each shared dataset, in the access policies lists defined by the data subject. Additionally, Andaman7 backend database contains some information about the sharing that occurs on the smartphone. Such information can be easily associated with a specific purpose, destination and category of recipient.
	Preventing Harm	
30	Do you allow the data subjects to request removal of their personal data from automated processing and profiling in situations that could result in adverse legal effects or harms to them?	Yes, in case their data is not already acquired by a third party (as then any data processing happens off the platform and cannot be controlled). See the first two questions under "Individual Participation".
31	How do you ensure that data subjects who exercise their rights (for changing how their personal data are used; request copies of personal data; and/or exercise other rights under GDPR) do not adversely affect the rights and freedoms of others or do not infringe a contract or a binding provision?	The exercise of rights concerns only data not already acquired by another party.
	Third-party/Vendor Management	
32	Do you have documented third-party / vendor management policies (and supporting procedures) to specify the type of documented contract (in hard copy and/or digital form), or other legal act under union or member-state law, setting out key aspects, like the subject-matter and duration of the processing, the nature and purpose of the processing and the types of personal data and the categories of data subjects?	As regards the smart contracts, our policies rely on the DataVaults sharing configuration tool to set all the specific characteristics and features of the data sharing (including, for instance, the selection of the privacy/anonymization level, of the visibility level, of the access policies level, of the pricing and of the licensing). The Individual can share not only their personal data collected from the connected data sources, but also any stored results from the Analytics and Visualisation Phase. In this way, whenever an Individual decides to make data available to Data Seekers through the DataVaults platform, they are prompted to define various details regarding data sharing, enabling the construction of fine-grained policies. The various parameters of a data asset sharing configuration can be modified at a later stage by the Individual, who can also completely revoke access to the shared data asset, by appropriately configuring the bound access policies. For the enforcement of these changes, DataVaults shall take into consideration any contracts in effect and ensure that Data Seekers that have purchased these data can acquire access for the respective period. In addition, Andaman7 provides another level of sharing control through its platform to have better control of what can be shared to the DataVaults platform.
	Breach Management	
33	Do you have documented personal data breach policies and/or tools for:	The policies will be developed for the v0.5 and v1.0 of the platform, so after v0.5 we will be support the

	a) notifying appropriate supervisory authorities of the breach in a timely manner, and with reasons provided for any delays; b) notifying data subjects of high risk breaches (as defined by GDPR) no later than 72 hours after discovery of a breach, if it is determined (following documented procedures for performing harm risk analysis) that the personal data breach will result in privacy harm to the associated data subjects; and c) Including all items necessary within the notice as required by GDPR?	notification of the data subjects for the case of breaches. Andaman7 does not have any specific documentation related to data breach policy or such tools but falls under its GDPR compliant policy. Tools are already in place if needed.
Security and Privacy by Design		
34	Have the security and privacy protections been embedded into the full lifecycle of automated decision-making processes involving personal data to safeguard the data subject's rights, freedoms and legitimate interests? Have you implemented appropriate technical security and privacy controls, supported by documented privacy principles (e.g., the ISACA Privacy Principles, and/or IEEE privacy standards, etc.), in order to appropriately mitigate harms to individuals to the extent possible in compliance with GDPR and to protect the rights of data subjects?	Yes, this is the main aim of the DataVaults project. Data subjects are able to on-board the platform and control which data they would like to take on-board, then decide if they want to share them, with which data seeker categories, under which provisions, and remove them if they want to. (unless they have been engaged in a binding contract) Core to these processes are the following components: Data Sharing Configurator; Anonymiser; Access Policy Editor; Data Sharing and Confirmation Dashboard; Risk Management Dashboard; Blockchain Infrastructure; Smart Sharing Contracts. Andaman7 also already provide privacy protections by design in its lifecycle and fully respect GDPR.
Legal, Ethical and Societal Implications		
35	Do people understand your purpose – especially people whose data are about or who are impacted by their use? How have you been communicating your purpose? Has this communication been clear? How are you ensuring more vulnerable individuals or groups understand?	The user that wants to share their data to the DataVaults platform is first informed of all the consequences through an information sheet and an informed consent to sign before being able to configure any exchange of data. We try to present it in the most user-friendly way on the smartphone to ensure that it will be correctly read and understood by the majority. During the demonstration activities, participants will be selected according to certain criteria. If more vulnerable individuals are selected, we will ensure that a responsible person can help them during this process.
36	What existing ethical codes apply to your sector or project? Are there any legislation, policies, or other regulation shape how you use data, in addition to those listed in DataVaults D2.3? Are you in compliance with them (if applicable)?	Processing and storing of health data falls, of course, under some ethical codes. All are defined in the GDPR and special country regulation already listed in D2.3. We are in compliance with them.
37	Positive effects on people. Which individuals, groups, demographics or organisations will be positively affected by your DataVaults pilot? How? How are you measuring and communicating positive impact? How could you increase it?	Our main objectives are improving the app to help users to take care of their health and ease collection of data for companies that build a better healthcare system for the future. We then aim to have a positive effect on our users (patients), healthcare companies and ultimately the whole healthcare system. The KPIs we are planning to measure should help have a sense of those positive impacts. The analysis of those as well as feedback received during the demonstration will help to improve any positive aspect. We are also

		communicating regularly and widely on our various social media about the positive impacts of our work.
38	Negative effects on people. Who could be negatively affected by your DataVaults pilot? How? Could the way that data is collected, used or shared cause any harm or expose individuals to risk of being re-identified? Could it be used to target, profile or prejudice people, or unfairly restrict access to some service? How are limitations and risks communicated to people? Consider: people whom the data is about, people impacted by its use and organisations using the data.	Negative impacts are not expected by the kind of data collection that is planned during our demonstration. Of course, the fear of sharing such sensitive data will still be present. During the whole demonstration, we are planning to communicate with users in the most transparent way to convince them their data are secured. Any third party involved in the data sharing is involved in the health system and therefore no prejudice or harm should be caused to the data owner. Any report done by a user at any step of the process will be taken into consideration to reveal and fix any harm.
39	Openness and transparency in the design process How open can you be about this project/DataVaults pilot? Are you asking the volunteer for feedback on the project and its outcomes? Are you building in thoughts, ideas and considerations of people affected by your project/DataVaults pilot? How? What information or training might be needed to help people understand data issues?	Any detail about the project will be communicated in the most transparent way at any time of the project. Feedbacks will be collected on a voluntary basis but also according to a predefined time frame in order to get as much feedback as we can get to help us improve our communication and our services. Any feedback will be handled individually and in a transparent way. Help from the technical team behind the DataVaults project may be needed to answer some feedback. In general, we communicate a lot and very transparently on what we do - via our website, our newsletter and our social networks. Please check them.
40	Review and iterations Are you planning to measure, monitor and discuss the data ethics issues in the post-project phase and to review this EDPIA?	Our process regarding ethics in the post-project phase should be exactly the same as described in this EDPIA. Regular reviews will be planned in order to make sure we are still in accord with it.

2.3.1.4   Demonstrator #4 – Smarthome Personal Energy Data

Introductory questions		
		Responses
1	Nature, scope, context and purposes of the processing (Recital 90)	The data we are going to collect is mainly consumption data from the homes of the participants. Also, we will collect through questionnaires information about the building they live in and the preferences of the participants in the project. We will only collect this data in order to develop the DataVaults project and the three scenarios of our pilot demonstration. After the end of the Project, only the data related to the Grant Agreement will be kept as required and will only be accessible to the European Commission for a period of 5 years. After that period, the data will be deleted. The purpose of collecting this data is to research new ways to offer services to our clients, using the DataVaults platform as an intermediary to share data between companies and potential clients, in a way that the client will always have control of the data they are

		sharing. With this data we will be able to recommend energy-saving tips, design PV installations and generate energy demand prediction models.
2	List of in-scope personal data items	1. Consumption data. 2. Data about their home: city, year of construction, m2, kind of roof, orientation, number of people living there. 3. Data about personal preferences: hobbies, communication preferences, tastes, daily habits.
3	List of key data sources	1. MiWenergia's API. 2. Questionnaires through DataVaults platform.
4	Limitation in data source: are there limitations that could influence your project's outcomes? Consider: ● bias in data collection, inclusion/exclusion, analysis, algorithms ● gaps or omissions in data ● provenance and data quality ● other issues affecting decisions, such as team composition	There can be gaps in the consumption data because of meter failures, but these gaps should not affect the project outcomes. Algorithms and data analysis should be carried out carefully to correctly process all the data and obtaining reliable results.
5	Recipients of personal data items. Are you going to be sharing data with other organisations in DataVaults and/or beyond? If so, who? Under what conditions?	All data will be shared through the DataVaults app under the control and consent of the participant. The participant will decide with which company they want to share the data through the app. The data shared with MiWenergia's will only be used to develop our pilot demonstration and will not be shared with any other organisation.
6	Period for which the personal data will be stored (e.g. in hours, days, weeks or years, etc.)	Six months.
7	Functional description of the processing operation related to your pilot activities	When the user wants to connect with MiWenergia source, they need to log in with the MiWenergia credentials. Then they have to select the USPC from which they want to share the data and the start and end dates. Then, the user's data are being anonymized (if the user selects to do so) based on the DataVaults Anonymiser, based on the anonymisation depth levels selected by the user. User Data can be part of anonymized aggregated "personas", if the user selects his data to be included in those Personas. There his data are merged with data from other people and provided as average data values of a "fictional" individual.
8	What are your main use cases (please provide a summary and indicate the DataVaults deliverable where details can be retrieved)? Are you replacing another product? You can also simply list them (with one line description) and insert the reference to the DataVaults deliverable where the complete description can be retrieved	Our three main use cases are: - Scenario A: PV installation design: Design of a PV installation based on the consumption and the details of their roof. - Scenario B: Improve profiling of the clients to enhance energy efficiency. Profiling of the clients to send them energy tips and improve their energy efficiency. - Scenario C: Energy consumption patterns with personal preferences. Demand prediction and analysis of preferences to provide personalized offers and services.

		The deliverables in which the details for each scenario are described are "D1.4 Updated DataVaults Concept Definition" and "D6.2 Pilot Scenarios and Implementation Plan". We now use an external application to predict our client's energy demand, which could be substituted in the future with our own model trained with information from DataVaults, if it works better than the actual system.
9	DataVaults technological assets (services, tools,…) involved in the data collection and/or processing in your pilot activities	• MiWenergia's API • Data Fetcher • Edge Analytics Engine • Anonymiser • SEAS Analytics Engine
Choice and Consent		
10	How do you provide choices, when appropriate, to data subjects regarding use of their personal data? Is consent obtained before using personal information for specific purposes, as required by GDPR? How?	• MiWenergia's participants have to sign a consent form before registering in the platform. • Initial Consent is asked upon registration to the platform. However, NO data are shared with anyone at that stage. • Data Subjects have the option to delete their data and/or their account at any time by visiting their profile/account page and asking the system to automatically delete all their data. (does not apply to data already acquired through a contract by a data seeker) • The Personal App of DataVaults allows users to fully manage their personal data by deleting it and revoking access to it. (If not already acquired by a data seeker). • Upon sharing data, Users are provided by the Data Sharing configurator with a dialogue requesting them to verify their sharing options of those data.
11	Are consents (once obtained) appropriately documented and maintained? How?	The consent form signed before the start of their participation in the project is stored in MiWenergia's servers. The agreement is stored in the backend database of the Personal App.
12	What data subject's privacy harms might occur? What risk-mitigation measures have you in place?	In DataVaults the user is in total control regarding the sharing of owned data, while the Risk Management dashboard informs data subjects on their privacy exposure. In addition, prior sharing in the cloud platform of DataVaults, data are anonymized and encrypted; this is one of the benefits of DataVaults towards privacy.
Legitimate Purpose Specification and Use Limitation		
13	Are you going to collect only the personal data that are adequate, relevant and limited to what is necessary in relation to the purposes for which the data are processed, in support of data-minimization requirements? Is the personal data processing lawful and necessary given the purposes for which the data were collected? Please provide details.	Yes, we will only collect data that is strictly necessary for the purposes of the project. The personal data collection is lawful and necessary to develop the DataVaults project. We will only collect consumption data and other data about their home-building, hobbies and personal preferences through questionnaires in order to develop the three use cases of the project. In every case, the participant will decide which data want to share with us, giving us permission and will be always informed of what data is shared and with which

		purpose. The participant will be always in control of the data they share.
Personal Information and Sensitive Information Life Cycle		
14	Are you going to keep personal data for no longer than necessary to support the purposes for which they were collected?	No, we will collect personal data for the project purposes, so only during its deployment.
15	Are you going to collect and/or process one or more of the following types of personal data? If yes, please provide details. a) data revealing racial or ethnic origin, political opinions, religious or philosophical beliefs, or trade-union membership b) genetic data c) biometric data for the purpose of uniquely identifying a natural person d) data concerning health e) data concerning a natural person's sex life or sexual orientation	No, we are not going to collect any of these types of data
16	How do you ensure that, by default, only personal data which are necessary for each specific processing purpose are actually processed?	No personal data will be share without consent. The user always chooses which data to make available over the platform. The data subject decides which questionnaires want to answer and share and what not.
Accuracy and Quality		
17	How do you ensure that personal data are kept accurate and up to date, as necessary, and correct personal data errors without delay?	The participant can update their personal data whenever they want through the platform. The personal data is updated following the command of the data subject.
Openness, Transparency and Notice		
18	Are you going to process personal data fairly, transparently and in compliance with applicable legal requirements?	Yes.
19	How do you communicate to data subjects their rights, notices, and answer their questions and provide information to them relating to data processing, in a manner that is clear, easy to understand, and age appropriate to the data subject? Are you going to provide the data subjects, at the time personal data are obtained from them, all necessary information elements? How do you restrict use of their associated personal data?	By default, NO personal data is shared, so this question does not apply. However, once data is shared, we cannot control this, as this is something that falls out of the scope of the project. Maybe we could have some smart contracts which could say something "generic" about "no harm being caused, etc." but again this is not controllable by the system. Regarding MiWenergia demonstrator, its users will have a look and accept the terms of the company. They will also sign the consent form before participating within the project. All relevant information will be provided at the sign-up /registration page, in the relevant terms. An FAQ page will be delivered to answer most common questions and a functional mailbox will be provided for further questions. There will also be a person at MiWenergia available to answer any questions related to the project that the participants want to clarify.
Individual Participation		
20	How are the data subjects allowed to withdraw consent to use their associated personal data at any time, as long as the withdrawal does not result in legal violations about which you have informed the data subjects?	By directly removing their data and/or their account

21	How do you ensure that a data subject can exercise his or her rights mandated by the GDPR? And do you have processes to provide documented reasons for denying requests?	Data Subjects can at any time delete their account and remove their personal data. No requests will be denied. If any participant of the MiWenergia demonstrator asks to leave the project and delete their data, the request will be accepted and the data removed from our servers. If they have shared their data to other companies through DataVaults, we cannot ensure which data policy the other companies have, but we will help the participant with any procedure.
22	How do you allow the data subject to obtain confirmation regarding whether or not personal data are being processed (including personal data used in partnership with other controllers), and when that is the case, to provide the data subject access to the associated personal data and related mandatory information (including, for instance, information concerning the purposes, the data categories, the recipients, the retention periods, the rights for deletion and registering complaints, etc.) in compliance with GDPR requirements?	Such information is stored in the blockchain where the data shared can be viewed by the data subject. This is provided as part of a dashboard for each user, where they can see: - The data he has already collected but he holds without sharing them. - And the data he has already shared and under which terms (e.g. anonymized or not, for how long, etc.) - The data that (after sharing them) have been acquired by a data seeker and the relevant transaction id.
23	Are you able to provide to the data subject, upon request and without prejudice, a copy of his/her personal data? How? Can this copy be delivered in a commonly used digital format and for free or for a reasonable fee (where the fee is based on actual administrative costs)?	Yes. Data Subjects can download a copy of the data they have provided to the platform for free. If users need help when downloading, MiWenergia will support them.
Accountability		
24	Have you established an appropriately qualified data protection officer (if applicable, according to the GDPR)? Can the data subjects contact him/her for any issue related to processing of their personal data or to the exercise of their rights under GDPR?	The data subjects can contact the project manager at MiWenergia (ana.garcia@MiWenergia.com) for any issue related to the processing of their data and their rights and she will try to solve it or ask a capable member of the team to do it. Our DPO can be contacted directly via dpoMiWenergia@legitec.com
25	Which DataVaults tool in your demonstrator support accountability?	- Blockchain infrastructure for storing transactions - Access Policy Engine for safekeeping access
Security Safeguards		
26	How do you ensure that appropriate technical and/or organisational safeguards are implemented to secure personal data, including protections against unauthorized or unlawful processing and against accidental loss, destruction or damage? What DataVaults technologies/tools ensure a level of security for the personal data appropriate to the personal harm risk, including, as appropriate: a) pseudonymization and/or encryption; b) procedures to establish confidentiality, integrity, availability and resilience of processing systems and services, data backup and recovery; and c) Regular testing of associated security controls?	- Blockchain infrastructure for storing transactions - Access Policy Engine for safekeeping access - Anonymisation Engine - Data Encryption Engine - TPM Attestation for devices running DataVaults

27	How do you assess the privacy risks and/or the likelihood of privacy harms to data subjects, for instance in the event of unauthorised access, sharing or use of personal data and/or unauthorised or accidental destruction, loss, or alteration of personal data?	Risk Management Dashboard can assess the privacy risks for the shared datasets of the user, based on the sharing policies applied while data are protected by unauthorised access within the platform. Also with the Blockchain infrastructure for storing transactions, we ensure that no unnoticed alternation, deletion or access will be performed.
Monitoring, Measuring and Reporting	
28	Do you provide reports for data subjects (at specified times; upon their request as appropriate; and reflecting all components required by GDPR), including: a) personal data-breach notifications; b) reports regarding correction of personal data erasure and/or incorrect personal data; c) reports showing the content of personal data associated to the subject; d) reports showing the personal data associated to the data subject shared with others, including the reasons for such sharing; and e) Full digital copies of personal data transmitted directly to another data controller in support of data portability requirements.	a) These are provided upon requests via their Inbox page. b) These are provided upon requests via their Inbox page. c) Dashboard of collected data. d) Transactions Dashboard. e) Transactions Dashboard.
29	How do you maintain a record of processing activities involving personal data that includes a) the name and contact details for your enterprise/institution; b) the purposes for processing personal data; c) a description of the categories of data subjects and of the categories of personal data involved in the processing; d) the categories of recipients to whom the personal data have been or will be disclosed; and where possible, the established time limits for erasure of the different categories of data?	There is a record showing which data seeker has acquired access to which data set, which is retrieved via the blockchain system and displayed to the user via his sharing dashboard page. Also information about the prospective categories of data seekers that can have access on each shared dataset is provided in the sharing configuration of each shared dataset, in the access policies lists defined by the data subject.
Preventing Harm	
30	Do you allow the data subjects to request removal of their personal data from automated processing and profiling in situations that could result in adverse legal effects or harms to them?	Yes, in case their data is not already acquired by a third party (as then any data processing happens off the platform and cannot be controlled). See the first two questions under "Individual Participation"
31	How do you ensure that data subjects who exercise their rights (for changing how their personal data are used; request copies of personal data; and/or exercise other rights under GDPR) do not adversely affect the rights and freedoms of others or do not infringe a contract or a binding provision?	The exercise of rights concerns only data not already acquired by another party. If the data is sold to third parties though DataVaults, there will be a contract between the parties engaged in the transaction.
Third-party/Vendor Management	
32	Do you have documented third-party / vendor management policies (and supporting procedures) to specify the type of documented contract (in hard copy and/or digital form), or other legal act under union or member-state law, setting out key aspects, like the subject-matter and duration of the	As regards the smart contracts, our policies rely on the DataVaults sharing configuration tool to set all the specific characteristics and features of the data sharing (including, for instance, the selection of the privacy/anonymization level, of the visibility level, of the access policies level, of the pricing and of the licensing). The Individual can share not only her/his

	processing, the nature and purpose of the processing and the types of personal data and the categories of data subjects?	personal data collected from the connected data sources, but also any stored results from the Analytics and Visualisation Phase. In this way, whenever an Individual decides to make data available to Data Seekers through the DataVaults platform, they are prompted to define various details regarding data sharing, enabling the construction of fine-grained policies. The various parameters of a data asset sharing configuration can be modified at a later stage by the Individual, who can also completely revoke access to the shared data asset, by appropriately configuring the bound access policies. For the enforcement of these changes, DataVaults shall take into consideration any contracts in effect and ensure that Data Seekers that have purchased these data can acquire access for the respective period.
Breach Management		
33	Do you have documented personal data breach policies and/or tools for: a) notifying appropriate supervisory authorities of the breach in a timely manner, and with reasons provided for any delays; b) notifying data subjects of high risk breaches (as defined by GDPR) no later than 72 hours after discovery of a breach, if it is determined (following documented procedures for performing harm risk analysis) that the personal data breach will result in privacy harm to the associated data subjects; and c) Including all items necessary within the notice as required by GDPR?	The policies will be developed for the v0.5 and v1.0 of the platform, so since v0.5 we will be support the notification of the data subjects for the case of breaches.
Security and Privacy by Design		
34	Have the security and privacy protections been embedded into the full lifecycle of automated decision-making processes involving personal data to safeguard the data subject's rights, freedoms and legitimate interests? Have you implemented appropriate technical security and privacy controls, supported by documented privacy principles (e.g., the ISACA Privacy Principles, and/or IEEE privacy standards, etc.), in order to appropriately mitigate harms to individuals to the extent possible in compliance with GDPR and to protect the rights of data subjects?	Yes, this is the main aim of the DataVaults project. Data subjects are able to on-board the platform and control which data they would like to take on-board, then decide if they want to share them, with which data seeker categories, under which provisions, and remove them if they want to. (unless they have been engaged in a binding contract) Core to these processes are the following components: Data Sharing Configurator; Anonymiser; Access Policy Editor; Data Sharing and Confirmation Dashboard; Risk Management Dashboard; Blockchain Infrastructure; Smart Sharing Contracts.
Legal, Ethical and Societal Implications		
35	Do people understand your purpose – especially people whose the data are about or who are impacted by their use? How have you been communicating your purpose? Has this communication been clear? How are you ensuring more vulnerable individuals or groups understand?	Yes, we have explained the purpose of collecting the data for the project and we are always at the disposal of the participants to clarify and explain any issue that they want to ask us. We have been communicating via email and phone calls. This communication has been clear and they can clear up any concerns at any time via these channels. In addition, all the participants have to sign the

		Informed consent form before participating, so they are aware of the purpose of the project. Vulnerable groups can ask for our support at any time and we will pay special attention to these people to ensure that they always understand the purpose of the data collection and the project.
36	What existing ethical codes apply to your sector or project? Are there any legislation, policies, or other regulation shape how you use data, in addition to those listed in DataVaults D2.3? Are you in compliance with them (if applicable)?	There is no new regulation apart from the one listed in D2.3 that affects the use of the data in the MiWenergia demonstrator.
37	Positive effects on people. Which individuals, groups, demographics or organisations will be positively affected by your DataVaults pilot? How? How are you measuring and communicating positive impact? How could you increase it?	From our energy point of view, people who are responsible for their homes and who are not very educated in energy efficiency and renewable sources will benefit greatly. Also, people interested in reducing their energy consumption and their environmental impact can benefit from the DataVaults deployment. At the same time, if participants reduce their energy consumption or increase their consumption from renewable sources, it will have a positive impact on the environment, reducing CO_2 emissions.
38	Negative effects on people. Who could be negatively affected by your DataVaults pilot? How? Could the way that data is collected, used or shared, cause harm or expose individuals to risk of being re-identified? Could it be used to target, profile or prejudice people, or unfairly restrict access to some service? How are limitations and risks communicated to people? Consider: people whom the data is about, people impacted by its use and organisations using the data.	We do not consider the users will face negative effects from our collection and use of their data. They will be always aware of what kind of data they are sharing with us and we will be supporting them to ensure transparency. The users will face some difficulties just as any other user of an innovative application such as DataVaults. We intend to help them in understanding the use of the platform and make the adaptation process as short as we can. If any user reports any harm we will take actions to fix and reduce any negative consequences. As the data is anonymized, we do not consider that there is any risk to be re-identified. The data cannot be used to target, profile or restrict access to any people.
39	Openness and transparency in the design process How open can you be about this project/DataVaults pilot? Are you asking the volunteer for feedback on the project and its outcomes? Are you building in thoughts, ideas and considerations of people affected by your project/DataVaults pilot? How? What information or training might be needed to help people understand data issues?	We try to have transparency and openness in the process of the MiWenergia demonstrator deployment. We will ask participants for their feedback about the project and platform through questionnaires, in order to improve our developments and take into account their ideas and considerations. We will be communicating with them in the most transparent way. We will organize 1 or 2 workshops with participants to teach them how to use the DataVaults platform, and help them to understand the way the data is collected and processed and solve their questions, doubts or issues with the project.
40	Review and iterations Are you planning to measure, monitor and discuss the data ethics issues in the post-project phase and to review this EDPIA?	In the post-project phase, if the DataVaults platform can be finally exploited from our company, we will review this EDPIA to adapt it to possible changes in legislation or other issues related to data collection.

2.3.1.5 Demonstrator #5 Personal data for municipal services and the tourism industry

	Introductory questions	
		Responses
1	Nature, scope, context and purposes of the processing (Recital 90)	The processing activities will be carried out inside pilot scenarios to test the functionality the project app and platform that users will adopt to share their personal data with data-seekers, in a secure way and obtaining in exchange a compensation.
2	List of in-scope personal data items	• personal profile data (civil status, mobility preferences, cultural interests, nationality) • social network posts • participation in cultural events • geolocation • Google history • personal certificates
3	List of key data sources	• Profile in DataVaults • Social media • Smartphone • Population registry
4	Limitation in data source: are there limitations that could influence your project's outcomes? Consider: ● bias in data collection, inclusion/exclusion, analysis, algorithms ● gaps or omissions in data ● provenance and data quality ● other issues affecting decisions, such as team composition	The main problem is the real capacity of getting the required data, either by accessing the user's smartphone or by connecting external data sources like the population registry, user's position and social networks.
5	Recipients of personal data items. Are you going to be sharing data with other organisations in DataVaults and/or beyond? If so, who? Under what conditions?	Parties acting as data seekers in the pilot activities (Municipality of Prato, Textile Museum, Museum of Palazzo Pretoria, CGIL (Union), CAAF - Fiscal Support Centre) will treat the personal data they will collect according to their own procedures fully respecting national and European legislation.
6	Period for which the personal data will be stored (e.g. in hours, days, weeks or years, etc.)	6 months.
7	Functional description of the processing operation related to your pilot activities	The user will connect to their own data sources and will be able to share data either non-anonymised or anonymised, according to their own preferences User's data can also be part of anonymised aggregated "personas", if the user selects their data to be included in those Personas. Here, their data are merged with data from other people and provided as average data values of a "fictional" individual. The data seekers will be able to buy the required assets (either according to the price set buy the data owner, or suggesting a price themselves), once the data owner has accepted the offer.
8	What are your main use cases (please provide a summary and indicate the DataVaults	• Scenario A - Access to personal data for the analysis of mobility solutions

	deliverable where details can be retrieved)? Are you replacing another product? You can also simply list them (with one line description) and insert the reference to the DataVaults deliverable where the complete description can be retrieved	• Scenario B - Access to personal data for the improvement of cultural offer in the city • Scenario C - Access to personal data for the delivery of personal certificates More information is available in D6.2 – Pilot scenarios and Implementation Plan. No replacement of other products is foreseen.
9	DataVaults technological assets (services, tools,…) involved in the data collection and/or processing in your pilot activities	• Data Fetcher • Edge Analytics Engine • Anonymiser • SEAS Analytics Engine
Choice and Consent		
10	How do you provide choices, when appropriate, to data subjects regarding use of their personal data? Is consent obtained before using personal information for specific purposes, as required by GDPR? How?	• Initial Consent is requested upon registration to the platform. However, NO data are shared with anyone at that stage. • Data owners have the option to delete their data and/or their account at any time by visiting their profile/account page and asking the system to automatically delete all their data. (does not apply to data already acquired through a contract by a data seeker) • The DataVaults Personal App allows users to fully manage their personal data by deleting it and revoking access to it. (if not already acquired by a data seeker) • Upon sharing data, users are provided by the Data Sharing configurator with a dialogue requesting them to verify their sharing options of such data.
11	Are consents (once obtained) appropriately documented and maintained? How?	The agreement is stored in the backend database of the Personal App.
12	What data subject's privacy harms might occur? What risk-mitigation measures have you in place?	In DataVaults the user is in total control regarding the sharing of owned data, while the Risk Management dashboard informs data owners on their privacy exposure. In addition, prior to being shared in the cloud platform of DataVaults, data are anonymized and encrypted; this is one of the benefits of DataVaults towards privacy.
Legitimate Purpose Specification and Use Limitation		
13	Are you going to collect only the personal data that are adequate, relevant and limited to what is necessary in relation to the purposes for which the data are processed, in support of data-minimization requirements? Is the personal data processing lawful and necessary given the purposes for which the data were collected? Please provide details.	The pilot's activities aim at validating the functionalities of the DataVaults platform and the model proposed for sharing and remunerating personal data: only strictly necessary data will be acquired and processed, in accordance with GDPR and other regulation requirements.
Personal Information and Sensitive Information Life Cycle		
14	Are you going to keep personal data for no longer than necessary to support the purposes for which they were collected?	We store it only for the scope of the project.
15	Are you going to collect and/or process one or more of the following types of personal data? If yes, please provide details. a) data revealing racial or ethnic origin, political opinions, religious or philosophical beliefs, or trade-union membership	No

	b) genetic data c) biometric data for the purpose of uniquely identifying a natural person d) data concerning health e) data concerning a natural person's sex life or sexual orientation	
16	How do you ensure that, by default, only personal data which are necessary for each specific processing purpose are actually processed?	The data owners are the only one able to decide which data will be made available over the platform. Data Seekers will be only able to buy data made available by data owners.
Accuracy and Quality		
17	How do you ensure that personal data are kept accurate and up to date, as necessary, and correct personal data errors without delay?	Personal data are fully in a data owner's control and they can decide the updating schedule according to needs.
Openness, Transparency and Notice		
18	Are you going to process personal data fairly, transparently and in compliance with applicable legal requirements?	Yes
19	How do you communicate to data subjects their rights, notices, and answer their questions and provide information to them relating to data processing, in a manner that is clear, easy to understand, and age appropriate to the data subject? Are you going to provide the data subjects, at the time personal data are obtained from them, all necessary information elements? How do you restrict use of their associated personal data?	By default, NO personal data is shared, so this question does not apply. However, once data is shared, we cannot control this, as this is something that falls out of the scope of the project. Maybe we could have some smart contracts which could say something "generic" about no harm being caused, etc. but again this is not controllable by the system. Regarding the demonstrators, users will be informed on their rights and data processing through a specific information form available on the platform and they will be able to provide their consent. Each demonstrator will ensure the compliance with GDPR and other national regulation, according to its own data management procedures. All relevant information will be provided at the sign-up /registration page, in the relevant terms. An FAQ page will be delivered to answer most common questions and a functional mailbox will be provided for further questions.
Individual Participation		
20	How are the data subjects allowed to withdraw consent to use their associated personal data at any time, as long as the withdrawal does not result in legal violations about which you have informed the data subjects?	By directly removing their data and/or their account.
21	How do you ensure that a data subject can exercise his or her rights mandated by the GDPR? And do you have processes to provide documented reasons for denying requests?	Data Subjects can at any time delete their account and remove their personal data. The Municipality of Prato is familiar with this kind of personal data processing operations: personal data processing is already used by the administration in different contexts. It has already in place technical and organizational measures for risk assessment and risk control in relation to data protection: register of treatments and risk assessment procedures when necessary, according to the GDPR (art.35), appointment of DPO and definition of appropriate policies for the correct behaviour of employees. No requests will be denied.

22	How do you allow the data subject to obtain confirmation regarding whether or not personal data are being processed (including personal data used in partnership with other controllers), and when that is the case, to provide the data subject access to the associated personal data and related mandatory information (including, for instance, information concerning the purposes, the data categories, the recipients, the retention periods, the rights for deletion and registering complaints, etc.) in compliance with GDPR requirements?	Such information is stored in the blockchain where the data shared can be viewed by the data subject. This is provided as part of a dashboard for each user, where he can see: - the data he has already collected but he holds without sharing them - And the data he has already shared and under which terms (e.g. anonymized or not, for how long, etc.) - The data that (after sharing them) have been acquired by a data seeker and the relevant transaction id.
23	Are you able to provide to the data subject, upon request and without prejudice, a copy of his/her personal data? How? Can this copy be delivered in a commonly used digital format and for free or for a reasonable fee (where the fee is based on actual administrative costs)?	Yes, the data owner can download a copy of the data they have provided to the platform for free.
Accountability		
24	Have you established an appropriately qualified data protection officer (if applicable, according to the GDPR)? Can the data subjects contact him/her for any issue related to processing of their personal data or to the exercise of their rights under GDPR?	Yes, the Municipality of Prato has in place technical and organizational measures for risk assessment and risk control in relation to data protection, including the appointment of DPO who may be contacted on request.
25	Which DataVaults tool in your demonstrator support accountability?	- Blockchain infrastructure for storing transactions - Access Policy Engine for safekeeping access
Security Safeguards		
26	How do you ensure that appropriate technical and/or organisational safeguards are implemented to secure personal data, including protections against unauthorized or unlawful processing and against accidental loss, destruction or damage? What DataVaults technologies/tools ensure a level of security for the personal data appropriate to the personal harm risk, including, as appropriate: a) pseudonymization and/or encryption; b) procedures to establish confidentiality, integrity, availability and resilience of processing systems and services, data backup and recovery; and c) Regular testing of associated security controls?	- Blockchain infrastructure for storing transactions - Access Policy Engine for safekeeping access - Anonymisation Engine - Data Encryption Engine - TPM Attestation for devices running DataVaults
27	How do you assess the privacy risks and/or the likelihood of privacy harms to data subjects, for instance in the event of unauthorised access, sharing or use of personal data and/or unauthorised or accidental destruction, loss, or alteration of personal data?	Risk Management Dashboard can assess the privacy risks for the shared datasets of the user, based on the sharing policies applied while data are protected by unauthorised access within the platform. Moreover, through the Blockchain infrastructure for storing transactions, we ensure that no unnoticed alteration, deletion or access will be performed.
Monitoring, Measuring and Reporting		
28	Do you provide reports for data subjects (at specified times; upon their request as	a) These are provided upon requests via their Inbox page.

	appropriate; and reflecting all components required by GDPR), including: a) personal data-breach notifications; b) reports regarding correction of personal data erasure and/or incorrect personal data; c) reports showing the content of personal data associated to the subject; d) reports showing the personal data associated to the data subject shared with others, including the reasons for such sharing; and e) Full digital copies of personal data transmitted directly to another data controller in support of data portability requirements.	b) These are provided upon requests via their Inbox page. c) Dashboard of collected data d) Transactions Dashboard e) Transactions Dashboard
29	How do you maintain a record of processing activities involving personal data that includes a) the name and contact details for your enterprise/institution; b) the purposes for processing personal data; c) a description of the categories of data subjects and of the categories of personal data involved in the processing; d) the categories of recipients to whom the personal data have been or will be disclosed; and where possible, the established time limits for erasure of the different categories of data?	There is a record showing which data seeker has acquired access to which data set, which is retrieved via the blockchain system and displayed to the user via their sharing dashboard page. Moreover, information about the prospective categories of data seekers that can have access on each shared dataset is provided in the sharing configuration of each shared dataset, in the access policies lists defined by the data owner.
	Preventing Harm	
30	Do you allow the data subjects to request removal of their personal data from automated processing and profiling in situations that could result in adverse legal effects or harms to them?	Yes, in case their data is not already acquired by a third party (as then any data processing happens off the platform and cannot be controlled). See the first two questions under "Individual Participation"
31	How do you ensure that data subjects who exercise their rights (for changing how their personal data are used; request copies of personal data; and/or exercise other rights under GDPR) do not adversely affect the rights and freedoms of others or do not infringe a contract or a binding provision?	The exercise of rights concerns only data not already acquired by another party.
	Third-party/Vendor Management	
32	Do you have documented third-party / vendor management policies (and supporting procedures) to specify the type of documented contract (in hard copy and/or digital form), or other legal act under union or member-state law, setting out key aspects, like the subject-matter and duration of the processing, the nature and purpose of the processing and the types of personal data and the categories of data subjects?	As regards the smart contracts, our policies rely on the DataVaults sharing configuration tool to set all the specific characteristics and features of the data sharing (including, for instance, the selection of the privacy/anonymisation level, of the visibility level, of the access policies level, of the pricing and of the licensing). The Individual can share not only their personal data collected from the connected data sources, but also any stored results from the Analytics and Visualisation Phase. In this way, whenever an Individual decides to make data available to Data Seekers through the DataVaults platforms, they are prompted to define various details regarding data sharing, enabling the construction of fine-grained policies. The various parameters of a data asset sharing configuration can be modified at a later stage by the Individual, who can also completely revoke access to

		the shared data asset, by appropriately configuring the bound access policies. For the enforcement of these changes, DataVaults shall take into consideration any contracts in effect and ensure that Data Seekers that have purchased these data can acquire access for the respective period.
Breach Management		
33	Do you have documented personal data breach policies and/or tools for: a) notifying appropriate supervisory authorities of the breach in a timely manner, and with reasons provided for any delays; b) notifying data subjects on high-risk breaches (as defined by GDPR) no later than 72 hours after discovery of a breach, if it is determined (following documented procedures for performing harm risk analysis) that the personal data breach will result in privacy harm to the associated data subjects; and c) Including all items necessary within the notice as required by GDPR?	The policies will be developed for the v0.5 and v1.0 of the platform, so since v0.5 we will be support the notification of the data subjects for the case of breaches.
Security and Privacy by Design		
34	Have the security and privacy protections been embedded into the full lifecycle of automated decision-making processes involving personal data to safeguard the data subject's rights, freedoms and legitimate interests? Have you implemented appropriate technical security and privacy controls, supported by documented privacy principles (e.g., the ISACA Privacy Principles, and/or IEEE privacy standards, etc.), in order to appropriately mitigate harms to individuals to the extent possible in compliance with GDPR and to protect the rights of data subjects?	Yes, this is the main aim of the DataVaults project. Data subjects are able to on-board the platform and control which data they would like to take on-board, then decide if they want to share them, with which data seeker categories, under which provisions, and remove them if they want to (unless they have been engaged in a binding contract) Core to these processes are the following components: Data Sharing Configurator; Anonymiser; Access Policy Editor; Data Sharing and Confirmation Dashboard; Risk Management Dashboard; Blockchain Infrastructure; Smart Sharing Contracts
Legal, Ethical and Societal Implications		
35	Do people understand your purpose – especially people whose data are about or who are impacted by their use? How have you been communicating your purpose? Has this communication been clear? How are you ensuring more vulnerable individuals or groups understand?	No real users have been involved yet, but some advertising material has been prepared to be used once the pilot actions will start. No involvement of more vulnerable individuals or groups is foreseen in the pilot.
36	What existing ethical codes apply to your sector or project? Are there any legislation, policies, or other regulation shape how you use data, in addition to those listed in DataVaults D2.3? Are you in compliance with them (if applicable)?	The use of data in the demonstrator will be fully compliant with current legislation policies and regulations.
37	Positive effects on people. Which individuals, groups, demographics or organisations will be positively affected by your DataVaults pilot? How? How are you measuring and communicating positive impact? How could you increase it?	Positive effects might arise both for all groups of citizens and data seekers (municipality, cultural institutions, and fiscal service providers) in the improvements of public and cultural services and in the facilitation in the management and sharing of personal certificates. Moreover, we assume that the

		demonstrator will contribute in arising citizens' awareness on personal data management risks and will empower users in maintaining the control on their data sharing. We are planning to use survey tools to measure such impacts and to disseminate results through social channels and communication media active in the city.
38	Negative effects on people. Who could be negatively affected by your DataVaults pilot? How? Could the way that data is collected, used or shared cause any harm or expose individuals to risk of being re-identified? Could it be used to target, profile or prejudice people, or unfairly restrict access to some service? How are limitations and risks communicated to people? Consider: people whom the data is about, people impacted by its use and organisations using the data.	We are not foreseeing any particular negative effects or harm on people and the technical solutions put in place in the DataVaults tools will reasonably prevent the possibility of individuals' re-identifications. Nevertheless, the survey tools that will be adopted in the open demonstration phase might possibly highlight negative impacts perceived by the users. Should this be the case, specific countermeasures will be put in place accordingly.
39	Openness and transparency in the design process How open can you be about this project/DataVaults pilot? Are you asking the volunteer for feedback on the project and its outcomes? Are you building in thoughts, ideas and considerations of people affected by your project/DataVaults pilot? How? What information or training might be needed to help people understand data issues?	In the pilot activities users' opinion will be taken into account by activating some feedback process related with the demonstrator activities, for example through specific surveys but also social media campaigns managed by the administration. The topic of personal data sharing is increasingly important and some specific communication and training actions could be carried out through social media and institutional channels. At the moment no specific communication tools are included in the DataVaults app/platform, but should this happen, we will consider this opportunity.
40	Review and iterations Are you planning to measure, monitor and discuss the data ethics issues in the post-project phase and to review this EDPIA?	The data ethics issue is a very relevant topic for the Municipality of Prato and it will be included in the administrative debate whenever required, also in accordance with current national and European legislation. No specific review of this EDPIA is foreseen after the conclusion of the project, although the document might provide useful insights for the debate on the data ethics issue.

Table 3 Demonstrator's responses to introductory questions

2.3.2   Fulfilment of the Ethical, Legal, Privacy, Security and Trust Requirements

As already underlined in D6.3, the legal and ethical requirements for the design, development and validation of DataVaults cloud-based platform and Personal App, as well as, to some extent, for the future operation of them, are elicited and refined/updated respectively in D2.1 "Security, Privacy and GDPR Compliance for Personal Data Management" and D2.3 "Updated DataVaults Security Methods and Market Design". They were elicited, relying on the Fairness & Privacy-by-Design-and-by-Default Approach enriched with the Protection Goals method, as well as on the analysis of the regulatory landscape and on the factual analysis of the privacy-relevant properties and other features foreseen for the personal data collection, processing and sharing in DataVaults services and tool.

The same deliverables also set the technical security, privacy and trust requirements for the DataVaults platform and App, elaborated with a view on an enhanced (holistic) data sharing solution. This category of requirements was elicited reflecting on DataVaults work and data flow and on how data security, privacy, sharing and management services are to be engrained in a policy-compliant Blockchain structure.

Both of these two macro-categories of requirements include mandatory and desirable/recommended requirements.

The fulfilment of the requirements regarding the DataVaults technology ensures that it is legally compliant, ethically sound and gives rise to a trusted, secure privacy-friendly enhanced (holistic) data sharing solution.

The following Table 4, which does not cover other "usability" aspects which will be covered as non-functional specifications/requirements, shows the interim assessment (for the beta phase evaluation) of the fulfillment of the Legal, Ethical, Privacy, Security and Trust requirements set in D2.1 and refined in D2.3. It will be further utilised for the final evaluation iteration, to ensure that all of them are met by the DataVaults technological artefacts.

Requirement	Status	Alpha	Beta	Final
Legal requirements to be fulfilled				
Purpose limitation and legitimate aim	Yes **Completed**	• DataVaults Personal App Terms and Privacy Notes • DataVaults Cloud Platform Terms and Privacy Notes		
Data minimisation	Yes **Ongoing**	• DataVaults Personal App Terms and Privacy Notes • DataVaults Cloud Platform Terms and Privacy Notes • Access Policy Engine	• Deletion of unnecessary information coming from data sources • Revised data sharing templates	• Risk Privacy Metrics Dashboard and Engine
Data Accuracy	Yes **Completed**		• TPM DAA Module Component	
Integrity and Confidentiality	Yes **Ongoing**	• Anonymise • Access Policy Engine	• Persona Builder	• ABE Engine
Storage Limitation	Yes **Ongoing**			• DataVaults Secure Storage Containers
Transparency	Yes **Completed**	• Access Policy Engine	• DataVaults DLT infrastructure • Sharing Configuration Information Checklist	
Privacy and Data Protection by Design and Privacy by Default	Yes **Ongoing**		• Persona Builder	• DataVaults Secure Storage Containers • ABE Engine
Avoidance of discrimination (including social sorting) and of harm	Yes **Completed**	• DataVaults Personal App Terms and Privacy Notes		

		• DataVaults Cloud Platform Terms and Privacy Notes		
Informed Consent	Yes **Completed**	• DataVaults Personal App and Cloud Platform Terms and Privacy Notes		
Set of requirements referring to the voluntary participation to DataVaults demonstrators	Yes **Completed**	• DataVaults Personal App Terms and Privacy Notes • DataVaults Cloud Platform Terms and Privacy Notes	• DataVaults Mobile App Terms and Privacy Notes	
User Control	Yes **Ongoing**	• Access Policy Engine		• Risk Privacy Metrics Dashboard and Engine • Wallet
Data subject's rights	Yes **Ongoing**	• Access Policy Engine • Data Request Resolver	• DataVaults DLT infrastructure	• Risk Privacy Metrics Dashboard and Engine • Wallet
Enforcement	Yes **Completed**		• DataVaults DLT infrastructure • Access Policy Engine	
Fairness by Design	Yes **Ongoing**	The whole design and development is driven by this approach.		
Effective "sharing the wealth" paradigm	Yes **Ongoing**	The whole design and development is driven by this approach.		
Privacy Notice	Yes **Completed**	• DataVaults Personal App Terms and Privacy Notes • DataVaults Cloud Platform Terms and Privacy Notes		
Data breaches	Not Started			• DataVaults Personal App Penetration Test • DataVaults Cloud Platform Penetration Test
Accountability	Yes **Ongoing**		• Trusted DLT Engine	• DataVaults Operations Manual
Record of processing activities	Not Started			• DataVaults Operations Manual
Data Protection Impact Assessment	Yes **Ongoing**			• Risk Privacy Dashboard and Engine

Technical and organizational measures	Yes **Ongoing**	• Access Policy Engine		• DataVaults Secure Storage Containers • ABE Engine
Use of private environment/cloud as much as possible	Yes **Ongoing**			• DataVaults Secure Storage Containers • ABE Engine
User and data protection friendly User Interface	Yes **Ongoing**			• Risk Privacy Dashboard and Engine
Measures in case of profiling	Yes **Ongoing**		• Persona Builder	• Risk Privacy Dashboard and Engine • Wallet
Appointment of Data Protection Officer	Yes **Completed**	• DPO Assignment		
Assignment of responsibilities	Yes **Completed**	• Responsibilities Assignment		
Ethics Board set-up and involvement	Yes **Completed**	• Ethics Board Setup		
Checklist for the Privacy, Security and Trust				
Integrity and Confidentiality	YES – **completed**	• Sharing Configurator Component		
Authorization and Access Control	YES – **completed**	• Access Policy Engine		
Non-repudiation and Accountability of Actions	YES – **completed**		• Trusted DLT Engine	
Anonymity	YES – **completed**	• Not for the alpha stage version	• Persona Builder	
Conditional Anonymity	YES – **completed**	• Anonymiser		
Unlinkability	Not Started		• Trusted DLT Engine	
Data Privacy	YES – **ongoing**	• Anonymiser	• Persona Builder	
Forward and Backward Privacy	Yes **Ongoing**			• Trusted DLT Engine
Trustworthiness and Operational Correctness	Yes - **completed**	• Personal Wallet		
Cryptography	YES – **completed**	• Sharing Configurator		
Ledger Security	YES – **completed**	• Trusted DLT Engine		

Table 4: Checklist for Legal, Ethical, Privacy, Security and Trust requirements

3   PREPAREDNESS AND STATUS OF THE DEMONSTRATION SITES

As identified in the previous WP6 deliverables, all five DataVaults demonstrators contribute to the evaluation process in three distinct ways, with all five demonstrators equally active in their evaluation of all aspects of DataVaults.

- Primarily they participate to showcase the technology and to check it is suitable. Collectively they can contribute to aspects of the project they have in common.
- Secondly, they need to see value in the use of the technology for their own purposes.
- Thirdly, they can add insight and lessons learned to the higher level and strategic goals for the project as a whole.

Given the planning of the demonstration (identified initially in D6.1/D6.2 and revised in D6.3) and the required metrics and in the evaluation of the achievement of the goals linked to these metrics, the sections below report on the actual status of the demonstrators at the beta stage and provide their progress relevant to the demonstration activities.

It is reminded that the demonstration phase in every setting has been split into 3 different phases, which go hand in hand with the releases of the platform, and those are

- Phase Alpha, running from M19-M24, working with the Alpha release of the platform (reported already in D6.3)
- Phase Beta, running from M25-M30, grounded on the Beta release of the platform, which is the focus of this deliverable
- Final Phase, running from M31-M36, evaluating the platform's version 0.5 release.

3.1   DEMONSTRATOR #1 - SPORTS AND ACTIVITY PERSONAL DATA (OLYMPIACOS)

3.1.1   Target Audience Reached during Beta Phase

3.1.1.1   Data Owners
During the beta phase, a small set of data owners were reached, with them being employees of Olympiacos, in order to continue testing the beta release of the platform internally.

3.1.1.2   Data Seekers
In the beta phase the sole data seeker was Olympiacos, working on getting to know the platform and identifying issues that could be relevant to the data seekers.

3.1.2   OLYMPIACOS Demonstrator Scenarios Evolution

3.1.2.1   Scenario A - Club Fans and Members Personal Data Marketplace

3.1.2.1.1   Validity of Scenario
The scenario is still valid and no main changes are planned for the moment.

3.1.2.1.2   Objectives of OLYMPIACOS Scenario A

Objective	Status	Expected in Phase

Connect internal CRM of the club to DataVaults cloud platform.	In Progress	Final
Share data of fans and members with DataVaults cloud platform.	In Progress	Final
Brand the DataVaults personal app, for example as an affiliate of Olympiacos.	Not Started Yet	Final
Promote DataVaults personal app to existing fans and members (e.g. via e-mail).	In Progress	Final
Advertise and implement compensation for connecting the DataVaults app with social media data sources based on the features that will be offered by the platform.	Not Started Yet	Final
Push questionnaires to fans to extract information in the absence of other data sources.	In progress	Final

Table 5 - OLYMPIACOS Scenario A objectives

3.1.2.1.3 OLYMPIACOS Scenario A Evolution

Actions taken so far:

- Analysed the connections of the internal CRM of the club to identify the connection points to DataVaults
- Evaluated other data sources that could be used for data collection
- Identification of sign-in options/authentication path for users stored in the CRM
- Shared fixed data amongst the club to alpha phase users of the platform
- Developed simple questionnaires via the platform
- Evaluate the technical solution of the alpha release from the perspective of Individuals and Data Seeker
- Provide feedback and comments to the technical partners to support the development of the final version of the tools.
- Language translation was provided both for the Personal App and the platform.
- Communication – marketing campaigns with possible data owners (fans, members, athletes)
- Building of a data owner group on the basis of received nominations.
- Small questionnaires collection from data owners and data seekers.
- More replies will be received in the coming weeks from new fans and members because now is the month for annual subscriptions.

3.1.3   OLYMPIACOS Scenario B – Athletes Sports and Activity Data Sharing

3.1.3.1.1 Validity of Scenario

The scenario is still valid and no main changes are planned for the moment.

3.1.3.1.2 Objectives of OLYMPIACOS Scenario B

Objective	Status	Expected in Phase
Connect internal portal of the club to DataVaults to fetch information upon individuals' command.	In Progress	Final

Share personal data and athletic activity data of athletes with DataVaults cloud platform.	In Progress	Final
Promote DataVaults Personal App to athletes, trying to include a proportion of professional athletes.	In Progress	Final
Run analytics on the performance of the athletes based on the collected data.	Not Started Yet	Final
Use DataVaults platform as the main channel to collect athletic activity and ergometric and medical examination data from the athletes who take part in the initiative.	In Progress	Final

Table 6: OLYMPIACOS Scenario B objectives

3.1.3.1.3   OLYMPIACOS Scenario B Evolution

Actions taken so far:

- Ongoing work into transforming static isolated data into data sources to be used by the project as files
- Performed experimental sharing of such files over the platform
- Evaluated the technical solution of the beta release from the perspective of Individuals and Data Seeker
- Provided feedback and comments to the technical partners to support the development of the final version of the tools.
- Communication with athletes about data sharing as athletes and data owners.
- Small questionnaires collection from athletes / data owners

3.1.4   Demonstrator's Activities Timeline

The following table presents the main activities performed within the demonstrator duringthe Beta version and a projection of what is expected in the final part of the project. Extensions to the activities are marked as orange/yellow in the tables, while purple denotes the original plan.

Demonstrator 1 OLYMPIACOS	M25	M26	M27	M28	M29	M30	M31	M32	M33	M34	M35	M36
Scenario A - Club Fans and Members Personal Data Marketplace												
Alpha Phase												
Connect internal CRM to DataVaults												
Share data of fans and members												
Collect data from a few of early adopters												
Club stakeholders inspect data												
Beta Phase												
Open up the use of DataVaults personal app												
Acquire analytics from the DataVaults cloud platform												
Pilot a branded version of the DataVaults personal app												
Final Phase												

Demonstrator 1 OLYMPIACOS	M25	M26	M27	M28	M29	M30	M31	M32	M33	M34	M35	M36
Branded DataVaults app available to everyone								■	■			
Activate the sharing compensation mechanisms								■	■			
Acquire analytics from the DataVaults cloud platform								■	■	■	■	■
Club stakeholders verify personas									■	■	■	■
Invite club sponsors												■
Scenario B - Athletes Sports and Activity Data Sharing												
Alpha Phase	🟪	🟪	🟪	🟪								
Transform static isolated data	■	■	■									
Connect data sources to DataVaults		■	■									
Test sharing features		■	■	■								
Club stakeholders inspect data			■	■								
Beta Phase	🟪	🟪	🟪	🟪	🟪	🟪	🟧	🟧	🟧	🟧		
Showcase basic analytics extracted with DataVaults		■	■	■	■	🟨	🟨	🟨	🟨			
Recruit (professional) athletes				■	■	■	■	■	🟨	🟨		
Final phase							🟪	🟪	🟪	🟪	🟪	🟪
Branded DataVaults app available to everyone								■	■			
Acquire analytics from the DataVaults cloud platform								■	■	■	■	■
Showcase acquisition of athletic activity and ergometric and medical examination data											■	■
Invite club sponsors												■

Table 7: Execution Timeline for Demonstrator #1 and Plan for M31-M36 - OLYMPIACOS

3.2   DEMONSTRATOR #2 - STRENGTHENING ENTREPRENEURSHIP AND MOBILITY (PIRAEUS)

3.2.1   Target Audience Reached during Beta phase

The following sub sections provide a status update on the audience reached by the demonstrators during the beta phase of the demonstrator.

3.2.1.1   Data Owners

The Municipality of Piraeus has already established a list of data owners, as a group consisted of Municipal personnel and some citizens derived from PireApp, the Municipal application for declaring problems within the city.

3.2.1.2   Data Seekers

At this stage the Municipality of Piraeus is the sole data seeker. Reaching other Data Seekers will be mainly done by direct invitation. This is foreseen as a task for the latest stages of the project, when the DataVaults platform is publicly available. At this stage we have made an initial contact (in person meeting) with the Piraeus Trade Association, a stakeholder in one of our scenarios and a potential data seeker in the DataVaults platform.

3.2.2   PIRAEUS Demonstrator Scenarios Evolution

This section provides a status update on the validity and progress of the initial scenarios defined for the demonstrator in D6.2

3.2.2.1   PIRAEUS Scenario A - Smart Mobility Services for Individuals

3.2.2.1.1   Validity of Scenario

The Scenario is still valid, as initially described.

3.2.2.1.2   Objectives of PIRAEUS Scenario A

Objective	Status	Expected in Phase
Setup the DataVaults personal app to contain the necessary for this scenario information	Not Started Yet	Final
Extract data of citizens from existing apps (e.g., PireApp) to be used for promotional purposes, always following the agreement/instruction of the user to retrieve their data	Achieved	Beta
Brand the DataVaults personal app, to be able to promote it through the Municipality of Piraeus channels.	Not Started Yet	Final
Advertise and implement compensation (e.g., perks) for connecting the DataVaults app with social media data sources (e.g., Facebook profile, Instagram profile, etc.) based on the features that will be offered by the platform	In Progress	Final

Push questionnaires to citizens and fans in order to extract information in the absence of other data sources	In Progress (Achieved for Alpha and Beta Phase with small group of people)	Final

Table 8: PIRAEUS Scenario A: objectives

3.2.2.1.3 Scenario A: Evolution during Beta Phase

Actions taken so far:

- We have collected citizen's data from PireApp
- We have formed an initial group of users
- We have completed the questionnaires to be distributed in order to collect data from the above group
- The questionnaire module of DataVaults has been thoroughly tested
- Actual questionnaires were uploaded, shared/distributed and answered

3.2.2.2 PIRAEUS Scenario B - Empowering local entrepreneurship

3.2.2.2.1 Validity of Scenario

The Scenario is still valid, as initially described.

3.2.2.2.2 Objectives of PIRAEUS Scenario B

Objective	Status	Expected in Phase
Setup the DataVaults personal app to contain the necessary for this scenario information	Not Started Yet	Final
Extract lists of citizens from existing apps (e.g., PireApp or an upcoming touristic application) to be used for promotional purposes	Achieved	Beta
Promote DataVaults personal app to citizens (e.g., via e-mail or through the website) and tourists (e.g., via posters and leaflets at the Cruise Terminal)	Not Started Yet	Final
Advertise and implement compensation (e.g., perks) for connecting the DataVaults app with social media data sources (e.g., Facebook profile, Instagram profile, etc.) based on the features that will be offered by the platform	In Progress	Final
Push questionnaires to citizens and tourists in order to extract information in the absence of other data sources	In Progress (Achieved for Alpha and Beta Phase with small group of people)	Final

Table 9: PIRAEUS Scenario B objectives

3.2.2.2.3 Scenario B: Evolution during Beta Phase

Actions taken so far:

- We have collected citizen's data from PireApp
- We have formed an initial group of users
- We have completed the questionnaires to be distributed in order to collect data from the above group
- We have completed the Piraeus Trade Association initial engagement task.
- The questionnaire module of DataVaults has been thoroughly tested
- Actual questionnaires were uploaded, shared/distributed and answered

3.2.2.3 PIRAEUS Scenario C - Services for Personalized cultural and touristic experiences

3.2.2.3.1 Validity of Scenario

The Scenario is still valid, as initially described.

3.2.2.3.2 Objectives of PIRAEUS Scenario C

Objective	Status	Expected in Phase
Setup the DataVaults personal app to contain the necessary for this scenario information	Not Started Yet	Final
Extract lists of citizens from existing apps (e.g., PireApp or the upcoming touristic application) to be used for personalized cultural and touristic experiences	Achieved	Beta
Brand the DataVaults personal app, to be able to promote it through the Municipality of Piraeus channels	Not Started Yet	Final
Promote DataVaults personal app to citizens (e.g., via e-mail or through the website) and tourists (e.g., via posters and leaflets at the Cruise Terminal)	In Progress	Final
Advertise and implement compensation (e.g., perks) for connecting the DataVaults app with social media data sources (e.g., Facebook profile, Instagram profile, etc.) based on the features that will be offered by the platform	In Progress (Achieved for Alpha and Beta Phase with small group of people)	Final
Push questionnaires to citizens and tourists in order to extract information in the absence of other data sources	Not Started Yet	Final

Table 8: PIRAEUS Scenario C objectives

3.2.2.3.3 Scenario C: Evolution during Beta Phase

Actions taken so far:

- We have collected citizen's data from PireApp
- We have formed an initial group of users (Municipality users, small group of citizens from PireApp)
- We have completed the questionnaires to be distributed in order to collect data from the above group

- The questionnaire module of DataVaults has been thoroughly tested
- Actual questionnaires were uploaded, shared/distributed and answered
- We have engaged with local cruise escort agents in order to reach out to cruise passengers going through the Piraeus cruise terminal.

3.2.3   Demonstrator's Activities Timeline

The following table presents the main activities performed within the demonstrator during the alpha and the beta phase and the plan for the final phase.

It is noted that due to the timing of the release of the Beta release of the platform and the need of debugging from the technical partners, some activities planned for the Alpha phase need to be extended, as indicated in the following diagram (marked with orange)

Demonstrator 2 PIRAEUS	M25	M26	M27	M28	M29	M30	M31	M32	M33	M34	M35	M36
Scenario A - Smart Mobility Services for Individuals												
Alpha Phase	■P	■P	■O	■O	■O	■O	■O	■O				
Collection of data	■Y	■Y	■Y	■Y	■Y	■Y	■Y	■Y				
Examine and analyse data	■Y	■Y	■Y	■Y	■Y	■Y	■Y	■Y				
Beta Phase	■P	■P	■P	■P	■P	■P	■O	■O	■O	■O		
Open up the use of DataVaults personal app to greater groups of users	■N	■N	■N	■N	■N	■N	■Y	■Y	■Y			
Acquire analytics					■N	■N	■Y	■Y	■Y			
Final Phase							■P	■P	■P	■P	■P	■P
Make the branded version of the DataVaults personal app available to everyone							■N	■N	■N	■N	■N	
Acquire advanced analytics from the DataVaults cloud platform and propose actions for smart mobility							■N	■N	■N	■N	■N	
Activate the sharing compensation mechanisms										■N	■N	■N
Scenario B - Empowering local entrepreneurship												
Alpha Phase	■P	■P	■O	■O	■O	■O	■O	■O				
Collection of data	■Y	■Y	■Y	■Y	■Y	■Y	■Y	■Y				
Examine and analyse this initial data	■Y	■Y	■Y	■Y	■Y	■Y	■Y	■Y				
Beta Phase	■P	■P	■P	■P	■P	■P	■O	■O	■O	■O		
Open up the use of DataVaults personal app to greater groups of users	■N	■N	■N	■N	■N	■N	■Y	■Y	■Y	■Y		
Acquire analytics					■N	■N	■Y	■Y	■Y	■Y		
Final phase							■P	■P	■P	■P	■P	■P
Make the branded version of the DataVaults personal app available to everyone							■N	■N	■N	■N	■N	
Acquire advanced analytics from the DataVaults cloud platform and propose actions to empower local entrepreneurship							■N	■N	■N	■N	■N	
Activate the sharing compensation mechanisms										■N	■N	■N

Scenario C - Services for Personalized cultural and touristic experiences												
Alpha Phase												
Collection of data												
Examine and analyse this initial data												
Beta Phase												
Open up the use of DataVaults personal app to greater groups of users												
Acquire analytics												
Final phase												
Make the branded version of the DataVaults personal app available to everyone												
Acquire advanced analytics from the DataVaults cloud platform and propose personalized cultural and touristic experiences												
Activate the sharing compensation mechanisms												

Table 9: Execution Timeline for Demonstrator #2 and Plan for M31-M36 – PIRAEUS

3.3   DEMONSTRATOR #3 - SECURE HEALTHCARE DATA RETENTION AND SHARING

3.3.1   Target Audience Reached during Beta phase

The following sub sections provide a status update on the audience reached by the demonstrators during the beta phase of the demonstrator.

3.3.1.1   Data Owners

So far no real data owners were reached to participate in the demonstration. The delay to implement the Andaman7 data connector (and the DataVaults platform in general) didn't allow providing a "ready-to-test" version for the final user yet. A first version of a working connector capable of downloading data from Andaman7 was delivered on M30. Even though this connector seems promising and well on track, we still have to test it internally and to make some adjustments in the connection workflow before providing it to users. The current timetable is to have this "ready-to-test" version of the platform by the end of June. We then expect to reach our first batch of data owners during the month of July- M31 (after finalisation of Andaman7 screens and communication plan). The plan is still to reach Andaman7 users (according to acceptance criteria) in waves by different means (private emails, private user groups, newsletter, social media, etc.) and so increase at each wave the number of users using the platform.

Additionally, we will reach one Belgian hospital to see if they could be interested in sending data to the platform but we still have to discuss modalities if they accept.

3.3.1.2   Data Seekers

The delay and the lack of data collection makes it even harder to reach data seekers for now. A list of potential companies to contact when ready was established. We are now focussing mainly on companies that run clinical trials as they are more likely to be interested in getting such data. The fake clinical trial that will be run in scenario A will help determine all the possibilities offered by the platform and help convince data seekers.

3.3.2   ANDAMAN7 Demonstrator Scenarios Evolution

3.3.2.1   ANDAMAN7 Scenario A - Get data from Andaman7 and provide to health sector

3.3.2.1.1   Validity of Scenario

Even though we have some delay in the originally planned timetable, scenario A is still valid as described in D6.2. As most activities planned during beta and final phases will occur during the last 6 months of the project, we won't probably be able to go as far as it was expected in the final phases' analysis, documentation and presentation for clinical trials but we will do as much as we can in this close time frame.

3.3.2.1.2   Objectives of ANDAMAN7 Scenario A

Objective	Status	Expected in Phase
Develop the backup of Andaman7 content	In progress. Uploading data is in internal testing, downloading still to do. Expected in M31-32.	Alpha

through the DataVaults platform		
Develop a connector to upload Andaman7 data to the DataVaults platform	First working version available. Internal testing. Finalisation expected in M31-32.	Alpha
Develop and run a fictitious clinical exercise	Developed. Internal testing. Finalisation expected in M31-32.	Beta - Final
Patient recruitment and study recruitment	Communication strategy under finalisation. Waiting for a tested version of connectors. Recruitment for data backup and for clinical study trials will be done simultaneously. Expected in M31-32.	Beta - Final
Service creation to integrate onboarding process into Andaman7	First working version done. Some refinement will be done before patient recruitment. Finalisation expected in M31-32.	Beta
Development of a connector to download DataVaults data and integrate it in Andaman7	No data available yet, waiting for integration of data sources.	Beta
User Onboarding	Waiting for user recruitment. Expected in M32-33	Beta
Data collection	Waiting for user recruitment. Expected in M32-33.	Beta-Final

Table 10: ANDAMAN7 Scenario A: objectives

3.3.2.1.3   ANDAMAN7 Scenario A Evolution

Actions taken so far:

- Test of DataVaults beta version during development process.
- Development of backup components of Andaman7 app (according to evolution of platform from alpha to beta version)
- End of analysis and development of the connector to automatically upload Andaman7 data to DataVaults personal app.
  - The DataVaults platform can now connect to an Andaman7 account through Andaman7 API by specifying credentials of the user.
  - Andaman7 detects this connection and make all new data available on Andaman7 platform
  - The DataVaults platform contacts Andaman7 API to retrieve and ack (trigger erase from Andaman7 server) data
  - Data source is incremental. Each sync adds data to the dataset instead of replacing it.

- Development of Andaman7 services plugins to integrate onboarding and DataVaults related features into Andaman7 app and analysis of onboarding process.
  - Finalisation of service configuration depending on implementation of connector
  - Addition of Information sheet and informed consent
- Patient recruitment strategy

3.3.2.2   ANDAMAN7 Scenario B - Data collection and Andaman7 improvements

3.3.2.2.1   Validity of Scenario

Scenario described in D6.2 is still mostly valid except for the objectives originally planned during the final stage.

Delays encountered in data collection by the DataVaults platform will lower our initial expectations in the quantity of data that we will be able to collect at the end of the project.

We will now focus on "easy-to-retrieve" raw data to build a proof-of-work integration that will be limited to some specific use cases but can still provide some useful data and functionalities to the end-user. This should demonstrate the feasibility and open the field to post-project improvements.

Our focus will be on:

- Everyday activities from Fitbit or Google fit API
- Athlete sports data collected in Olympiacos demonstration
- Import of basic CSV file, for example Apple healthkit export or drug intakes built by the patient.

As we want to focus more on Scenario A, basic analytics on those data will be analysed at high level. Building deeper statistics on the community is now considered out of scope as such calculations are too complex and cannot be generalised to all medical dataset we may retrieve.

3.3.2.2.2   Objectives of ANDAMAN7 Scenario B

Objective	Status	Expected in Phase
Develop a connector to the DataVaults platform	In progress, waiting data upload	Alpha
Develop data integration	Behind Schedule due to lack of health data sources. Identification of possible data sources that could be added by the end of the project.	Beta - Final
Patient recruitment	Communication strategy under finalisation. Waiting for a tested version of connectors. Will be done simultaneously with Scenario A recruitment.	Beta

Service creation to integrate onboarding process into Andaman7	First working version done. Some refinement will be done before patient recruitment.	Beta
User onboarding	Waiting for user recruitment.	Beta - Final
Involve new sources	Identification of possible data sources that could be added by the end of the project.	Beta - Final
Analytics	Reported to end of project if we have time	Beta - Final

<div align="center">Table 11: ANDAMAN7 Scenario B objectives</div>

3.3.2.2.3 ANDAMAN7 Scenario B Evolution

Most tasks of this scenario are waiting for data collection and new data sources. However, we still manage to make some progress by doing preliminary analysis on some of them.

Actions taken so far:

- Preliminary analysis of raw data to be retrieved.
- Validation of possible sources that can be added by the end of the project.
- Development of Andaman7 services plugins to integrate onboarding and DataVaults related features into Andaman7 app and analysis of onboarding process.
    - Finalisation of service configuration depending on implementation of connector
    - Addition of Information sheet and informed consent
- Patient recruitment strategy

3.3.3   Demonstrator's Activities Timeline

The following table presents the main activities performed within the demonstrator during the alpha and beta phase and the plan for the final phase.

The delay encountered during alpha and beta phase in the platform development didn't allow to perform completely the planned objectives. However, a soon-to-be-released version of the platform should unlock most of them and we expect that most of scenario A tasks will be achieved during month 31-33. Scenario B tasks should follow but are dependent on further development and data collection.

Demonstrator 3 ANDAMAN7	M25	M26	M27	M28	M29	M30	M31	M32	M33	M34	M35	M36
Scenario A - Get data from Andaman7 and provide to health sector												
Alpha Phase												
Dev. upload connector												
Dev. download connector												
Dev. backup												

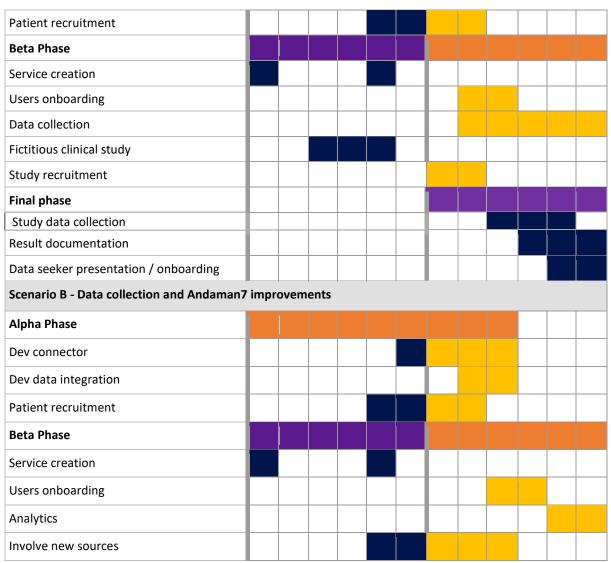| Activity	1	2	3	4	5	6	7	8	9	10	11	12
Patient recruitment					navy	navy	yellow	yellow				
Beta Phase	purple	purple	purple	purple	purple	purple	orange	orange	orange	orange	orange	orange
Service creation	navy				navy							
Users onboarding							yellow	yellow				
Data collection							yellow	yellow	yellow	yellow	yellow	yellow
Fictitious clinical study			navy	navy	navy							
Study recruitment							yellow	yellow				
Final phase							purple	purple	purple	purple	purple	purple
Study data collection									navy	navy	navy	
Result documentation										navy	navy	navy
Data seeker presentation / onboarding											navy	navy
Scenario B - Data collection and Andaman7 improvements												
Alpha Phase	orange	orange	orange	orange	orange	orange	orange	orange	orange			
Dev connector						navy	yellow	yellow	yellow			
Dev data integration								yellow	yellow			
Patient recruitment					navy	navy	yellow					
Beta Phase	purple	purple	purple	purple	purple	purple	orange	orange	orange	orange	orange	orange
Service creation	navy				navy							
Users onboarding								yellow	yellow			
Analytics											yellow	yellow
Involve new sources					navy	navy	yellow	yellow	yellow			

Table 12: Execution Timeline for Demonstrator #3 and Plan for M31-M36 – ANDAMAN7

3.4   DEMONSTRATOR #4 – SMART HOME PERSONAL ENERGY DATA (MIWENERGIA)

3.4.1   Target Audience Reached during Beta phase

The following sub sections provide a status update on the audience reached by the demonstrators during the beta phase of the demonstrator.

3.4.1.1   Data Owners

As in the Alpha phase we have engage 10 real users that are MiWenergia clients, now we have started to contact with non-clients to involve them in DataVaults as data owners. The initial plan was to involve 15-20 MiWenergia customers and 5-10 non-customers. For now, we have managed to involve 15 MiWenergia customers and 2 non-customers, but we expect to achieve at least 5 non-customers by the start of the Final phase. The MiWenergia's API is now being connected and integrated with the DataVaults platform and we expect that will be ready for the Final phase in order to start the real testing with users.

MiWenergia is in contact with entities that may be interested in accessing the data of individuals, mainly electricity consumption data. The lack of capacity to access this data means that institutions such as universities or energy service providers do not perform research tasks or provide their services correctly.

3.4.1.2   Data Seekers

MiWenergia will participate in the project not only as a bridge to the data owner providing connection to their data but also as a data seeker. Additionally, it is planned that at least two other data seekers (private and public institutions, to obtain both points of view) will be involved in the project. The participation of external data seekers is not foreseen until the final phase of the platform.

The contact with the potential data seekers is done by the usual methods with each entity, normally by email, showing the advantages and potential of the platform. We have not yet started recruiting actions, we only have informed potential data seekers, because of the delay in the Cloud platform deployment.

The v0.5 phase of the platform will be used as an introduction to the platform, as a demonstration. Access to external data seekers is not expected to be provided until the minimum functionalities have been implemented and tested by the pilots.

3.4.2   MIWENERGIA Demonstrator Scenarios Evolution

3.4.2.1   MIWENERGIA Scenario A – PV installation design for self-consumption

3.4.2.1.1   Validity of Scenario

The scenario is still valid.

3.4.2.1.2   Objectives of MIWENERGIA Scenario A

Objective	Status	Expected in Phase
To have a functional API that returns customer's hourly consumption	Achieved	Alpha
Additional mock-ups definition	Achieved	Beta
Participant Recruitment	In Progress	Final

Table 10: MiWenrgia Scenario A: objectives

3.4.2.1.3   MIWENERGIA Scenario A: Evolution Plan

The MiWenergia API developed during the Alpha phase to provide customer's data to DataVaults have been tested with artificial users. Then, it has been connected to the DataVaults app to allow Data Owners of the platform to share their energy consumption with the Data Seekers. This API is the main channel to provide data for the three scenarios of the demonstrator.

For the moment, the MiWenergia connector can only provide data for artificial users between two dates selected by the data owner and selecting the UPSC (supply point) from the list of USPC available for each user. In the next phase, it will be possible for real participants to connect the MiWenergia's API to share their data through the DataVaults app.

We are currently approaching different MiWenergia's clients and non-clients to recruit them as participants for the DataVaults platform. We will perform a workshop with the participants to show them the platform and make some trainings.

Due to the need to collect information manually from users, we will implement some questionnaires in the DataVaults Cloud that will be sent through the platform to the Data Owners, so that they can enter the additional information needed to develop the scenarios.

3.4.2.2   *MIWENERGIA Scenario B - Improve profiling of the clients to enhance energy efficiency*

3.4.2.2.1   Validity of Scenario

The scenario is still valid.

3.4.2.2.2   Objectives of MIWENERGIA Scenario A

Because some of the initial tasks are common to the different scenarios and have already been defined above. Only additional tasks will be mentioned here.

Objective	Status	Expected in Phase
Energy efficiency mock-ups definition	Achieved	Beta

Table 11: MiWenergia Scenario B objectives

3.4.2.2.3   MIWENERGIA Scenario B: Evolution

Energy efficiency mock-ups have been defined and will be implemented in later stages. We have designed some questionnaires to share with the data owners, in order to allow them to share the extra information needed to develop this scenario.

3.4.2.3   MIWENERGIA Scenario C – Energy consumption patterns with personal preferences

3.4.2.3.1   Validity of Scenario

Though some tasks will be partially delayed to later phases, the scenario is still valid. In 4.5 the timeline shows the initial approach and the modifications.

3.4.2.3.2   Objectives of Demonstrator's Scenario

Objective	Status	Expected in Phase
Hobbies and interests mock-ups definition	In Progress	Final

Table 12: MiWenergia Scenario C objectives

3.4.2.3.3   MIWENERGIA Scenario C: Evolution

In this scenario, it is necessary to define how users will contribute to the platform with non-standardized information. This extra information is being defined and will be added to the platform with a questionnaire in the Cloud platform. We are still defining some mock-ups and it is expected to be finished in next weeks.

3.4.3   Demonstrator's Activities Timeline

Due to the fact that the initial planning of tasks and jobs for the Beta phase could not be completely fulfilled, due to delays relevant to the Alpha release of the platform, some of the activities had to be extended in the beta phase.

Demonstrator 4 MIWENERGIA	M25	M26	M27	M28	M29	M30	M31	M32	M33	M34	M35	M36
Scenario A – PV installation design for self-consumption												
Alpha Phase	■											
Dwelling mock-up definition	■											
Participant Recruitment	■											
Beta Phase	■	■	■	■	■	■	■	■	■	■		
API, data reliability	■	■	■									
Real users	■						■					
Energy basic analyses		■	■	■	■	■						
Data extraction				■	■	■	■					
Implementation virtual wallet	■	■	■	■	■	■	■	■	■	■		
Implementation of compensation methods	■	■	■	■	■	■	■	■	■			
PV calculation method	■	■	■	■	■	■	■					
Scenario B – Improve profiling of the clients to enhance energy efficiency												
Alpha Phase	■											
Energy efficiency mock-ups definition	■											
Beta Phase	■	■	■	■	■	■	■					
Clustering basic analyses		■	■	■	■	■	■					
Data extraction				■	■	■	■					
Energy efficiency factors	■	■	■									
Scenario C – Energy consumption patterns with personal preferences												
Alpha Phase	■											
Hobbies and interests mock-ups definition	■											
Beta Phase	■	■	■	■	■	■	■	■	■			
Profiles and basic analyses		■	■	■	■	■	■	■				
Data extraction				■	■	■	■	■				

Def. Commercial campaigns													
Playground external data test													

Table 13: Execution Timeline for Demonstrator and Plan for M31-M36 #4 - MIWENERGIA

3.5   DEMONSTRATOR #5 - PERSONAL DATA FOR MUNICIPAL SERVICES AND THE TOURISM INDUSTRY (PRATO)

3.5.1   Target Audience Reached during Beta phase

The following sub sections provide a status update on the audience reached by the demonstrators during the beta phase of the demonstrator.

3.5.1.1   Data Owners

In the current phase of development of the beta version of the platform, no specific involvement of external data owners has been foreseen, since priority was given to test the platform functionalities with avatar users provided by technical partners.

A brochure has already been prepared to introduce the pilot purposes to possibly interested data owners, to support the launch of the pilots on a wider scale with the beta version of the tool.

3.5.1.2   Data Seekers

In the current phase of development of the beta version of the platform, the role of data seeker was carried out by internal staff committed in testing operations. The aim was mainly that of checking the currently available functionalities of the tools, in anticipation of a more structured adoption of the platform, where both the Mobility Office and the two participating museums will be involved.

3.5.2   PRATO Demonstrator Scenarios Evolution

3.5.2.1   Scenario A - Access to personal data for the analysis of mobility solutions

3.5.2.1.1   Validity of Scenario
The scenario is still valid, and no main changes are planned for the moment.

3.5.2.1.2   Objectives of PRATO Scenario A.

Objective	Status	Expected in Phase
To involve a reasonable number of data owners to provide their personal data including mobility behaviours and preferences.	Not Started Yet	Final
To test the platform as a mobility operator (Data Seeker) and check the functionalities of data search and purchase.	In Progress	Final

To evaluate the platform tools for data analytics to improve and integrate the current procedures adopted for mobility planning.	Not Started Yet	Final
To build citizens' samples as a mobility operator, on the basis of specific profiling specifications, and to push them specific questions to enrich the existing knowledge base.	Not Started Yet	Final
To build specific questionnaires and surveys as a mobility operator and send them to the selected citizen samples.	In Progress	Final
To get back sample's answers as a shared dataset according to the data sharing procedures implemented in the platform, including compensation schemas, and analyse them with the platform tools.	In Progress	Final
To provide feedbacks and comments for the technical improvement of the DataVaults app and platform.	Concluded for beta version	Alpha, Beta, Final

Table 14: PRATO Scenario A: objectives

3.5.2.1.3 PRATO Scenario A: Evolution Plan

The beta version of the app and the platform has been tested internally by the project staff, to check the basic functionalities available, both from the data owner's and data seeker's point of view (for example, fetching simple available data sources, sharing with access control, making simple search and data acquisition, sending questionnaires and retrieving answers). The objective in this phase was to provide feedback and comments to the technical partners to support the development of the final version of the tools.

In addition, language translation was provided both for the Personal App and the platform.

Meanwhile, some plans for the future involvement of data owners in the scenario have been discussed and the following actions have been established:

- Collection of possible data owners among existing contacts of the Mobility Office and sending of a call for participation.
- Building of a data owner group on the basis of received nominations.
- Preparation of a specific regulation for participation, including the extraction of a reward (for example a smart watch) for those who will share the largest number of datasets and will reply to questionnaires.

In the final part of the project, it is foreseen to involve the data owner group and have users interacting with the personal app, in order to provide personal data and replies to questionnaires sent by the Mobility Office, acting as data seekers. The Mobility Office will then analyse data provided by users to verify their possible use in planning activities.

3.5.2.2 *PRATO Scenario B - Access to personal data for the improvement of cultural offer in the city*

3.5.2.2.1 Validity of Scenario

The scenario is still valid, and no main changes are planned for the moment.

3.5.2.2.2 Objectives of PRATO Scenario B

Objective	Status	Expected in Phase
To involve a reasonable number of data owners to provide their personal data including cultural preferences, attendance and liking of cultural events.	Not Started Yet	Final
To test the platform as a cultural institution (Data Seeker) and check the functionalities of data search and purchase.	In Progress	Final
To evaluate the platform tools for data analytics to improve and integrate the current procedures for the planning of cultural offer.	Not Started Yet	Final
To build citizens' samples on the basis of specific profiling items and to push them specific questions to enrich available information.	Not Started Yet	Final
To build specific questionnaires and surveys as a mobility operator and send them to the selected citizens' samples.	In Progress	Final
To get back sample's answers as a shared dataset according to the data sharing procedures implemented in the platform, including compensation schemas, and analyse them with the platform tools.	In Progress	Final
To get back sample's answers and analyse them with the platform tools.	Not Started	Final
To provide feedbacks and comments for the technical improvement of the DataVaults app and platform.	Concluded for alpha version	Alpha, Beta, Final

Table 15: PRATO Scenario B objectives

3.5.2.2.3 PRATO Scenario B: Evolution Plan

The beta version of the app and the platform has been tested internally by the project staff, to check the basic functionalities available, both from the data owner's and data seeker's point of view (for example, fetching simple available data sources, sharing with access control, making simple search and data acquisition, sending questionnaires, and retrieving answers). The objective in this phase was to provide feedback and comments to the technical partners, to support the development of the final version of the tools.

In addition, language translation was provided both for the Personal App and the platform.

Meanwhile, some plans for the future involvement of data owners in the scenario have been discussed and the following actions have been established:

● Collection of possible data owners among existing contacts of the city museums and sending of a call for participation.
● Building of a data owner group on the basis of received nominations.
● Preparation of a specific regulation for participation, including the extraction of a reward (for example a smart watch) for those who will share the largest number of datasets and will reply to questionnaires.

In the final part of the project, it is foreseen to involve the data owner group and have users interacting with the personal app, to provide personal data and replies to questionnaires sent by the museums, acting as data seekers. They will then collect and analyse data provided by users to verify their possible use in marketing activities.

3.5.2.3   PRATO Scenario C - Access to personal data for the delivery of personal certificates

3.5.2.3.1   Validity of Scenario

The scenario is still valid and no main changes are planned for the moment.

3.5.2.3.2   Objectives of PRATO Scenario C

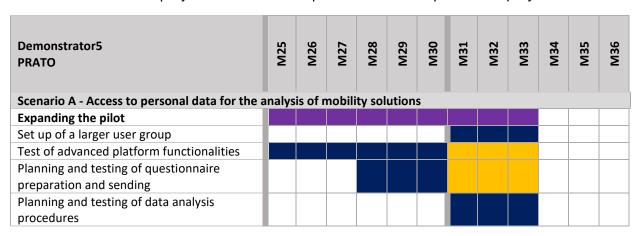| Objective	Status	Expected in Phase
To verify the software connection (API) between the city population registry and the DataVaults App and implement the inclusion of the civil certificates inside the project data model.	In progress	Final
To test the proposed innovative document exchange between citizens and the CGIL – CAAF fiscal support centre by involving a small group of users (2-3 citizens).	Not Started Yet	Final
To evaluate the whole procedure to check strong and weak points and suggest possible technical improvements, from both data owner's and data seeker's point of view.	Not Started Yet	Final

Table 16: Prato Scenario C: objectives

3.5.2.3.3   PRATO Scenario C: Evolution Plan

In this phase, documentation on the API provided by Maggioli was translated into English and passed to technical partners for the building of the connector. In the final phase of the project, the API connection with the population registry will be tested with the support of the fiscal support centre and with the participation of a small group of users (2 – 3 persons), since this scenario it's aimed at verifying the proposed procedure rather than including a large number of participants.

3.5.3   PRATO Demonstrator's Activities Timeline

The following table presents the main activities performed within the demonstrator during the Beta version and a projection of what is expected in the final part of the project.

Demonstrator5 PRATO	M25	M26	M27	M28	M29	M30	M31	M32	M33	M34	M35	M36
Scenario A - Access to personal data for the analysis of mobility solutions												
Expanding the pilot	purple	purple	purple	purple	purple	purple	purple	purple	purple			
Set up of a larger user group							blue	blue	blue			
Test of advanced platform functionalities	blue	blue	blue	blue	blue	blue	yellow	yellow	yellow			
Planning and testing of questionnaire preparation and sending				blue	blue	blue	yellow	yellow	yellow			
Planning and testing of data analysis procedures							blue	blue	blue			

	1	2	3	4	5	6	7	8	9	10	11	12
Evaluation of results							■B	■B	■B			
Consolidating the pilot										■P	■P	■P
Extension of the user group										■B	■B	■B
Data collection, questionnaire and data analytics in a real context										■B	■B	■B
Data analysis for mobility planning and evaluation of results										■B	■B	■B
Scenario B - Access to personal data for the improvement of cultural offer in the city												
Expanding the pilot	■P	■P	■P	■P	■P	■P	■P	■P	■P			
Continuous set up of a larger user group												
Test of advanced platform functionalities	■B	■B	■B	■B	■B	■B	■Y	■Y	■Y			
Planning and testing of questionnaire preparation and sending				■B	■B	■B	■Y	■Y	■Y			
Planning and testing of data analysis procedures							■B	■B	■B			
Evaluation of results							■B	■B	■B			
Consolidating the pilot										■P	■P	■P
Continuous extension of the user group										■B	■B	■B
Data collection, questionnaire, and data analytics in a real context										■B	■B	■B
Data analysis for the planning of cultural events and evaluation of results										■B	■B	■B
Scenario C - Access to personal data for the delivery of personal certificates												
Testing the procedure	■P	■P	■P	■P	■P	■P						
Release of the API with the population registry				■B	■B	■Y						
Test of the certificate flow procedure						■Y	■Y					
Collection of feedbacks						■Y						
Consolidating the procedure								■P	■P	■P	■P	■P
Set up of a user group								■B	■B	■B		
Verification of the certificate sharing procedure in a real context									■B	■B	■B	
Result evaluation										■B	■B	■B

Table 17: Execution Timeline for Demonstrator and Plan for M31-M36 #5 - PRATO

4   COMMUNICATION/INTERACTION WITH STAKEHOLDERS

WP6 activities proceed in tandem with WP8 by coordinating the communication and interaction with the various types of stakeholders. Notably, the dissemination team extends its activities much further than knowledge diffusion and reaches out to key stakeholders from various sources (companies, affiliated projects, clusters and initiatives, associations, other key collaborators etc.) that have the expertise to provide valuable advice and assist in the overall evaluation process through their experience and work in related fields.

The KPIs reported in WP8 deliverables are also interconnected with liaisons, synergies, face-to-face feedback and the two-way interaction from stakeholders, whose importance we have shown in the Evaluation Framework.

D6.3 presented the evaluation of the state of readiness at M24, which was concluded to be satisfactory and having met all the expectations set.

Positive responses were made in respect of the following questions which were first identified in D6.1:

- Have we identified the stakeholder's roles in evaluation planning, implementation, interpretation of results and decision-making about the next steps?
- Has the list of stakeholders been reviewed to ensure all appropriate stakeholders are included?
- Have we created a plan for stakeholder involvement and a communication strategy?
- Have areas been identified for stakeholder input?
- Have stakeholders been brought together as needed?
- Have key stakeholders been targeted for regular participation?
- Have we involved stakeholders in the evaluation process?

Further feedback in relation to the questions relating to dealing with DataVaults stakeholders in the latest period, coinciding with the beta testing includes the following:

- The online engagement tracker is constantly revised by all partners
- All the positive activities reported in D6.3 have been continued and consolidated
- The implementation of the dissemination and communication strategic plan included specific activities dedicated to synergies and liaisons that engages stakeholders in the evaluation process.
- We have formed an Industrial Liaison Group consisting of selected key members from the 220+ real market companies engaged with already, that are expected to become more than 300 by the end of the project
- Industry communities informed about the project include 6 associations, 37 projects with similar scope that are constantly being expanded by the dissemination team
- Due to the close relations, joint activities and many common events (more than 10 already) that have been organized with key external groups we are considering the formulation of a "valorisation board" (example key BDVA members, key Smart Cities Initiative Members, key Major Cities of Europemembers and affiliated projects, Key partner networks etc.

Thus, the carrying out of the activities set out in the Stakeholder Engagement Plan within D8.1 has provided a solid mechanism for further interactions to occur and assist in the shaping of the project as it progresses.

5 TECHNICAL ASPECTS – TECHNOLOGY ACCEPTANCE BY THE DEMONSTRATORS

As indicated in the previous deliverables, this section is not focusing on the technical verification of the DataVaults platform (as this is part of task 5.5 where automated tests are being implemented) but is rather focusing on the technology acceptance of the platform as perceived by the demonstrators. In this direction, for measuring the quality of the system from a user's perspective (e.g. non-software performance level evaluation) DataVaults makes use of the ISO 25010 Quality in Use Model[9], which describes the perception of the quality of the system from a user's perspective. (See deliverable D6.1 and D6.3)

During the period of the evaluation of the beta platform of DataVaults, the consortium has worked towards enriching the questionnaire it is using to also encapsulate assessment questions relevant to ethics. As such, more questions have been posed to the engaged stakeholders.

It is noted that during the next evaluation round (of the 0.5 version of the platform), the questionnaire will be distributed to different target groups (e.g. demonstrator partners, data owners and data seekers) and asking them different questions (of the ones listed below). This has not been performed during this evaluation round, as the closed and limited evaluation user based engaged for the beta platform did not allow to perform such a distinction.

Assessment Question	Mean Value	OLYMPIACOS	PIRAEUS	ANDAMAN7	MIWENERGIA	PRATO
General Questions						
Do the features offered by DataVaults **cover all tasks/objectives promised for this release**?	**Partially**	Partially	Partially	NO	YES	NO
Do the function of DataVaults **accomplish the promised tasks** foreseen in this release?	**YES**	YES	YES	NO	YES	Partially
Does the platform provide **accurate results** when it comes to its operations?	**YES**	YES	YES	YES	YES	Partially
Can you **accurately reach your goals** with the system?	**3.6**	4	4	3	4	3
Do you think DataVaults **covers the intended purpose**?	**3.4**	4	3	4	3	3
Do you find DataVaults **useful**?	**3.6**	4	4	3	3	4
Do you **trust** DataVaults and its results?	**4**	4	4	4	4	4
Does DataVaults have **attributes that facilitate usability**?	**Partially**	Partially	Partially	Partially	Partially	NA

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[9] https://www.iso.org/obp/ui/#iso:std:iso-iec:25010:ed-1:v1:en

Do you believe DataVaults can be used by **disabled users**?	**3**	4	N/A	3	2	NA
Do you believe **DataVaults can be used the system for other purposes** than the intended use? And which are those?	**NO**	NO	NO	YES	YES	NO
PersonalApp Relevant Questions						
Do the **aesthetics of the DataVaults Personal App** UI satisfy the needs of the user?	**YES**	YES	YES	YES	YES	YES
Does **DataVaults Personal App please you** when you use it?	**3.8**	4	4	4	3	4
Do you feel that the DataVaults **Personal App provides a comfortable UI and workflow**?	**4**	4	4	4	4	4
To what extent does the DataVaults Personal App UI **allows you to exercise real control over your personal information**?	**4.4**	4	4	4	5	5
How much comfortable do you feel when using DataVaults as regards the **exercise of your rights** (information, access, rectification of inaccurate data, erasure, object, etc.)	**4.4**	4	4	5	5	4
Do you think that DataVaults Personal App is **easy-to-use for adjusting your privacy preferences**?	**Partially**	YES	Partially	Partially	Partially	Partially
Is DataVaults providing **clear notifications regarding your privacy risk exposure**?	To be evaluated in the next round					
How much do you think that **DataVaults consent mechanism is fatiguing**?	**3**	4	3	2	3	3
How much do you feel that **DataVaults is privacy and data protection friendly**?	**4.6**	4	5	4	5	5
Cloud based Platform relevant Questions						
Do the **aesthetics of the DataVaults Cloud Platform UI** satisfy the needs of the user?	**YES**	Partially	YES	YES	YES	YES
Do you feel that the **DataVaults Cloud Platform**	**4**	4	4	4	4	4

provides a comfortable UI and workflow?						
Does **DataVaults Cloud Platform please you** when you use it?	**4**	4	4	4	4	4

Table 18: Qualitative Evaluation Results per Demonstrator (5 being high)

When it comes to the general evaluation questions for the technology acceptance of the overall solution as perceived by the demonstrator partners, a slight decrease in various categories is noticed, such as in the ability to cover all the anticipated goals, the accuracy of the operation, the intended purpose, and the usefulness. These rates, which are in some cases slightly lower than the ones measured in the previous evaluation are attributed to the increased amount of features deliveries in the beta version (over the alpha), which came with a larger number of bugs that did not allow demonstrators and users to witness an improved experience over the one perceived with the alpha version mockups. Nevertheless, these pain points have been addressed with the iterative deliveries and bug fixing updates provided during the last months, and as demonstrators and users express, these ratings are expected to be higher in the 0.5 release evaluation. The same is also true about usability and UI, as the initial release of the beta version did not include an improved UI/UX, which is currently being reworked to be part of the 0.5 version.

Regarding the PersonalApp most ratings coming from data owners are at the higher levels, e.g. >4. The main critical points have to do with the user experience when using the App as some points seem too complicated and not as straight forwards as users would like to have, especially when it comes to the security and privacy preferences adjustment. However, as identified in various situations, consent procedures and deep/sophisticated privacy preferences cannot be provided to users with minimal UI elements, and there needs to be a kind of compromise between ease of use and security/privacy options. This is something that has been placed in the backlog and will be evaluated in the 0.5 version of the PersonalApp, as easier to use, pre-filled templates will be offered to users, alongside with simple explanations of what kind of privacy and security they include.

Finally, regarding the cloud platform, options about the ease-of-use and the UI have been positive, and these ratings are also expected to improve as a new improve UI will be also provide in v0.5 of the platform.

6 Evaluative thinking and Validity of the DataVaults theory of change

6.1 The "Evaluative Thinking" process

Underlying the evaluation process for DataVaults is the concept of evaluative thinking.
An evaluation that reflects evaluative thinking is the systematic process of telling the DataVaults "story" by:

- Identifying assumptions about why we think the project will work and be a success
- Determining what change we expect to see during and after we implement what we have set out to do in the Description of Action (DoA).
- Collecting and analysing data to help us understand what happened during the project.
- Communicating, interpreting, and reflecting on the results.
- Using these results and lessons learned to help make informed decisions to be able to plan for a successful exploitation after the project finishes.

Part of the storytelling included the creation of a "Theory of Change" and a "Logic Model".

A general perception which was followed, was that evaluation should be designed into a project from the beginning. The DataVaults Evaluation Framework established that evaluation should be viewed as **a collaborative process that involves all of the stakeholders in various roles**, whilst it helps tell the story of the DataVaults project through a continuous cycle of asking, planning, and acting, reflecting and improving. We should continually strive to make sure that findings are practical and useful for end users and inform decision-making and capacity building for further exploitation and sustainability. Indeed, evaluation can be regarded as a means of communication within the project.

In short, "*Evaluation is an objective process of understanding how a project or other intervention was implemented, what effects it had, for whom, how and why*".[10]

Thus, here we need to reference the most significant influences which we have taken on board in the work we have carried out, which may have re-shaped our view of the DataVaults "Theory of Change" as elaborated in Chapter 2 of D6.1.

6.2 Evaluative Thinking and Business Model Progress

The Evaluation Framework set out how we were to tackle how we have contributed to providing a novel business model and contributions to the data economy. But this is an aspect of the evaluation plan which cannot be tackled in any detail until the final stages of the project, and as the technology matures. The current objectives remained valid during the alpha phase and remained so during this beta phase. Until we move from testing within a controlled closed group to engaging with a wider audience, we do not expect any change.

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[10] HM TREASURY, The Magenta Book,
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/220542/magenta_book_combined.pdf.

However, there have been three influences in particular, which have both confirmed our initial perceptions for the DataVaults business plan and its contribution to the data economy and provided us with added focus, which may lead to embracing additional objectives and potentially give rise to further exploitation opportunities.

- One has been the feedback from reviewers and other stakeholders, including Commission officers.
- The second is linked to the valuable input gained through the DataVaults efforts in establishing and leading the Smart Cities MarketPlace "Citizen Control of Personal Data" Initiative. [11]
- And with DataVaults continuing close liaison with BDVA being the third.

In the final phases of the project, we will take into account further suggestions made at the first review, both in evolution of the DataVaults exploitation strategy and within the work led by DataVaults in the Smart Cities MarketPlace Initiative.

6.2.1   Smart Cities MarketPlace

The work initiated by DataVaults in the Smart Cities MarketPlace is shaping the project through providing new engaged stakeholders having conditions they would wish to see being met, whilst at the same time, providing answers to points raised by existing stakeholders, including the reviewers. New stakeholders are being recruited, with new dissemination and exploitation channels emerging.

6.2.1.1   Evaluative Thinking and Input from the MarketPlace membership to act upon

A set of questions have been identified as this initiative, set up early in 2021, matures. If answers can be provided to these questions as DataVaults develops, the more likely it is that we will be able to deploy at scale. Other requirements will arise and be added to the list. The purpose of the "Citizen Centric approach to data"[12] initiative within the Marketplace can be summed up as **helping to build the conditions and relationships whereby the citizen will be willing to share personal data with a city and with other actors in the data economy.**

Removing obstacles would grow the extremely valuable "personal data lake" which would then increase activity in the data economy and enrich existing data eco-systems. Success here would bring about tremendous benefits to the Data Economy as whole, and in particular to the digital SMEs within those cities, with access to data being regarded as more of a problem than access to finance. Growing an accessible "Personal Data Lake" will provide a means for improving most aspects of how data is currently utilised. And enable us to move more speedily to having a distinct European Data Model, of more benefit to wider society, rather than focussed on global commerce.

The topics we are focussing upon include:

- Identifying cities as exemplars in their general usage of data platforms and to highlight what value is in adding personal data.

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[11] "https://smart-cities-marketplace.ec.europa.eu/action-clusters-and-initiatives,"
[12] https://smart-cities-marketplace.ec.europa.eu/action-clusters-and-initiatives/action-clusters/citizen-focus/citizens-control-personal-data

- Involving citizens by creating impactful use cases and easy to use services/Apps and facilitate citizens to remain in control of their data which is at the core of DataVaults
- Capture/pilot collaborative/joint business case; developing methods and tools that will help multiple cities adopt.[13]
- Providing answers to "legal and ethical" questions arising.

We will be able to take stock on how successful we have been in providing answers to these questions raised, in the Final Evaluation Report.

6.2.1.2   Related comments from the review

1. "DataVaults can potentially disrupt the monopolies that are on the rise."

   To seriously disrupt the monopolies, it is recognised that the impact will be more if multiple cities across the EU can simultaneously deploy the platform. Hence the movement towards putting in place the conditions which will enable this goal to be pursued. The majority of partners referred to smart cities in their exploitation strategies at the outset, and looking for synergies and a joint roadmap to deployment at scale is emerging from the early work, further shaping our evaluative thinking.

   We have taken steps to consolidate our approach in the last period.

2. "Some demonstrators might have impact on local authorities, e.g. mobility/transport"

   Pursuing the links between the mobility cluster within the Smart Cities MarketPlace, raises the potential for revenue generation and added value to a city, particularly in situations which they are familiar with and this aspect will be pursued, alongside the culture, leisure and health aspects etc. Including mobility and energy as fed back by the reviewers.

   Again, we have pursued this identified course of action throughout the last period

3. "Societal Challenges and Value dimension for stakeholders and use-cases"

   It is recognised that by partnering with other "fellow-travellers", this potential impact will be maximised and this approach has been vigorously followed in recent months.

4. "Market-economy definition of the value of data is potentially problematic"

   Steps have been taken to widen our understanding of the valuation of data and these will be reported in D6.5.

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[13] " https://smart-cities-marketplace.ec.europa.eu/sites/default/files/2021-03/Notes%20-%20Workshop%20Citizen%20Control%20workshop%20on%2025.02.2021_0.pdf

5. "Marketing focus on societal challenges"

Steps have been taken to widen our understanding of how best to contribute to the key societal challenges and in responding to the Commissions change in emphasis towards "climate-neutral cities by 2030" and these again will be reported in D6.5.

6. "reducing the user burden when dealing with consent"

DataVaults has engaged with initiatives looking to standardise how citizens should interact with the consent process.

7. "The role, value, and involvement of so-called 2nd tier economic operators are weakly defined."

WP8 is giving further consideration in its exploitation planning as to how the 2nd tier economic operators fit into the overall strategy.

6.2.1.3   Commission's Changing emphasis regarding smart cities

The change of emphasis from the Commission referred to above, regarding the direction smart cities should be taking in future has been acted upon. The new initiative focussed on having a core group of 100 climate neutral cities by 2030 which will act as lighthouse for 350 more cities. Funding will be sought to enable a group of these cities, (Prato being one of the 100 cities), to enable them to investigate in depth many of the topics above which were raised in the first review and contributing to what best practice in dealing with citizen's personal data should be.

Further, there has been a "stock-take" of the plethora of networks and collaborative mechanisms which have emerged over the years, so as to have more effective intervention, given the short time scale set for getting to climate –neutral status. DataVaults is positioning itself within these anticipated changes.

6.2.1.4   Interoperability

And as a final example of how the DataVaults "Theory of Change" has been utilised to prompts from stakeholders, work is planned in the final phase to act on advice from Commission officials to engage with the interoperability work coming out of Livingin.eu[14] and with the MyData[15] movement and this will be reported in D6.5 and D6.6.

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[14] "https://living-in.eu/"
[15] "https://mydata.org/about/"

7 CONCLUSIONS

The overall view is that progress continues to be made in achieving the overall DataVaults objectives and that the demonstration sites are well-prepared for the important final phase of the project.

From Chapter 2, we can see that the necessary technical, ethical and legal steps have been put in place to ensure that we can confidently proceed with deploying the final version of the platform at the demonstration sites.

Successful stakeholder interactions have provided "food for thought" in progressing the "evaluative thinking" and utilising the "Theory of Change" underpinning the DataVaults project, confirming that we are on track.

Similarly, the demonstration sites themselves are well-prepared for the next phase of the project, while progress in their scenarios has been performed in terms of building connectors and progressing their envisaged test cases, mostly by engaging internal stakeholders and preparing the ground for opening DataVaults to the public.

The beta trials have shown that from a technical perspective the second release of the platform has been very well perceived, improving the rate of user perception from the one measured in the first evaluation. The methods and functions offered do generate a very high feeling of trust, and in general the features offered are in line with what has been expected by the demonstrators based on the development backlog which was used to deliver the beta release of the platform. It is noted though that due to various limitations naturally imposed by the current (beta) version relevant to the availability of the fully rolled-out blockchain infrastructure, demonstrators could not fully evaluate all aspects of the system, which is a task to be performed during the final evaluation phase, where also a more thorough evaluation of the UX will be performed, as well as of the facilities to be used for providing information about sharing transactions and for distributing value amongst stakeholders.

Lessons were learned during the beta phase testing and have been reported in the document where relevant. These complemented those from the alpha testing and we will draw our final conclusions and overall lessons learned in D6.5 and D6.6.