



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

D5.1

DataVaults User Stories and Non-Functional Requirements

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Lead Beneficiary	Suite5
Status	Final
Version	1.00
Due Date	30/11/2020
Delivery Date	15/12/2020
Dissemination Level	PU

This deliverable has been submitted to the EC and is pending approval



DataVaults is a project co-funded by the European Commission under the Horizon 2020 Programme (H2020-ICT-2019-2) under Grant Agreement No. 871755 and is contributing to the BDV-PPP of the European Commission.

Project	DataVaults – 871755
Work Package	WP5 - DataVaults Platform Continuous Integration
Deliverable	D5.1 – DataVaults User Stories and Non-Functional Requirements>
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Abstract	This deliverable constitutes the first version user stories of the DataVaults Platform’s components and draws the initial list of the functional and non-functional requirements.
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Version	Date	Partner	Description
0.1	15/09/2020	Suite5	Initial Deliverable ToC
0.2	22/09/2020	Suite5	Methodology Elaboration
0.3	30/09/2020	Suite5	Components and Actors Identifications
0.4	16/10/2020	ALL	First set of User Stories and mapping to Components
0.5	13/11/2020	Suite5 / ALL	Final Set of User Stories
0.6	26/11/202	ALL	First Set of Requirements
0.7	30/11/2020	Suite5	Revised Requirements
0.8	7/12/2020	Suite5	Final Draft Version
0.8.1	10/12/2020	UBITECH	Reviewed Version
0.8.2	14/12/2020	ETA	Reviewed Version
0.9	14/12/2020	Suite5	Updated draft based on review comments
1.00	15/12/2020	Suite5	Final Version to be submitted to the EC

Executive Summary

Deliverable D5.1 documents the first round of efforts undertaken within the context of Task 5.1 towards collecting the user stories per component of the overall DataVaults infrastructure and with the aim to analyse the functional and non-functional requirements of the platform.

To this end, D5.1 starts with the identification and documentation of the major technical components to be integrated into the holistic platform and carries on with a requirements extraction technique based on agile software development practices. This is performed by adopting the principles of larger epics that are then split into user stories, which group functionalities together in order to extract the functional and non-functional requirements of the platform

As a result, during this process, a set of 36 epics and 225 user stories have been defined. These results to a set of 223 functional and 39 non-functional requirements, which will be forwarded to the next deliverables to draw the DataVaults architecture and to design the different components.

The contents of this deliverable will be revised as necessary in the upcoming WP5 deliverables, as new user stories and requirements are expected to be introduced during the development and pilot operation phases of the project.

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Terms and Abbreviations

API	Application Programming Interface
DoA	Description of Action
Dx.y	Deliverable x.y
MVP	Most Valuable Product
Tx.y	Task x.y
WPx	Work Package x

1 INTRODUCTION

Deliverable D5.1 aims at providing the user stories of the DataVaults platform and derive out of those the major functional and non-functional requirements which will be utilized to design the various components and the platform as a whole.

As such, the work presented in D5.1 is part of WP5 and more specifically, of task T5.1 “DataVaults Platform Requirement and User Stories Elicitation”.

More precisely, its purpose is to illustratively describe how users will be able to interact with the platform and the different components, setting criteria for the successful outcomes of each such operation and subsequently translating those actions into requirements. The requirements then should be implemented by the different components that will be able to execute the required operations. At this stage, the deliverable at hand stays at the level of functional and non-functional requirements, leaving the technical requirements aside, as the purpose during this phase of the project was to better describe what the platform can do from an end-user’s perspective. The technical underlying function of these actions and the different design blueprints to execute those will be presented in the architecture and subsequent component design deliverables.

1.1 DOCUMENT APPROACH

The deliverable follows a clear and comprehensive approach in order to derive the outcomes of T5.1. Figure 1 depicts a high-level and abstract overview of such approach.

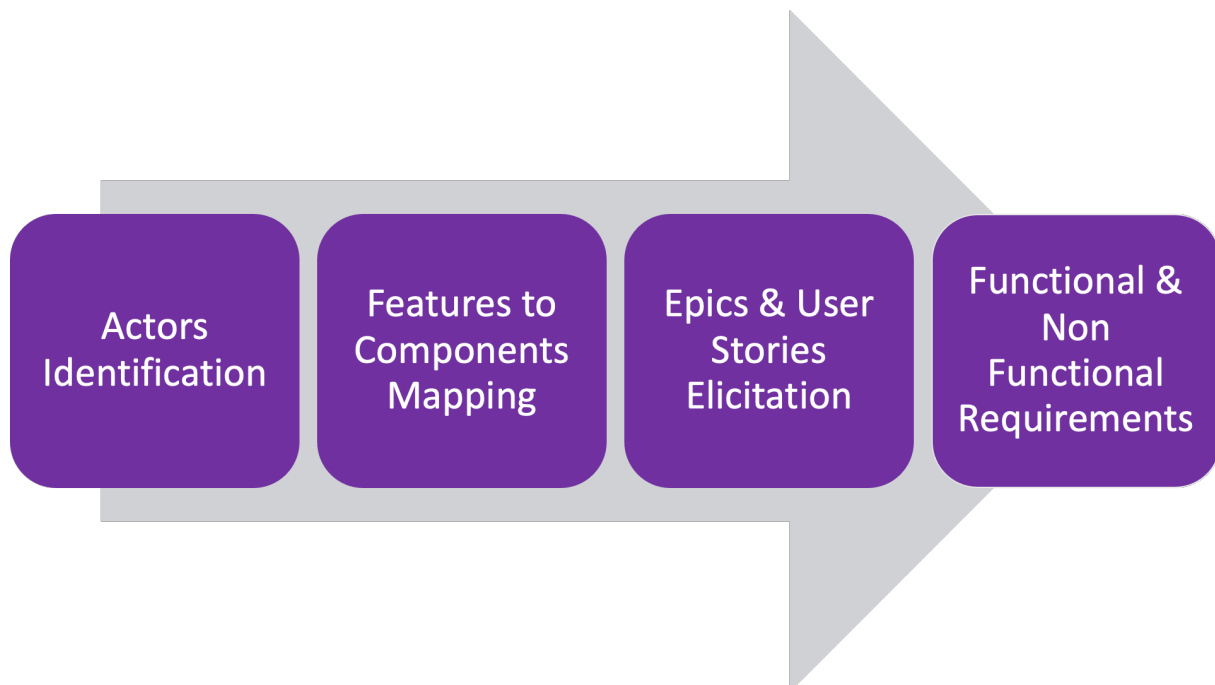


Figure 1 - Document Approach

At first, the key findings of the various WP1 deliverables have been consulted, and more precisely of D1.1 “DataVaults Data Value Chain Definition” and D1.3 “DataVaults MVP and Usage Scenarios” which both offered valuable insights on how the platform could be seen as the direct technical extract that derives out of the DataVaults MVP.

As a second step, the different actors that will work with the platform have been identified, verifying the initial list of actors identified in D1.3 and concluding these are the ones to be considered when defining the different requirements.

The third step is to map the different features that have been identified as requested operations that the platform shall perform to technical components, based on the initial architectural concept of DataVaults. To achieve this, the MVP was truncated in different larger or smaller technical stories that were mapped to the architecture figure coming from the DoA, which describes the envisaged outputs of the tasks in WP3 and WP4.

As a next step, for each component, and through the eyes of the different actors, epics were authored describing (as the “operations” presented in D1.3) operations which can be seen as groups of sub-functions to be performed over the platform. These epics were then distilled into user stories relevant to different components, from the scope of each actor have been authored. Such user stories have been also rated based on their priority, value and complexity to be able during the implementation stage to better plan the different sprints.

Finally, the collected user stories have been used to extract the functional and non-functional requirements of the platform which have been grouped into macro-functionalities (larger functional groups). The use of such macrofunctionalities allows to give a more holistic and precise outlook on the main operations which should be translated into technical requirements and be used to drive the architecture definition steps for the platform and the design of the various components.

The user stories, functional, non-functional requirements presented in this deliverable will be revisited throughout the project in order to capture any changes and updates that occur from the development activities. More specifically, updated versions will be reported in the context of the supporting documentation to the DataVaults Platform releases.

1.2 RELATION TO OTHER WPs AND DELIVERABLES

This deliverable is the outcome of the T5.1 “DataVaults Platform Requirement and User Stories Elicitation”. It used as main input the key outcomes of D1.1 “DataVaults Data Value Chain Definition”, and more specifically, the elaborated DataVaults Data Value Chain. The present deliverable follows the methodological Phases and Operations outlined in D1.3 “DataVaults MVP and Usage Scenarios” to structure the framework of the DataVaults user stories and envisioned requirements, while the MVP features served as a basis for the extractions of specific functionalities that should be delivered by the various components.

The DataVaults User Stories, functional and non-functional requirements that are reported in D5.1 will be further elaborated into the components’ technical requirements and will be used for the design of the DataVaults Architecture in the context of D5.2. The content of this deliverable will also provide input to the components’ implementation activities of WP3 and WP4, as well as to the DataVaults platform development in WP5.

1.3 DOCUMENT STRUCTURE

The following sections of the specific deliverable are structured as follows:

- Section 2 presents the definition of the DataVaults Requirements Engineering process, discussing the different phases that have been employed for the elicitation of the user stories and the requirements
- Section 3 presents the various actors that will utilize the DataVaults platform
- Section 4 provides a mapping of the features identified in WP1 to the initial components of the architecture
- Section 4 presents the list of epics and user stories, grouped based on the components identified in the previous section.
- Section 6 delivers the list of functional and non-functional requirements of the platform.
- Section 7 concludes this deliverable.

2 DATAVAULTS REQUIREMENTS ENGINEERING

For extracting the functional and non-functional requirements of DataVaults, the basis of the work followed principles of Agile methodologies, adapted as necessary to accommodate the needs of the project. Agile, compared to other requirements elicitation methods, is highly people-focused and communications-oriented. Agile planning is adaptive, focused on quick responses to change through continuous development and improvement. As such, it is considered as highly suitable for projects such as DataVaults where the full list of requirements cannot be entirely collected at the beginning of the software development cycle; every aspect of development — requirements, design, etc. — is continually revisited to have time to properly steer the project to the right direction.

The next figure presents a well-known representation of the general Agile methodology development process.



Figure 2 - Agile methodology ¹

As depicted above, when a project is developed in an agile manner, it is truncated into smaller increments, that minimize overall risk and allow the product to adapt to changes quickly. Iterations are short time frames, each involving a cross-functional team working in all activities necessary to deliver the final output of the time frame. Thus, once requirements are agreed at the beginning of such a time frame and an objective and target is set, all involved team members take part in planning discussions, in the analysis and design of the solution, in the coding, testing and acceptance actions to achieve the final output.

In general, the overall workflow following this iterative process:

- a) Initially, user features for the next product increment are defined and clearly specified. Features are described as User Stories. To prepare the acceptance of a User Story by the Product Owner (see below), acceptance criteria are defined. Only if criteria are fulfilled, the user story will be accepted by the Product Owner.
- b) Prior to commencing the development process, the system architecture is designed or updated by the system architects and developers.
- c) The software is developed, always considering the predefined test criteria.
- d) The acceptance criteria are translated into test cases. The test cases will be applied to the product increment.

¹ Image Source: ApplInventiv

- e) The development team presents the new features of the product increment to the Product Owner. The Product Owner checks if the requirements are fulfilled completely. In case of required changes new User Stories are defined.

One of the main characteristics of the agile development is the assignment of activities to precise specified roles[1]. The table below provides an overview of these roles.

Table 1 - Phases, Roles and Activities in an Agile Software Development Process

Product Owner	The viewpoint of the product owner is the perspective of the customer. The product owner translates the product related interest of the customer into a functional description – so-called User Stories - which will feed into the development process. By assigning a priority to a functionality, the product owner determines the sequence of functions development. Finally, the product owner checks during an acceptance if the functional requirement has been implemented completely and correctly.
System Architect	A System Architect is a developer with special skills. A system architect designs the system architecture to ensure, among other things, reliability, availability and maintainability of the product during the development process.
Developer	A developer executes development task to realise the functional request defined by the product owner.
Quality Assurance	The Quality Assurance ensures during the development that newly implemented functions are working as specified and that the rest of the product works still faultless.

For the latter to be successful, it is important that there is a continuous close collaboration between the development team and the business stakeholders of a project. To facilitate this necessity, user stories come into the picture, which can provide an easy to comprehend interpretation of the actions that technical components should execute.

2.1 THE DATAVAULTS AGILE REQUIREMENTS ENGINEERING PROCESS

The requirements engineering process has been already initiated in WP1 of the project, which included a strong collaboration between all technical and demonstrator partners. Based on this collaboration, the work performed in D5.1 is the natural follow-up of the outcomes of the WP1 actions. Hence the high-level requirements identified in D1.1 and D1.3 which served as the basis of the material necessary to perform the required requirements engineering processes. In more detail, the breakdown of the DataVaults methodology has been taken into consideration which is the following:

- Phase I: Data Retrieval
- Phase II: Data Transformation & Enrichment
- Phase III: Asset Storage at Individual's Side
- Phase IV: Asset Sharing to DataVaults Cloud Platform
- Phase V: DataVaults Cloud Platform Asset Storage
- Phase VI: Asset Exploration & Extraction
- Phase VII: Data Analytics
- Phase VIII: Added Value Services

As documented in D1.3, each one of those phases consists of one or more operations and illustrates how the different stakeholders interact with the DataVaults framework. These

phases or steps will be used to cluster the user requirements and the User Stories to functional sets, which will be the input for the next step, the technical requirements definition, in D5.2 and the technical architecture. Having these as input, and through the collaboration of technical partners, a comprehensive perspective of the overall components and their interactions (in technical terms) will be formulated. The initial business user stories (coming from D1.1) have been collected and analysed by the technical partners to extract the first set of technical user stories and identify the different actors and components.

The user stories that are presented in this deliverable follow a structure agreed at consortium level and serve as raw content to materialize to the various functional and non-functional requirements of the platform. The later will be verified by the demonstrator partners as the core functionalities that the platform should offer (specific demonstrator-tailored requirements will be defined in WP6 of the project).

The following figure presents an overview of the major steps of the requirement engineering tasks in DataVaults.

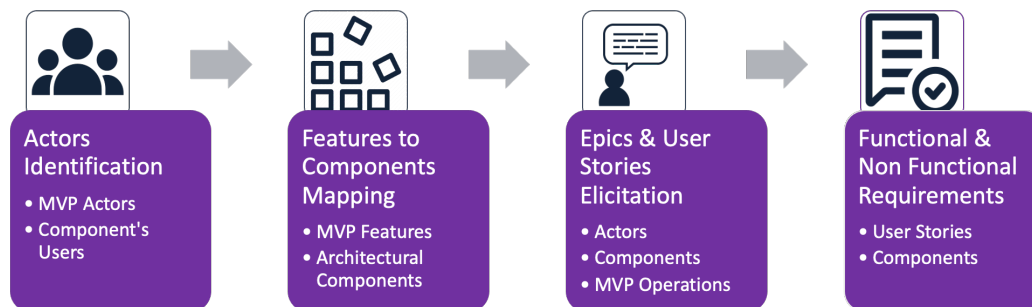


Figure 3 - DataVaults Requirement Engineering Process

The following table assigns the agile instruments to the DataVaults adapted instruments and lists the activities and the responsible work-packages and partners.

Product Owner	The Product Owners in DataVaults are the demonstrator partners who are the ones to use the platform's features.	WP1, WP6: ANDAMAN7, MIWENERGIA, OLYMPIACOS, PIRAEUS, PRATO
System Architect	Represented in DataVaults by the partners who are designing and implementing the overall technical product. Their activities are the derivation of technical requirements out of user requirements, the definition of User Stories and implementation of the product increments under WP3, WP4 and WP5	WP3, WP4, WP5: FOKUS, ASSENTIAN, ATOS, DTU, FAG, IFAT MAGIOLLI, SUITE5, TECNALIA, UBITECH, UNISYSTEMS
Developer		
Quality Assurance	Represented in DataVaults by the partners defining and implementing the testing plan of the platform and activities, as well as the validation and evaluation framework, which ensures a comparable assessment of each platform increment combined with the application of the related demonstrator scenarios.	WP5: ATOS, UBITECH, MAGGIOLI WP6: ANDAMAN7, MIWENERGIA, OLYMPIACOS, PIRAEUS, PRATO

2.1.1 Actors Identification

The first step in the process identified above is the identification of the different actors of the overall DataVaults solution. This identification has been grounded on the main actors identified in deliverable D1.3 “DataVaults MVP and Usage Scenarios” and on the operations and scenarios that each technical component is designated to execute. Following these, a brainstorming exercise takes place to discuss other potential actors, while at a second stage a screening of the different user stories is performed to identify any extra actors that have not been identified before.

2.1.2 Features to Components Mapping

Afterwards, the set of features that compose the DataVaults MVP, outlined in D1.3, is mapped to the components of the initial DataVaults Architecture (as per DoA).

This task except for providing a rough idea of the functionalities that should be incorporated by the various DataVaults components, is crucial for the validation of the initially proposed DataVaults architecture and helps in the identification of components that were initially not foreseen. Also, it will serve as the basis for the definition of responsible partners to lead the elicitation of component-specific user stories in the next step of the methodology

2.1.3 Epics and User Stories Elicitation

The next step is the identification of Epics and then User Stories. Epics are larger pieces of product functionality that are in general too big to be completed during one increment and need to be broken down in smaller pieces which are the ones that will define the requirements. These pieces are called User Stories.

In literature, user stories are a very high-level definition of requirements, describing a feature told from the end user’s perspective (i.e., who desires the new capability), usually a user or customer of the system.

A user story is short, generally one-sentence containing enough information to describe a requirement, so that the developers can produce a reasonable estimation of the effort to implement it.

A user story typically follows a simple structure:

As a <user-type>, I want to <user-requirement> so that <reason>.

In general, a specific sheet is created to capture user stories, which contains the following information:

- ID: an arbitrary ID to identify the user story
- EPIC: Defined as a large functional topic that needs to be broken down in smaller stories to find out the requirements.
- USER STORY: A short sentence describing the overall requirement from an actor perspective. IN more detail, a user story is truncated in the following parts:
 - As a <role>: through a dropdown list, it is the role of the subject of the story
 - I want to <do a thing>: the functionality to be added to the solution; this field is free

- so that I can <reason>: the added value of the development suggested; this field is free
- PRIORITY: it is a priority value (1(low) to 5(high)) given from who defined the user story
- VALUE: it is the added value (1(low) to 5(high)) to the solution from the defined story (from the pilot-user point of view)
- COMPLEXITY: provides an estimation on the complexity (1(low) to 5(high)) of implementing the user story
- ACCEPTANCE: the conditions (result at the system level) of satisfaction of the story.

The following table provides a snapshot of the filled-in template used in DataVaults to collect the user stories per component.

ID #	Related Component	Related Epic	User Story			Priority	Value	Complexity	Acceptance Criteria
			As a <Role>	I want to <Action>,	so that <Reason>				
US_194	Personal DataVaults Wallet	Pseudonym Management	Data Provider	use multiple blockchain addresses	I keep the data from unrelated sources separate.	5	5	3	The application must support the usage of multiple addresses ("pseudonyms") for every user.
US_195	Personal DataVaults Wallet	Pseudonym Management	Data Provider	see a list of all my blockchain addresses	I can view my previously used addresses.	3	3	1	The application lists all previously used addresses with the associated data categories.
US_196	Personal DataVaults Wallet	Individual Account Exploration	Data Provider	display the value of all accounts in my wallet	I can evaluate the worth of the previous sharing activities.	5	5	1	An overview must inform the user about the total currency value held in the individual accounts.
US_197	Personal DataVaults Wallet	Individual Account Creation	Data Provider	create a new account	a new pseudonym is used for subsequent data uploads.	5	5	1	The application must provide a functionality to create new ledger accounts.

Table 2 – User Stories Capturing Template

2.1.4 Functional and Non-Functional Requirements Elicitation

Once the user stories are collected, the next step is to extract requirements from them. The requirements are then classified in the following two main categories; functional requirements, and non-functional requirement.

2.1.4.1 Functional Requirements

A functional requirement is the declaration of the intended functionality of a system and its components as reported by a hypothetical non-technical observer. A functional requirement is facilitating the development team to determine the expected behaviour or output of the system in the case of a certain input and addresses a specific technical problem. Additionally, within the functional requirements the outputs of the envisioned product increment when receiving the described input is described. Depending on the degree of efficiency they can be split into “platform”- and “demonstrator”- oriented functional requirements.

In general, requirements do not have such a strong definition schema like User Stories but need to own a set of characteristics in order to be useful as an input for the design and development process[2]. These characteristics are listed in the following table.

Table 3 – Requirements Characteristics

Characteristic	Meaning for the requirements
Unambiguous	The requirements cannot be interpreted in different ways. There is a clear understanding and open issues have been indicated.
Understandable	The requirements are understandably described for all the possible stakeholders. Notations and models are adapted to the target group.
Complete	The requirements describe the functionality completely
Consistent	The requirements must be consistent according to the content, the degree of abstraction and the description.
Current	The requirement has not been made obsolete by the passage of time.
NonConjugated (Atomic)	The requirement is atomic, i.e., it does not contain conjunctions
Verifiable	The requirements are weighted by their importance. The requirements are testable and can be measured unambiguously
Traceable	The requirements are clearly identified and include information on status, author, version, etc. They are linked at least with one test case and if it is necessary, they are linked horizontally and vertically to other requirements of comparable abstractions.
Relevant	The requirements are necessary to implement the properties, which have at least a concrete benefit for one target group
Feasible	The requirements can be implemented within the resources and the technology to be used. The complexity of the implementation is estimated and arranged.

Having the aforementioned characteristics in mind, a template document has been generated to elicit the requirements. Following this, a requirement is described based on the following fields.

- ID: an arbitrary ID composed by the technical partner name and a number
- EPIC: The Epic/Macro-function to which this requirement is related to
- DESCRIPTION: the description of the requirement
- RELATED USER STORIES: the user stories ID from which the requirement comes from.

A snapshot of the overall requirements list is presented in the following figure.

ID	Epic	Description	Related User Stories	Comments
FR_143	Individual Account Creation	DV should allow the users of the Personal DataVaults App initiate the account creation process by providing minimal information (email, password).	US_10	
FR_144	Individual Account Creation	DV should send a verification email to the newly registered users and finalise the account creation after the verification is completed	US_11	
FR_145	Individual Account Creation	DV should allow the users of the Personal DataVaults register using an existing account at a third-party app, such as Google or Facebook account.	US_12	

Figure 4 – Functional Requirements Capturing Template

2.1.4.2 Non-functional Requirements

According to ISO/IEC 25010:2011 [3], non-functional requirements are the ones that define system attributes such as security, reliability, performance, maintainability, scalability and

usability. Non-Functional Requirements are also referred to as system qualities and are of same criticality as functional requirements, as they safeguard the usability and effectiveness of the entire system. Failing to meet any of them can result in systems, that fail to satisfy business or markets or user needs [4]. In some cases, non-functional requirements cannot be resolved to one function or component or layer in the overall system architecture, while they might not be testable directly, but should always be present to allow developers to make the correct choices during the implementation phases of each product.

To identify the not functional requirements, the model proposed by ISO/IEC 25010:2011 was adopted. Following that model there are eight quality characteristics contributing to software product quality.

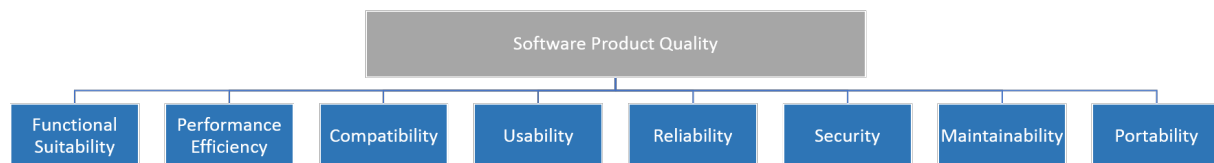


Figure 5 – ISO/IEC 25010:2011 Software Product Quality model

Each characteristic deal with a specific framework within the software product quality; to have a better understanding of them, they can be well detailed (ISO/IEC 25010:2011) in sub-categories as reported in the following table.

Table 4 – ISO/IEC 25010:2011 Software Product Quality Model Sub-Categories

Quality characteristic	Sub-categories
Functional Suitability	<ul style="list-style-type: none"> • Functional Completeness • Functional Correctness • Functional Appropriateness
Performance Efficiency	<ul style="list-style-type: none"> • Time Behaviour • Resource Utilization • Capacity
Compatibility	<ul style="list-style-type: none"> • Co-existence • Interoperability
Usability	<ul style="list-style-type: none"> • Appropriateness Recognisability • Learnability • Operability • User Error Protection • User Interface Aesthetics • Accessibility
Reliability	<ul style="list-style-type: none"> • Maturity • Availability • Fault Tolerance • Recoverability
Security	<ul style="list-style-type: none"> • Confidentiality • Integrity • Non-repudiation • Authenticity

	<ul style="list-style-type: none">• Accountability
Maintainability	<ul style="list-style-type: none">• Modularity• Reusability• Analysability• Modifiability• Testability
Portability	<ul style="list-style-type: none">• Adaptability• Installability• Replaceability

3 DATAVAULTS ACTORS

The main actors of DataVaults, after the different consultation and desk research phases conducted following the requirement elicitation process, do not differ from those identified in deliverable D1.3.

For the sake completeness, these are re-listed in this section and are:

3.1 DATA PROVIDER/INDIVIDUAL

A Data Provider (or as mentioned in D1.3 an “Individual”) is a private person who generates and collects his/her own personal data from various services, devices and applications. An Individual uses the DataVaults Personal App to construct his/her own unified personal data hub and collect at a single place all their personal data in a secure and trusted manner. At the same time, an Individual manages his/her personal data and decides what to share and with whom, receiving compensation for the data assets they place at the disposal of third parties. An Individual connects to the DataVaults Personal App which is installed on a given device, or directly via web-based access and its main activities include collecting personal data, configuring sharing parameters for those data, as well as analysing them at a basic level.

3.2 DATA SEEKER

A Data Seeker (also titled as 1st-tier Economic Operator, as per the DoA) is an organisation of any type, public or private. A Data Seeker is interested in acquiring Primary Personal Data from Individuals and create business intelligence based on it. A Data Seeker has or wishes to have the ability to combine Primary Personal Data (e.g., social media activity) with other types of data she already possesses (e.g., demographic data) with a goal to create new datasets or relevant derivatives (insights, reports, etc.). A Data Seeker connects to the DataVaults Cloud Platform via an API or via web-based access and its main activities include exploring, acquiring and analysing Primary Personal Data from Individuals.

3.3 DATAVAULTS PERSONAL APP

The DataVaults Personal App or Personal DataVaults (as per the DoA,) is the personal side of DataVaults, which resides at the side of Individual users. The DataVaults Personal App retrieves personal data from various data sources (services, devices and applications), transforms them and stores them locally. The DataVaults Personal App offers capabilities to the Individual user to manage data access policies, configure data sharing parameters, analyse and visualize their data and remain aware of privacy exposure. Finally, the DataVaults Personal App connects to the Private Ledger of the Individual user and interacts with the DataVaults Cloud Platform.

3.4 DATAVAULTS CLOUD PLATFORM

The DataVaults Cloud Platform is the central part of the DataVaults architecture, residing in the cloud. The DataVaults Cloud Platform stores personal data of Individual users in the cloud upon user selection, indexes them and creates an Encrypted Searchable Data Lake, which

includes metadata and data samples and allows the operation of certain searchable encryption. The DataVaults Cloud Platform anonymises personal data of Individual users by implementing the Digital Twin Generator and the Persona Group Generator. The DataVaults Cloud Platform allows Data Seekers to search through encrypted and anonymised personal data of Individuals and express their interest to acquire them. At this point, the DataVaults Cloud Platform composes and validates contracts, in order to grant access to the data assets for the Data Seekers and to compensate the Individual who provided them. Finally, the DataVaults Cloud Platform allows Data Seekers to explore and analyse data assets and experiment within the DataVaults platform, by combining the extracts of personal data with their own (private) data and by running various analytics.

3.5 DATAVAULTS DATA SCIENTIST

A DataVaults Data Scientist is a technical user who is familiar with data analytics and aware of algorithms and statistics for data analysis. A DataVaults Data Scientist is well trained on the use of analytics engines and is tasked to work on the data available over the DataVaults Cloud platform, in order to generate insights which might be of interest for different Data Seekers. Such insights are for example Personas, that can be created by Data Scientists and be offered to Data Seekers.

4 DATAVAULTS – FEATURES TO COMPONENTS MAPPING

In this section, features extracted in D1.3 are mapped to the identified architectural components of the DataVaults Architecture.

The features have been extracted in D1.3 from the combination of the methodology and the DataVaults operational scenarios, and describe the offerings of DataVaults, as “high-level” functionalities, in a technical view. In D1.3 they have been divided into two categories: features envisioned for the DataVaults Personal App and feature for the DataVaults Cloud Platform. In this exercise, however, we dive deeper, in order to recognize the specific components that will be responsible for delivering the described functionalities and be able to further analyse in next steps the underlying requirements stemming from this high-level functionality.

The initial DataVaults architecture (to be detailed and revised in D5.2) and its structural components are presented in the following figure:

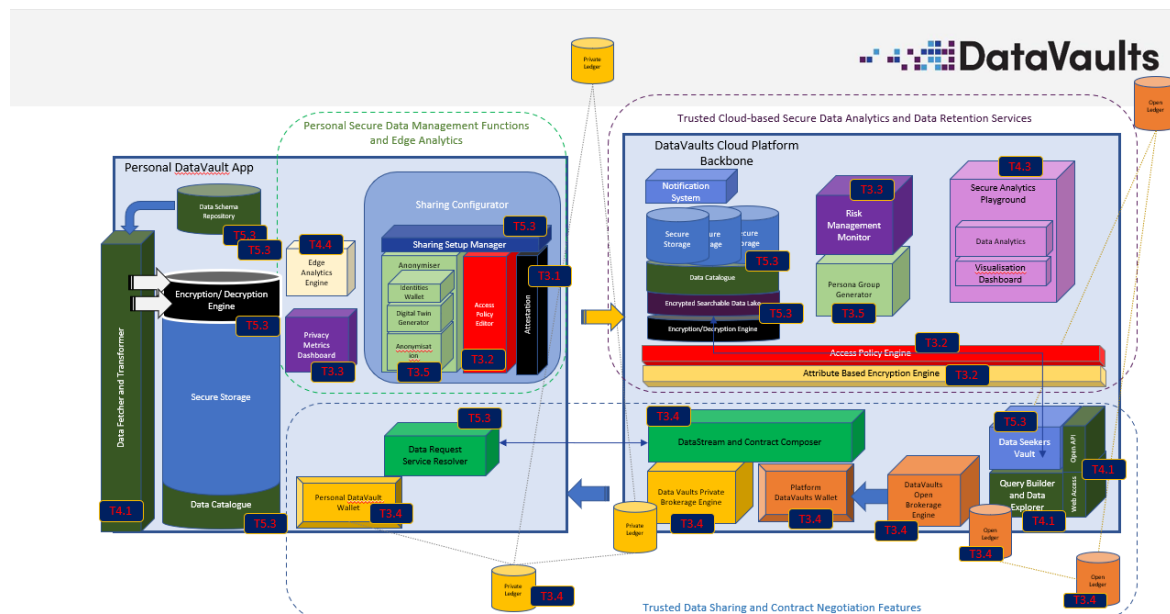


Figure 6 - DataVaults Initial Architecture

During the feature to components mapping exercise, the need for some additional components to deliver envisioned functionalities arose. Thus, the figure presented here has been updated with the introduction of two additional components under the DataVaults Cloud Backbone: the Notification System and the Data Seekers Vault. Additionally, the presence of Anonymiser components on both the personal and the cloud side, was considered superfluous as Anonymisation should happen at the side of the Individual for increased privacy, and the cloud anonymizer has been excluded from the picture. It should be noted that this is an initial version, serving as a basis for this mapping exercise. The DataVaults Architecture will be further elaborated, and the first official version will be available in the context of D5.2.

The following tables present the results of the mapping exercise. As with D1.3, the features are grouped under the label that occurred from their prioritization by the consortium partners, based on their business value and expected complexity. The resulting groups of

features were the following four: *“Highly valuable and not complex”*, *“Highly valuable and complex”*, *“Not highly valuable and not complex”*, *“Not highly valuable and complex”*.

Regarding the naming codifications, features related to Cloud components are denoted with *“DVPLAT_F_xx”*, while features foreseen for the DataVaults Personal App are denoted with *“DVPERS_F_xx”*. For the mapping to subcomponents, we used the following naming convention; we present both the subcomponent and the parent component, separated with a dot, for direct alignment with the user stories cards that are grouped at component level.

Table 5 - Highly Valuable and Not Complex

Feature ID	Feature Title	Related Component(s)
DVPERS_F_30	Save sharing configuration	Sharing Configurator. Sharing Setup Manager
DVPERS_F_31	Use of existing sharing configuration template for a new data asset sharing job	Sharing Configurator. Sharing Setup Manager
DVPERS_F_25	Configuration of license(s)	Sharing Configurator. Access Policy Editor
DVPERS_F_04	Request for advanced profile information – Individual’s profile enrichment	Personal DataVaults App; Personal DataVaults App. Data Fetcher & Transformation
DVPERS_F_09	Test data source connection and data availability	Personal DataVaults App. Data Fetcher & Transformation
DVPLAT_F_20	Data Seekers assets vault	DataVaults Cloud Platform Backbone. Data Seekers Vault
DVPLAT_F_31	Visualisation of data analysis results on a dashboard	Secure Analytics Playground. Visualisation Dashboard
DVPERS_F_36	Information on the Digital Twin Identities owned by the Individual	Sharing Configurator. Digital Twin Generator; Sharing Configurator. Identities Wallet
DVPLAT_F_37	Availability of data analysis results through an API	Secure Analytics Playground. Data Analytics; DataVaults Cloud Platform Backbone. Data Seekers Vault
DVPERS_F_19	Indexing of data assets at local storage	Personal DataVaults App. Data Catalogue
DVPLAT_F_19	Data Seekers transaction log	DataVaults Public DLT Engine
DVPERS_F_37	Notifications generated by DataVaults Personal App	DataVaults Cloud Platform Backbone. Notification System

DVPLAT_F_23	Exporting acquired data assets from the DataVaults Cloud Platform	DataVaults Cloud Platform Backbone. Data Seekers Vault
DVPLAT_F_40	Notifications generated by DataVaults Cloud Platform	DataVaults Cloud Platform Backbone. Notification System
DVPERS_F_20	Storage of data assets at local storage	Personal DataVaults App. Secure Storage
DVPERS_F_26	Configuration of price tag(s)	Sharing Configurator. Sharing Setup Manager
DVPERS_F_21	De-authorisation of connection with given data source	Personal DataVaults App; Personal DataVaults App. Data Fetcher & Transformation
DVPLAT_F_39	Complete erasure of data from the Analytics Playground	Secure Analytics Playground. Data Analytics
DVPLAT_F_36	Availability of data analysis results for download in various formats	Secure Analytics Playground. Data Analytics; DataVaults Cloud Platform Backbone. Data Seekers Vault
DVPERS_F_08	Data collection configuration options	Personal DataVaults App. Data Fetcher & Transformation
DVPLAT_F_14	Navigation through query results in the unencrypted data lake	Query Builder and Data Explorer. Web Access; DataVaults Cloud Platform Backbone. Secure Storage; DataVaults Cloud Platform Backbone. Data Catalogue
DVPLAT_F_34	Storage of data analysis results	Secure Analytics Playground. Data Analytics; DataVaults Cloud Platform Backbone. Data Seeker Vault
DVPERS_F_13	Semantic annotation/enrichment of data assets	Personal DataVaults App. Data Fetcher and Transformation
DVPERS_F_24	Configuration of access policies	Sharing Configurator. Access Policy Editor
DVPLAT_F_17	Transferring value for acquired data assets to the DataVaults Platform	DataVaults Public DLT Engine
DVPERS_F_22	Removal of personal data from local storage	Personal DataVaults App. Secure Storage
DVPERS_F_35	Individuals transaction log	DataVaults Private DLT Engine
DVPERS_F_02	Population of Individual's profile	Personal DataVaults App

DVPERS_F_18	Encryption of personal data at the Individual's side	Personal DataVaults App. Encryption/Decryption Engine
DVPLAT_F_13	Construction of simple or complex data asset queries	Query Builder and Data Explorer
DVPERS_F_10	Apply data quality check	Personal DataVaults App. Data Fetcher & Transformation
DVPERS_F_06	Authorise DataVaults Personal App to collect data from local data sources	Personal DataVaults App; Personal DataVaults App. Data Fetcher & Transformation
DVPLAT_F_11	Data Seekers profile authenticity validation	DataVaults Cloud Platform Backbone
DVPLAT_F_09	Removal of data assets from DataVaults Cloud Platform	DataVaults Cloud Platform Backbone. Secure Storage
DVPLAT_F_07	Storage of data assets at DataVaults Cloud Platform	DataVaults Cloud Platform Backbone. Secure Storage
DVPLAT_F_08	Indexing of data assets at DataVaults Cloud Platform	DataVaults Cloud Platform Backbone. Data Catalogue

Table 6 - Highly Valuable and Complex

Feature ID	Feature Title	Related Component(s)
DVPERS_F_14	Data assets linking	Personal DataVaults App. Data Fetcher and Transformation
DVPLAT_F_26	Configuration of data analytics task	Secure Analytics Playground. Data Analytics
DVPERS_F_01	Ability of Individual to register/login using third-party identity providers	Personal DataVaults App
DVPLAT_F_16	Custom data asset request from a Data Seeker	DataStream and Contract Composer; Data Request Service Resolver
DVPLAT_F_02	Generation of Digital Twin	Anonymizer. Digital Twin Generator; Anonymiser. Identities Wallet
DVPERS_F_23	Configuration of sharing anonymisation level	Sharing Configurator. Anonymiser
DVPLAT_F_03	Generation of Personas	Persona Group Generator

DVPLAT_F_15	Navigation through query results in the encrypted data lake	Query Builder and Data Explorer; DataVaults Cloud Platform Backbone. Encrypted Searchable Data Lake
DVPLAT_F_01	Transferring value of shared data assets to the Individual	DataVaults Private DLT Engine
DVPLAT_F_18	Management of public DataVaults contract for data asset acquisition	DataStream and Contract Composer; DataVaults Public DLT Engine
DVPERS_F_11	Implement data transformations on fetched data	Personal DataVaults App. Data Fetcher and Transformation
DVPLAT_F_41	Right to be forgotten	Personal DataVaults App; DataVaults Cloud Platform Backbone
DVPLAT_F_42	Right to data portability	Personal DataVaults App; DataVaults Cloud Platform Backbone
DVPERS_F_28	Assessment of sharing privacy exposure	Privacy Metrics Dashboard; Risk Management Monitor
DVPLAT_F_06	Enable searching over shared encrypted data assets	Query Builder and Data Explorer
DVPERS_F_07	Connect Personal DataVaults App to external data sources	Personal DataVaults App. Data Fetcher and Transformation
DVPERS_F_12	Mapping data to DataVaults schema	Personal DataVaults App. Data Fetcher and Transformation
DVPLAT_F_05	Encryption of data assets at the DataVaults Cloud Platform	DataVaults Cloud Platform Backbone. Encryption/Decryption Engine
DVPLAT_F_04	Enforcement of data access policies	Access Policy Engine
DVPERS_F_34	Management of private DataVaults contract for data asset transfer	DataStream and Contract Composer; DataVaults Private DLT Engine

Table 7 - Not Highly Valuable and Not Complex

Feature ID	Feature Title	Related Component(s)
DVPLAT_F_35	Storage of visualizations as assets	Secure Analytics Playground. Visualisation Dashboard; DataVaults Cloud Platform Backbone. Data Seekers Vault
DVPLAT_F_33	Storage of visualisation configuration	Secure Analytics Playground. Visualisation Dashboard; DataVaults Cloud Platform Backbone. Data Seekers Vault
DVPLAT_F_21	Present disk usage quotas to Data Seekers	DataVaults Cloud Platform Backbone
DVPERS_F_33	Generation and management of a sharing schedule	Sharing Configurator. Sharing Setup Manager
DVPLAT_F_22	Upload own data to the Data Seekers assets vault	DataVaults Cloud Platform Backbone. Data Seekers Vault
DVPLAT_F_32	Customisation of visualisation dashboard	Secure Analytics Playground. Visualisation Dashboard
DVPLAT_F_24	Remote access to acquired data assets via the DataVaults Cloud Platform	DataVaults Cloud Platform Backbone
DVPLAT_F_10	Data Seekers profile editing	DataVaults Cloud Platform Backbone
DVPERS_F_32	Edits on saved sharing configuration	Sharing Configurator. Sharing Setup Manager
DVPLAT_F_38	Availability of visualization results for download in various formats	Secure Analytics Playground. Visualisation Dashboard; DataVaults Cloud Platform Backbone. Data Seekers Vault
DVPLAT_F_25	Present analytics time quotas to Data Seekers	Secure Analytics Playground. Data Analytics
DVPERS_F_05	Display profile completion status	Personal DataVaults App
DVPLAT_F_29	Storage of data analytics task configuration	Secure Analytics Playground. Data Analytics
DVPERS_F_15	Local visualisation of datasets	Edge Analytics Engine
DVPERS_F_29	Selection of DAA method at sharing by an Individual	Personal DataVaults App; Sharing Configurator. Attestation

Table 8 - Not Highly Valuable and Complex

Feature ID	Feature Title	Related Component(s)
DVPERS_F_03	AutoPopulation of Individual's profile	Personal DataVaults App
DVPLAT_F_30	Suggestion of pre-defined data analytics chains	Secure Analytics PlayGround. Data Analytics
DVPLAT_F_27	Creation of a chain of data analytics tasks	Secure Analytics PlayGround. Data Analytics
DVPLAT_F_28	Compatibility check of data assets with selected analytics task(s)	Secure Analytics PlayGround. Data Analytics
DVPERS_F_16	Running edge analytics	Edge Analytics Engine
DVPERS_F_17	Generating assets from the outputs of edge analytics	Edge Analytics Engine
DVPLAT_F_12	Apply DAA method to Data Seeker connection	DataVaults Cloud Platform Backbone
DVPERS_F_27	Suggestion of data asset price setting	Sharing Configurator

5 DATAVAULTS EPICS AND USER STORIES

5.1 DATAVAULTS PLATFORM EPICS

Following the results of WP1, a set of operations has been identified under the various phases, which constitute the main concepts out of which the various epics of the platform's operations will be elicited. The list below presents the main epics, which are thought to provide the main high-level functionalities of the DataVaults platform.

The formulation of Operations into Epics is not a one-to-one relation. Some Operations imply various and conceptually separate functionalities, thus they have been broken into more than one Epic (ex. Operation VII.3: Persona Creation corresponds to four distinctive Epics), while other operations may be greatly interrelated thus resulting in a combined Epic (ex. Operation II.1: Data Quality Check & Transformation, Operation II.2: Semantic Enrichment & Annotation and Operation II.3: Data Linking are combined under the "Data Transformation" Epic).

It should also be noted that in D1.3, user-management related activities were not considered part of the core DataVaults methodology. However, they are crucial for the overall functionality of the platform, thus at this stage, some Epics were created that do not relate to a Methodological Phase or Operation. Furthermore, the need for the provision of background functionalities related to the smooth operation and exchange between components has been identified, resulting in the addition of "Orchestration" Epics.

Following is the list with the identified Epics that will be further broken in the relevant User Stories.

Table 9 – List of Epics

Methodology Operation	Epic	Description
Operation III.1: Asset Generation and Storage	EP_1. Analytics Configuration	User stories related to the configuration of various parameters of analytics or visualisation tasks to be executed on the Personal or Cloud side. This epic is further distinguished in "Edge" and "Cloud", respectively.
Operation VII.1: Cloud Based Data Analysis	EP_2. Analytics Execution	User stories related to the execution of a configured analytics or visualisation task on the Personal or Cloud side. This epic is further distinguished in "Edge" and "Cloud", respectively.
Operation VII.2: Data Visualisation		
Operation III.1: Asset Generation and Storage	EP_3. Analytics Results	User stories related to the presentation of the results from the execution of a configured analytics or visualisation on the Personal or Cloud side. This epic is further distinguished in "Edge" and "Cloud", respectively.
Operation VII.3: Persona Creation	EP_4. Persona Generation	User stories related to the creation of aggregated, anonymized data from individual data assets, i.e. Personas
	EP_5. Persona Editing	User stories related to the evolution of Personas.
	EP_6. Persona Sharing	User stories related to making the Personas available through the DataVaults Cloud Platform.

	EP_7. Persona Request	User stories related to the creation of Personas-on-demand after specific requests.
	EP_8. Persona Exploration	User stories related to browsing shared Personas and displaying their details.
Operation IV.1: Data Sharing Configuration	EP_9. Sharing Configuration	User stories related to the configuration of various parameters before sharing a personal data asset to the Cloud.
Operation VIII.2: Sharing Gains	EP_10. Sharing Management	User stories related to the management of stored sharing configurations and the update of already shared data assets.
Operation IV.3: Private Contract Management Operation V.2: DataVaults Cloud Platform Asset Storage Operation V.3: DataVaults Cloud Platform Asset Indexing Operation V.4: DataVaults Cloud Platform Asset Deletion	EP_11. Sharing Execution	User stories related to performing a sharing configuration by making the related data assets available to the Cloud.
Operation IV.3: Private Contract Management Platform Operation IV.4: Compensation Management Operation VI.2: Public Contract Management - Data Seeker – DataVaults Platform	EP_12. Currency Transaction	User stories related to the compensation and contract creation mechanism of DataVaults.
Operation VI.2: Public Contract Management - Data Seeker – DataVaults Platform	EP_13. Custom Contract	User stories related to the workflow of custom data requests through the creation of custom contracts.
Operation II.1: Data Quality Check & Transformation Operation II.2: Semantic	EP_14. Data Transformation	User stories related to the curation of data from external sources in order to ensure alignment and high quality.

Enrichment & Annotation		
Operation II.3: Data Linking		
Operation I.1: Data Retrieval Configuration	EP_15. Input Connection	User stories related to the establishment of connection between external sources and the DataVaults Personal or Cloud side. This epic is further distinguished in “Edge” and “Cloud”, respectively.
Operation I.2: Data Retrieval Implementation	EP_16. Input Configuration	User stories related to the configuration of various data collection parameters.
Operation I.3: Data Asset Retrieval Authorisation Revocation	EP_17. Input Configuration Management	User stories related to the management and modification of existing collection configurations.
Operation III.3: Local Asset Storage	EP_18. Input Execution	User stories related to the collection of data from the external data sources based on the defined collection configurations.
Operation III.4: Local Asset Indexing		
Phase VI: Asset Exploration & Extraction	EP_19. Output	User stories related to the export of data from the DataVaults Personal or Cloud side. . This epic is further distinguished in “Edge” and “Cloud”, respectively.
Phase VI: Asset Exploration & Extraction	EP_20. Asset Display	User stories related to the browsing of data assets on the Cloud side and the display of their details.
Operation VI.1: Asset Searching	EP_21. Query Configuration	User stories related to composition of a search query from various available search parameters.
	EP_22. Query Execution	User stories related to the execution of a search query over the Encrypted and Unencrypted Data Lakes.
Operation VI.3: Asset Export	EP_23. Query Results	User stories related to making available the results of an executed query.
	EP_24. Query Management	User stories related to the management and modification of existing queries.
N/A	EP_25. Account Creation	User stories related to the creation of a user account and the respective ledger account and secure storage on the Personal or Cloud side. This epic is further distinguished in “Individual” and “Seeker”, respectively.
	EP_26. Login	User stories related to the login of a user to her account on the Personal or Cloud side. This epic is further distinguished in “Individual” and “Seeker”, respectively.
	EP_27. Pseudonym Management	User stories related to the management of the user’s private ledger account(s).
	EP_28. Account Enrichment	User stories related to the population of a user profile on the Personal or Cloud side. This epic is further distinguished in “Individual” and “Seeker”, respectively.
	EP_29. Account Data Exploration	User stories related to the exploration of a user’s secure storage on the Personal or Cloud side. This epic is further distinguished in “Individual” and “Seeker”, respectively.

	EP_30. Logout	User stories related to the logout of a user from her account on the Personal or Cloud side. This epic is further distinguished in “Individual” and “Seeker”, respectively.
Operation III.5: Local Asset Deletion	EP_31. Account Deletion	User stories related to the deletion of a user account and the related data on the Personal or Cloud side. This epic is further distinguished in “Individual” and “Seeker”, respectively.
Operation III.2: Encryption at the Personal DataVaults Side	EP_32. Secure Data Management	User stories related to secure storage of data with use of encryption.
Operation V.1: Encryption and Access Policies Enforcement	EP_33. Trusted Sharing	User stories related to the privacy-preserving sharing of data assets using ABAC and Attestation.
Operation IV.2: Sharing Risk Information	EP_34. Risk Assessment	User stories related to the assessment of the privacy risk exposure of the DataVaults platform, the users and the individual data assets.
N/A	EP_35. Orchestration Task	User stories related to the smooth operation of the DataVaults components and their apt communication.
Operation VIII.1: Notifications	EP_36. Alerts	User stories related to notifications on the Personal or Cloud side. This epic is further distinguished in “Individual” and “Seeker”, respectively.

5.2 DATAVAULTS PLATFORM USER STORIES

This section contains the DataVaults user stories per component as identified by the different partners by fleshing out the epics and taking into consideration the features that have been mapped to the subsequent components.

5.2.1 User Stories for DataVaults Personal App

ID #	Related Component	Related Epic	User Story			Priority	Value	Comple xity	Acceptance Criteria
			As a <Role>	I want to <Action>,	so that <Reason>				
US_01	Encryption/Decryption Engine	Secure Data Management	Data Provider	be sure that when my personal data are collected from my connected data sources, they are not accessible to anyone else than me	my privacy and security are not at risk.	5	5	2	User's data in transit (from the connected data sources to DataVaults) shall be protected with the use of strong encryption ciphers (based on formally verified key derivation functions) during transport sessions
US_02	Encryption/Decryption Engine	Secure Data Management	Data Provider	be sure that data stored on my Personal DataVaults App will not be accessible to anyone else than me	my privacy and security are not at risk.	5	5	2	User's data at rest (stored on Personal DataVaults App) shall be protected with the use of strong encryption ciphers (based on formally verified key derivation functions).
US_03	Encryption/Decryption Engine	Secure Data Management	Data Provider	be sure that the encryption keys used to secure my data will not be made available to anyone else when I decide to share my data through the Cloud	my data that are protected with cryptographic techniques are not at risk.	5	5	4	User's secret keys (used for local storage) shall not be shared with third parties, as instead the encrypted cloud storage will use unique ABE keys managed by the DataVaults ABE Trusted Component during data sharing.

US_04	Secure Storage	Input Execution	Data Provider	store data that have been collected from my connected data sources to my DataVaults personal App	I can gather all my personal data at a single point and perform any further other actions with them.	5	5	2	User's collected data shall be persisted in the dedicated space for the specific user in the DataVaults infrastructure for personal apps
US_05	Secure Storage	Edge Analytics Results	Data Provider	store the results of selected analytics I have executed on my Personal DataVaults App as data assets	I can easily find the results of analytics over my personal data and use them as any other personal data asset.	3	3	3	User's analytics data shall be persisted (upon demand) in the dedicated space for the specific user in the DataVaults infrastructure for personal apps
US_06	Personal DataVaults App	Individual Account Exploration	Data Provider	view all the collected personal data that have been stored on my Personal Data Vaults App sorted by time	I can easily explore my personal data.	4	3	2	User shall be able to view a list of all the data assets collected from the connected sources, sorted in reverse time order.
US_07	Personal DataVaults App	Individual Account Exploration	Data Provider	search for specific data assets using keywords	I can easily explore my Personal data assets.	2	2	2	User shall be able to type keywords in a field and search in stored data assets.
US_08	Personal DataVaults App	Individual Account Exploration	Data Provider	filter data assets based on metadata values (such as "period, "data source")	I can easily explore my Personal data assets.	2	2	2	User shall be able to select one or multiple filters and view the matching data assets.
US_09	Personal DataVaults App	Individual Account Exploration	Data Provider	To have an overview about the data assets I have shared, under which pseudonym and the amount of currency I have earned from it	I keep track of my sharing activities	3	4	4	User shall be able to view a list of all the data assets she has shared with sharing and compensation information.

US_10	Personal DataVaults App	Individual Account Creation	Data Provider	create my account using some minimal information (username, mail, password)	I can start using the Personal DataVaults App as a new user.	5	5	1	User shall be able to create an account in the DataVaults Personal App by providing a username and/or her email address and a password.
US_11	Personal DataVaults App	Individual Account Creation	Data Provider	verify the email address for my new DataVaults Personal App account through a verification email	I have an extra security step and my email address is verified.	3	4	3	User shall receive a confirmation/verification email to the address she has provided during her registration, in order to finish the registration process.
US_12	Personal DataVaults App	Individual Account Creation	Data Provider	register using a third-party app such as my Google or Facebook account	I can start using the DataVaults Personal App as a new user and my account is automatically created using existing credentials/authentication information.	4	5	3	User shall be able to create an account in the DataVaults Personal App by providing her credentials for an existing account in a third-party app (Facebook, Google, other).
US_13	Personal DataVaults App	Individual Account Login	Data Provider	log in using the credentials I have provided during the registration process	I enter my DataVaults Personal App account.	5	5	1	User shall be able to log in her DataVaults Personal App by entering the credentials: username/email and password.
US_14	Personal DataVaults App	Individual Account Login	Data Provider	be provided with the "Forgot your password" option	I can get a new password, in a secure manner to access the DataVaults Personal App account	5	5	2	User shall receive an email with a link to reset her password, whenever she clicks on the "Forgot your password" option.
US_15	Personal DataVaults App	Individual Account Login	Data Provider	log in using a third-party app, whose credentials I have provided during the registration process	I enter my DataVaults Personal App account without the need to provide credentials - under the condition I am already logged-in the third-party app.	4	5	2	User shall be able to log in her DataVaults Personal App by entering the credentials of the connected third-party app, if she is not already logged in, or automatically, if she's already in her FB Google account.

US_16	Personal DataVaults App	Individual Account Enrichment	Data Provider	add/edit manually at any time some basic profile information, such as name, age, gender, country etc.	I personalise my profile and make available some information that may be used as metadata for my data assets.	5	5	2	User shall be able to edit her profile information through the UI.
US_17	Personal DataVaults App	Individual Account Enrichment	Data Provider	populate my basic profile information automatically from my account in a connected data source (such as my Facebook account), at any time	my profile is personalised with information already available in other apps and this information may be used as metadata for my data assets.	4	5	3	User shall be asked whether she wants to populate her profile from the connected Fb/Google/etc. account and if she accepts, then DataVaults gets all available profile information to fill the DV account.
US_18	Personal DataVaults App	Individual Account Enrichment	Data Provider	view my profile completion status	I know whether information is missing from my personal profile, that may be useful to complement my existing data assets.	3	3	1	User shall be able to view a profile completion percentage and a completion status bar (like LinkedIn) showing what is missing (ex. photo, education, hobbies etc.).
US_19	Personal DataVaults App	Edge Input Connection	Data Provider	select a third-party app from a list of available apps, to connect it to my DataVaults Personal App	my DataVaults Personal App initiates the data collection configuration process from this source.	5	5	3	User shall view a list of available apps and be provided with the option (button) to connect to her DataVaults Personal App those that are not already connected.
US_20	Personal DataVaults App	Edge Input Connection	Data Provider	manually authorise the DataVaults Personal App to collect data from a selected data source	my DataVaults Personal App can connect to this source.	5	5	2	User shall be asked whether she wants to authorise DataVaults to collect data from the specific data source.
US_21	Personal DataVaults App	Edge Input Connection	Data Provider	verify my account using my email address whenever I connect a new data source	I have an extra security step whenever I perform a data source connection to my	2	4	4	User shall receive an email to her verified email address, with a link to verify the connection to the third party app.

					DataVaults Personal app.				
US_22	Personal DataVaults App	Edge Input Connection	Data Provider	view a list of the connected data sources to my DataVaults Personal App	I have an overview from where my DataVaults Personal App collects data.	5	5	1	User shall view a list of the third-party apps/data sources that have been connected to her DataVaults Personal App.
US_23	Personal DataVaults App	Edge Input Connection	Data Provider	De-authorise DataVaults Personal App to collect data from a connected data source and delete the relevant collection configurations	DataVaults Personal App does no longer have access to the specific data source.	5	5	1	User shall be provided with the option to disconnect/de-authorise her DataVaults Personal App from a third-party app/data source in the connected apps list.
US_24	Personal DataVaults App	Individual Account Logout	Data Provider	log out from my DataVaults Personal App on my device	I can exit my account and no other user of the device can enter without going through the authentication/authorisation process.	5	5	1	User shall be provided with a log out option/button in her user management/settings tab, that will disconnect her from DataVaults personal App on the device.
US_25	Personal DataVaults App	Individual Account Logout	Data Provider	log out from my DataVaults Personal App on all logged in devices	I can exit my account and no other user a device I have used to log in my account, can enter without going through the authentication/authorisation process.	3	5	2	User shall be provided upon logout with the option to disconnect from all devices.
US_26	Personal DataVaults App	Individual Account Deletion	Data Provider	erase my account and remove all data from DataVaults	my data and profile are no longer part of the DataVaults Platform.	5	5	3	User shall be provided with the option in her user management/settings tab, to erase her profile and all associated and collected data from DataVaults.

US_27	Personal DataVaults App	Edge Output	Data Provider	download all my data	I can use them in any way I wish in other applications/devices etc. (data portability)	5	5	2	User shall be provided with the option in her user management/settings tab, to download all her data (profile information, collected data from data sources, data assets created from DataVaults Edge Analytics)
US_28	Personal DataVaults App	Edge Output	Data Provider	download a selection of my data	I can use them in any way I wish in other applications/devices etc. (data portability)	3	5	3	User shall be provided with the option in her user management/settings tab, to select some of her data to be downloaded profile information, collected data from data sources, data assets created from DataVaults Edge Analytics)
US_29	Personal DataVaults App	Individual Alerts	Data Provider	receive notifications from the DataVaults Personal App regarding important events	I become aware of such updates in near real-time.	3	4	2	User shall receive notifications on her DataVaults Personal App, either from the personal app or from other DataVaults components, for events such as the success/failure of a collection process, the success/failure of a sharing process etc.
US_30	Data Catalogue	Input Execution	Data Provider	my data to be stored in a well organised way	it is easier to retrieve them at a later stage	4	5	3	User's data shall be indexed using the appropriate technique prior to their storage in the Personal Data Storage
US_31	Data Catalogue	Input Execution / Edge Output	Data Provider	the search and retrieval of my stored data to happen in an efficient way	I can find and access the data I want, fast.	4	4	2	User shall be able to search and retrieve personal data in a fast and efficient way, as data queries will

									make use of the used indexes of the Data Catalogue.
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5.2.2 User Stories for Data Fetcher and Transformation

ID #	Related Component	Related Epic	User Story			Priority	Value	Complexity	Acceptance Criteria
			As a <Role>	I want to <Action>,	so that <Reason>				
US_32	Data Fetcher & Transformation	Input Configuration	Data Provider	view the available data and their metadata in the connected data source	I have an overview of which data are available from the connected data source.	5	5	3	The user shall be provided with a snippet of the data that are available in the data source.
US_33	Data Fetcher & Transformation	Input Configuration	Data Provider	manually select the specific data that will be collected from the connected data source	I have control on which data assets are collected by my DataVaults Personal app and exclude any data that I don't want to be transferred from the data source.	5	5	2	The user shall be able to select which of the available data she wants to be fetched from the source.
US_34	Data Fetcher & Transformation	Input Execution	Data Provider	execute a data collection configuration	I can collect data from the connected data source.	5	5	2	The collection task configured by the user shall be executed and the data are collected from the data source .
US_35	Data Fetcher & Transformation	Input Execution	Data Provider	save a data collection configuration	I can reuse it in the future.	3	3	3	The user shall be allowed to save a data collection configuration and it shall be available to the user for future use.
US_36	Data Fetcher & Transformation	Input Configuration	Data Provider	add a collection schedule to a collection configuration	I can configure a recurring collection process for the specific data source (e.g., once a day, once a week etc.)	3	3	2	A recurring collection task is executed multiple times based on the attached schedule.

US_37	Data Fetcher & Transformation	Input Configuration	Data Provider	configure how data from the intervals between recurring collections will be handled (e.g., collect only the data that were created on the collection date or collect all data that have been created since the latest collection date)	I can configure the "density" of the data that are collected in my DataVaults personal App.	3	5	4	A recurring collection task fetches data that was created in the meantime, based on the configuration of the user.
US_38	Data Fetcher & Transformation	Input Configuration	Data Provider	pause a collection schedule	I can stop my DataVaults personal App from collecting data from a specific data source for a time period and if I change my mind later, restart data collection using the same configuration	3	3	3	The users shall be provided with the option to freeze a collection task for a while. Any upcoming collections shall not be executed, until the user unfreezes it.
US_39	Data Fetcher & Transformation	Input Configuration Management	Data Provider	edit a saved data collection configuration	I can change the selected data, collection schedule etc.	3	3	3	The user shall be allowed to modify an existing collection configuration. The collection parameters of any upcoming collections are adapted accordingly.
US_40	Data Fetcher & Transformation	Input Configuration	Data Provider	remove a collection schedule from a saved configuration	the collection no longer happens automatically and recurringly.	3	3	3	The users shall be provided with the option to freeze a collection task for a while.
US_41	Data Fetcher & Transformation	Input Configuration Management	Data Provider	delete a data collection configuration	I completely discard a collection configuration I no longer need	3	3	3	The user shall be allowed to delete an existing collection configuration. Any upcoming collections should be removed also.

US_42	Data Fetcher & Transformation	Data Transformation	DataVaults Personal App	link different datasets from the collection tasks of one account	I know that these refer to the same Individual	3	5	4	All collected datasets under the same account should be interlinked.
US_43	Data Fetcher & Transformation	Data Transformation	DataVaults Personal App	semantically enrich the collected data	I can retrieve similar data from different sources with different representations.	4	5	3	Collected data shall be annotated with information and metadata.
US_44	Data Fetcher & Transformation	Data Transformation	DataVaults Personal App	do a Quality Check over the fetched data	I know, how to transform the data into the DataVaults data model.	5	5	3	The quality of the collected data shall be checked and any issues shall be addressed based on curation workflows.
US_45	Data Fetcher & Transformation	Data Transformation	DataVaults Personal App	I want to transform the fetched data into the DataVaults data model	I can ensure compliance with the available DataVaults schemas as well as the necessary data quality levels to achieve maximum usefulness and usability.	5	5	3	Data collected from data sources shall be mapped to the DataVaults data model, based on existing mapping configurations.

5.2.3 User Stories for Sharing Configurator

ID #	Related Component	Related Epic	User Story			Priority	Value	Complexity	Acceptance Criteria
			As a <Role>	I want to <Action>,	so that <Reason>				
US_46	Sharing Configurator. Sharing Setup Manager	Sharing Configuration	Data Provider	create a new sharing configuration, with all fields empty	I can share/upload to the DataVaults Cloud a data asset	5	5	4	User shall be provided with a "Share a data asset" option, available from the general menu.
US_47	Sharing Configurator. Sharing Setup Manager	Sharing Configuration	Data Provider	select inside the sharing configuration the	I can make a copy of the selected data asset to the DataVaults Cloud for	5	5	2	User shall be provided with a list of data assets available for sharing, inside the sharing configuration.

				data asset to be shared	private or sharing purposes.				
US_48	Sharing Configurator. Sharing Setup Manager	Sharing Configuration	Data Provider	select inside the sharing configuration the data source to be shared	I can make copies of data collected from the selected data source to the DataVaults Cloud for private or sharing purposes.	5	5	3	User shall be provided with a list of data sources available for sharing, inside the sharing configuration.
US_49	Sharing Configurator. Sharing Setup Manager	Sharing Configuration	Data Provider	select a data asset to be uploaded and/or shared to the DataVaults Cloud, from my Personal DataVaults App data assets	I can make a copy of the selected data asset to the DataVaults Cloud for private or sharing purposes.	5	5	2	User shall be provided with the option next to each data asset, to share it to the Cloud.
US_50	Sharing Configurator. Sharing Setup Manager	Sharing Configuration	Data Provider	select a connected data source to share data assets collected from there	I can make copies of data collected from this source to the DataVaults Cloud for private or sharing purposes.	5	5	3	User shall be provided with the option next to each connected data source to share data collected from it to the Cloud.
US_51	Sharing Configurator. Sharing Setup Manager	Sharing Configuration	Data Provider	select the anonymisation level of the selected data asset	I can choose what happens with the personally identifiable information that is available in the data asset that will be shared.	5	5	3	User shall be provided inside the sharing configuration with a list of available anonymisation levels (eponymous, digital twin, persona)
US_52	Sharing Configurator. Sharing Setup Manager	Sharing Configuration	Data Provider	select the sharing level for the selected data asset (public, private - access policies in effect, confidential -not to be shared)	I can choose whether the specific data asset will be available to others or will only be uploaded for me.	5	5	3	User shall be provided inside the sharing configuration with a list of available sharing levels (e.g., public, private, confidential) to select.
US_53	Sharing Configurator.	Sharing Configuration	Data Provider	select a time period for which the data	I control the availability of my data.	5	5	3	User shall be able to define for how long her data asset will be

	Sharing Setup Manager			asset will be available on the DataVaults Cloud for sharing					available on the DataVaults Cloud for sharing (one week, one month, unlimited, custom)
US_54	Sharing Configurator. Sharing Setup Manager	Sharing Configuration	Data Provider	select what part of the data asset and its metadata will be publicly available for preview purposes	I control what is available from my data and at the same time higher the chances of my data being purchased by Data Seekers.	4	5	4	User shall be able to create a preview of her data asset (title, description, part of the actual data - e.g., 2 rows), that will be viewable by Data Seekers (based on the defined access policies)
US_55	Sharing Configurator. Sharing Setup Manager	Sharing Configuration	Data Provider	select from a list of predefined licences that should be in effect for the shared data, regarding usage (e.g., no distribution, sharing with reference to source etc.), time (e.g., one-month, one year, forever)	I control that my data assets that are shared are used properly.	4	5	2	User shall be provided with a list of licences and their details to select from. Also, maybe links to legitimate sites with the detailed description of the licence. The various usage fields will be autocompleted according to the selected licence.
US_56	Sharing Configurator. Sharing Setup Manager	Sharing Configuration	Data Provider	edit the fields of the licence terms	I can customise the various licence parameters.	3	3	1	User shall be able to edit fields of the various licencing aspects and create a custom licence.
US_57	Sharing Configurator. Sharing Setup Manager	Sharing Configuration	Data Provider	view a suggested price for my data asset under the selected sharing options	I can decide easier on a price that maximises my earnings, while remaining competitive in the personal data market ecosystem.	3	5	4	User shall be provided with a price calculated by DataVaults, that balances maximum earning without overpricing, considering the various sharing aspects and the nature of the data to be shared.

US_58	Sharing Configurator. Sharing Setup Manager	Sharing Configuration	Data Provider	select a price tag for the data asset, under the selected sharing configuration (licence, anonymisation level etc.)	I can be compensated whenever the data asset is acquired by a Data Seeker.	5	5	1	User shall be able to input a price for the specific data asset to be shared under the selected terms.
US_59	Sharing Configurator. Sharing Setup Manager	Sharing Configuration	Data Provider	Select if I want DAA to be used during data sharing	my data asset will have an extra "trustworthiness" guarantee.	4	5	3	User shall be able to upload the data asset to the Cloud Platform with or without the use of DAA.
US_60	Sharing Configurator. Sharing Setup Manager	Sharing Execution	Data Provider	execute the configured sharing	my data asset is uploaded to the DataVaults Cloud Platform.	5	5	2	User shall be able to finalise the sharing configuration by selecting the "share" option. The data asset is uploaded to the Cloud, after the respective anonymisation, encryption, access policy creation tasks are completed.
US_61	Sharing Configurator. Sharing Setup Manager	Sharing Management	Data Provider	Modify the sharing parameters of a data asset I have already shared	my data asset is from this point shared under the new terms.	3	3	3	User shall be able to modify some of the parameters in an executed sharing configuration. Changes shall affect new purchases.
US_62	Sharing Configurator. Sharing Setup Manager	Sharing Management	Data Provider	save the sharing configuration at any stage	I can return to it at a later stage to continue or reload it for reuse.	3	3	2	user shall be able to save the sharing configuration at any stage and find it in the stored configurations.
US_63	Sharing Configurator. Sharing Setup Manager	Sharing Management	Data Provider	create a sharing schedule using a saved sharing configuration for a connected data source	my data assets are shared in an automated way and I don't have to reconfigure the sharing process again and again.	3	5	3	user shall be able to create a sharing schedule for a saved sharing configuration (every day, weekly, monthly and time)
US_64	Sharing Configurator.	Sharing Management	Data Provider	pause a sharing schedule	I freeze the sharing of specific data assets for a	2	3	2	User shall be provided with a "pause sharing" option for

	Sharing Setup Manager				while, until I decide to resume.				scheduled, and/or recurring sharing configurations.
US_65	Sharing Configurator. Sharing Setup Manager	Sharing Management	Data Provider	delete a sharing schedule	the specific sharing configuration is no longer a recurring event.	2	3	2	User shall be provided with a "delete schedule" option for scheduled, and/or recurring sharing configurations.
US_66	Sharing Configurator. Sharing Setup Manager	Sharing Management	Data Provider	delete a sharing configuration	I discard any sharing configuration I no longer wish to use.	2	3	2	User shall be provided with a "delete configuration" option for saved sharing configurations.
US_67	Sharing Configurator. Sharing Setup Manager	Sharing Management	Data Provider	load a saved sharing configuration for a new data asset to be shared	I can reuse an existing configuration and make any adaptations needed for the new data asset to be shared.	2	4	2	User shall be provided with the option to load an existing configuration, upon creation of a sharing configuration. All the fields of the configuration shall be loaded, and the user shall be able to edit all of them.
US_68	Attestation	Trusted Sharing	Data Provider	Authenticate my device in a privacy-preserving way	my data cannot be linked directly to my identity.	5	5	5	Communications must use DAA to initialize a privacy-preserving communication channel between the Personal App and the Cloud, unless the user selects to skip authentication or the devices does not support it.
US_69	Attestation	Trusted Sharing	Data Provider	I want to get informed if my device supports DAA	I am aware of whether the strictest privacy-preserving mode is available for me	3	4	2	User shall be provided with a notice on the availability of DAA for her device.
US_70	Attestation	Trusted Sharing	Data Provider	choose an alternative authentication method, in case my device does not support DAA	I have compatibility with my devices and avoid technology lock-in.	5	5	2	Alternative authentication methods must be provided to support devices without hardware-TPM.

US_71	Attestation	Trusted Sharing	Data Provider	have the strictest privacy-preserving technology enabled by default	I have the best privacy preservation without further configuration.	2	3	1	The strictest privacy-preserving mechanism of the platform must be enabled by default, unless the user selects to skip authentication or the devices does not support it.
US_72	Access Policy Editor	Sharing Configuration	DataVaults Personal App	Receive the identification of the Individual and load the access policies on the Access Policy Editor interface	The Individual can configure the policies for granting access to her data.	5	5	2	The Individual has already data in the DataVaults Personal App.
US_73	Access Policy Editor	Sharing Configuration	Data Provider	edit the access policies that apply to my data assets	I change the terms for providing access to my data	4	4	4	The Individual has already data in the DataVaults Cloud Platform, and some policies have been set. Individual and Data asset/source as an input, in the personal or cloud side or both.
US_74	Access Policy Editor	Sharing Configuration	Data Provider	load existing access policy templates for creating new policies	I can easily define the access policies that will apply to my data.	4	4	4	The individual has already data in the system. Individual and Data asset/source as an input, in the personal or cloud side or both.
US_75	Access Policy Editor	Sharing Configuration	Data Provider	create new templates from my policies	I can re-use it in the future.	2	2	4	The individual has already data in the system. Individual and Data asset/source as an input, in the personal or cloud side or both.
US_76	Access Policy Editor	Sharing Configuration	Data Provider	finalise the policies configuration of a data sharing configuration.	these policies take effect once the sharing configuration is executed.	5	5	2	The individual has already data in the system. The individual confirms the policies set. Individual and Data asset/source as an input, in the personal or cloud side or both.

5.2.4 User Stories for Privacy Metrics Dashboard

ID#	Related Component	Related Epic	User Story			Priority	Value	Complexity	Acceptance Criteria
			As a <Role>	I want to <Action>,	so that <Reason>				
US_77	Privacy Metrics Dashboard, Risk Management Monitor	Risk Assessment	Data Provider	know the risk related to the data I want share to the Cloud Platform	I fix any privacy- related issues in the data sharing configuration.	3	5	3	User shall be provided with risk information
US_78	Privacy Metrics Dashboard, Risk Management Monitor	Risk Assessment	Data Provider	view a graphical representation of the risk values related to my shared data	I modify the sharing configuration or make the data completely unavailable for sharing.	3	5	4	User shall be provided with a heatmap or a similar graphical tool
US_79	Privacy Metrics Dashboard, Risk Management Monitor	Risk Assessment	Data Provider	know the privacy exposure of specific datasets that I have shared in the Cloud	I modify the sharing configuration or make the data completely unavailable for sharing.	4	5	3	User shall be provided with risk information
US_80	Privacy Metrics Dashboard, Risk Management Monitor	Risk Assessment	Data Provider	the privacy metrics of my data to be updated based on the downloads performed by a Data Seekers	I modify the sharing configuration or make the data completely unavailable for sharing.	4	5	5	Risk information shall be updated on each download of the dataset
US_81	Privacy Metrics Dashboard, Risk Management Monitor	Risk Assessment	Data Provider	know the overall privacy metrics of my user account	I modify the sharing configuration or make the data completely unavailable for sharing.	3	3	4	Privacy metrics are provided to the user

5.2.5 User Stories for Edge Analytics Engine

ID #	Related Component	Related Epic	User Story			Priority	Value	Complexity	Acceptance Criteria
			As a <Role>	I want to <Action>,	so that <Reason>				
US_82	Edge Analytics Engine	Analytics Configuration	Data Provider	select an analytics algorithm from a list of available algorithms to perform analysis on my data	I can get specific insights regarding my data and their progress.	3	3	4	Users shall be able to select an algorithm/statistical method from a predefined list. The edge statistical analytics are designed appropriately for the UI restrictions of mobile devices and are resource efficient.
US_83	Edge Analytics Engine	Analytics Configuration	Data Provider	select a specific set of data to perform analysis	I can get insights regarding data from specific sources, during a specific period.	4	5	3	Users shall be able to select specific data they want to perform analysis on, based on filters like domain, source, period etc.
US_84	Edge Analytics Engine	Analytics Results	Data Provider	view on my device the results of the analytics task over my data	I can easily understand my activity and progress in relation to factors such as time.	3	3	4	Users shall be able to view the results of the statistical analysis, over a specific set of data. The edge statistical analytics are designed appropriately for the UI restrictions of mobile devices and are resource efficient.
US_85	Edge Analytics Engine	Analytics Configuration	Data Provider	select a visualisation method from a list of available methods such as graphs, timelines, pie charts	I can easily understand my data and their progress through their visual presentation.	4	5	3	Users shall be able to select a visualisation method, such as pie chart, timeline etc., from a predefined list. The edge visualisations are designed appropriately for the UI restrictions of mobile devices and are resource efficient.
US_86	Edge Analytics Engine	Analytics Configuration	Data Provider	select a specific set of data to visualise	I can get better visual insights regarding data from specific sources, during a specific period.	4	4	3	Users shall be able to select specific data they want to perform analysis on, based on filters like domain, source, period etc.

US_87	Edge Analytics Engine	Analytics Execution	Data Provider	view on my device the visualisation results of the defined visualisation task	I can easily understand my activity and progress in relation to factors such as time.	3	4	3	Users shall be able to view the results of the selected visualisation method over the selected data. The visualisations are designed appropriately for the UI restrictions of mobile devices and are resource efficient.
US_88	Edge Analytics Engine	Analytics Results	Data Provider	generate data assets from the results of the analysis of my data	I can handle them as any other personal data asset: store them, export them and share them through DataVaults.	2	4	4	Users shall be able to select a set of results from the statistical analysis of their data (for example for a time period, from a specific source, from a specific domain etc.) and generate a data asset. This data asset is available to users, to view it, export it, share it etc.
US_89	Edge Analytics Engine	Analytics Results	Data Provider	generate data assets from the results of the visualisation of my data	I can handle them as any other personal data asset: store them, export them and share them through DataVaults.	2	4	4	Users shall be able to select a set of results from the visualisation of their data (for example for a time period, from a specific source, from a specific domain etc.) and generate a data asset. This data asset is available to users, to view it, export it, share it etc.

5.2.6 User Stories for ABE Engine

ID #	Related Component	Related Epic	User Story			Priority	Value	Complexity	Acceptance Criteria
			As a <Role>	I want to <Action>,	so that <Reason>				
US_90	ABE Engine	Secure Data Management	Data Provider	protect specific pieces of data	they can be access only by those who I give permission to	5	5	4	The user can select among her/his data which to protect
US_91	ABE Engine	Secure Data Management	Data Provider	I want to decide who can access my encrypted data	so that I choose who can learn what about me	5	5	3	The user must be able to reinforce access control to these data through Attribute based encryption
US_92	ABE Engine	Secure Data Management	Data Provider	apply different access policies to each piece of data through attribute encryption	that I can define cumulative access levels to my information	5	5	4	The user must be able to apply different access policies to each piece of information
US_93	ABE Engine	Secure Data Management	Data Provider	I want to manage how queries are done over my encrypted data	I have extra level of protection against data correlation	3	3	2	The user must be able to prevent some queries over the data
US_94	ABE Engine	Secure Data Management	Data Provider	I want to be able to revoke/modify access to my encrypted data	I can re-define access policies applied to my encrypted data	5	5	4	The user must be able to modify policies used to encrypt data, which are used to manage the access to data
US_95	ABE Engine	Secure Data Management	Data Provider	some data being accessible only from my personal App	the platform let me differentiate between data to be shared and operational data.	5	5	4	The user must know that some specific data cannot be shared by design for example banking data should be only accessible by my personal wallet, and cannot be shared by design
US_96	ABE Engine	Secure Data Management	DataVaults Cloud Platform	improve the performance on searching operations	to avoid searching over protected data will safe resources	3	4	2	the combination encryption techniques must be focused on improving performance
US_97	ABE Engine	Secure Data Management	Data Seeker	I want to have access to aggregated data which I could not	to obtain more expressive of richer data sets	5	5	4	retrieve aggregated data sets built with pieces of information affected by different access policies.

				have in case the subject of these data was identifiable to					
US_98	ABE Engine	Secure Data Management	Data Seeker	simplify the access to encrypted data as much as possible	so that I do not need to perform extra operations.	3	2	4	the seeker does not need to retrieve any encrypted data set and perform any decrypting operation
US_99	ABE Engine	Secure Data Management	DataVaults Cloud Platform	I want to be able to decrypt the data using ABE on behalf of a Data Seeker who has purchased it	I provide the data to the Data Seeker	4	4	3	the seeker does not need to retrieve any encrypted data set and perform any decrypting operation

5.2.7 User Stories for Data Request Service Resolver

ID #	Related Component	Related Epic	User Story			Priority	Value	Complexity	Acceptance Criteria
			As a <Role>	I want to <Action>,	so that <Reason>				
US_100	Data Request Service Resolver	Individual Alerts	Data Provider	receive a notification on my Personal DataVaults App whenever a custom request for my data is made	I am instantly informed of any pending requests.	4	4	3	The user shall receive a notification from the request service whenever a new data request is made by a Data Seeker.
US_101	Data Request Service Resolver	Custom Contract	Data Provider	view the details of the sharing proposal made by the Data Seeker, including the requested type of data, usage, licence, price, seeker's information (organisation etc.).	I have a full overview of the sharing & usage terms prior to accepting or rejecting the proposal.	3	4	4	The user shall be able to open the request and see the fields of a contract for her data, completed from the side of the Data Seeker
US_102	Data Request	Custom Contract	Data Provider	accept the sharing proposal/request	the sharing of my data asset under the accepted terms can take place.	2	4	4	The user shall be provided with an "accept" option. Once she selects it, the data asset the proposal refers to

	Service Resolver								is shared to the Data Seeker and the agreed price is transacted to the user's Wallet.
US_103	Data Request Service Resolver	Custom Contract	Data Provider	reject the sharing proposal/request	I can keep having some data only on the personal DataVaults side and not share them with anyone else.	2	4	4	The user shall be provided with a "reject" option. Once she selects it, a notification is sent to the Data Seeker.
US_104	Data Request Service Resolver	Alerts	Data Provider	modify the notification settings	I can block recurrent requests without disabling the service completely.	1	3	3	The service must not display requests for blocked data categories or specific data seekers.
US_105	Data Request Service Resolver	Alerts	Data Provider	disable the service completely	I will not get any notifications in the future.	1	3	1	Notifications for the request service should be configurable independent from other app-notifications. User should not disable all notifications when they only want to ignore sharing requests.
US_106	Data Request Service Resolver	Custom Contract	Data Provider	blacklist certain Data Seekers or business sectors from performing requests	I quickly filter out Data Seekers with whom I am not interested to share data	2	3	2	The service must possess a blacklist to automatically reject requests coming from specific data seekers

5.2.8 User Stories for DataVaults Cloud Platform Backbone

ID #	Related Component	Related Epic	User Story			Priority	Value	Complexity	Acceptance Criteria
			As a <Role>	I want to <Action>,	so that <Reason>				
US_107	DV Cloud Platform Backbone. Encryption / Decryption	Secure Data Management	Data Provider	have selected data assets that reside on the DataVaults Cloud Platform to be stored encrypted	only I and Data Seekers with the appropriate rights can get access to them.	5	5	4	User's data assets are encrypted during their transfer from the Personal to the Cloud DataVaults, and are stored encrypted at the Cloud side, according to sharing configuration.
US_108	DV Cloud Platform Backbone. Encryption / Decryption	Secure Data Management	Data Provider	be sure that the decryption keys provided to Data Seekers for getting access to my data assets, are configured so that they enforce the sharing terms in place (e.g., expire after a period, are only for one use etc.)	the sharing of my data assets complies to the sharing terms I have defined.	4	4	5	User's data assets are encrypted under ABE scheme that incorporates aspects like time, organisation, etc in their attributes, so that decryption happens based in these aspects.
US_109	DV Cloud Platform Backbone. Encryption / Decryption	Data Exploration	Data Seeker	be able to search over the encrypted data assets available over the DataVaults Cloud	I can find any data assets of interest.	3	5	5	User shall be able to perform searches over the encrypted data lake, as the data assets are encrypted under a SSE scheme, allowing queries without leakage of other information except the search results.
US_110	DV Cloud Platform Backbone	Seeker Account Creation	Data Seeker	create my account using some minimal information (username, mail, password)	I can start using the DataVaults Cloud Platform as a new user.	5	5	1	User shall be able to create an account in the DataVaults Cloud Platform by providing a username and/or her email address and a password.
US_111	DV Cloud Platform Backbone	Seeker Account Creation	Data Seeker	verify the email address for my new DataVaults Personal App account	I have an extra security step and my email address is verified.	5	5	2	User shall receive a confirmation/verification email to the address she has provided

				through a verification email					during her registration, in order to finish the registration process.
US_112	DV Cloud Platform Backbone	Seeker Account Creation	Data Seeker	provide verification documents	I verify my identity.	3	5	2	User shall be able to upload documents to verify her identity. These documents will be reviewed by the DV Admin who will then decide if they suffice for verifying the Seeker.
US_113	Notification System	Alerts	Data seeker	Be notified whether my verification has been accepted or rejected	I can resubmit additional documents to try again or continue as unverified user.	3	4	1	User shall receive a notification on the decision about her verification.
US_114	DV Cloud Platform Backbone	Seeker Account Creation	Data Seeker	Have a private, secure storage container	I can upload my own data and store my DV assets.	5	5	2	DV should create a separate cloud storage container for every new Data Seeker.
US_115	DV Cloud Platform Backbone	Seeker Account Login	Data Seeker	log in using the credentials I have provided during the registration process	I enter my DataVaults Cloud Platform account.	5	5	1	User shall be able to log in her DataVaults Cloud Platform account by entering the credentials: username/email and password.
US_116	DV Cloud Platform Backbone	Seeker Account Login	Data seeker	be provided with the "Forgot your password" option	I can get a new password, in a secure manner to access the DataVaults Cloud Platform account	5	5	2	User shall receive an email with a link to reset her password, whenever she clicks on the "Forgot your password" option.
US_117	DV Cloud Platform Backbone	Seeker Account Enrichment	Data seeker	add/edit manually at any time some basic profile information, such as name, age, gender, country etc.	I personalise my profile and make available some information that may be used as attributes for my data access requests.	5	5	1	User shall be able to edit her profile information through the UI.
US_118	DV Cloud Platform Backbone	Seeker Account Enrichment	Data seeker	populate my profile information automatically from my account in a connected data source (such as my	my profile is enhanced with information already available in other apps and this information may	2	4	3	User shall be asked whether she wants to populate her profile from the connected organization/Google/etc. account and if she accepts, then DataVaults

				official organisation account	be used as metadata for my data access requests.				gets all available profile information to fill the DV account.
US_119	DV Cloud Platform Backbone. Encryption / Decryption	Secure Data Management	Data Seeker	have access to the content of encrypted data I have purchased	I can make use of them.	5	5	4	User shall be provided with a decryption key in order to decrypt the data she has acquired.
US_120	DV Cloud Platform Backbone. Data Seekers Vault	Cloud Input	Data Seeker	upload my own data as files	I can use them for analytics.	5	5	4	User shall be able to access a secure space where she can upload her own data
US_121	DV Cloud Platform Backbone. Data Seekers Vault	Cloud Input	Data Seeker	Upload my own data through an API	I can use them for analytics.	3	5	2	User shall be able to access a secure space through an API and upload her own data
US_122	DV Cloud Platform Backbone	Seeker Account Exploration	Data Seeker	browse through the assets I have already purchased/stored in my storage container	I can use it in the analytics containers	3	3	4	User shall be able to browse through the files in his secure space
US_123	DV Cloud Platform Backbone	Seeker Account Exploration	Data Seeker	select from available options (e.g., 'Group by source', 'Group by domain', etc.) to view my data	I can group my data.	3	4	1	User shall be able to view a list of groups based on the selection of the user, and inside each group find the relevant data assets, sorted in reverse time order.
US_124	DV Cloud Platform Backbone	Seeker Account Exploration	Data Seeker	search for specific data assets using keywords	I can easily explore my data assets.	5	5	3	User shall be able to type keywords in a field and search in stored data assets.

US_125	DV Cloud Platform Backbone	Seeker Account Exploration	Data Seeker	filter data assets based on metadata values	I can easily explore my data assets.	4	5	2	User shall be able to select one or multiple filters (such as "purchase date", "data source") and view the matching data assets.
US_126	DV Cloud Platform Backbone	Seeker Account Exploration	Data Seeker	To have an overview about my transactions, the related data asset	I keep track of my sharing activities	5	5	2	User shall be able to view a list of all transactions she has performed
US_127	Notification System	Alerts	Data Seeker	receive notifications regarding important events	I become aware of updates in near real-time.	3	4	2	User shall receive notifications on her DataVaults account, from the DataVaults components, for events such as the success/failure of an upload process, the success/failure of a sharing process etc.
US_128	DV Cloud Platform Backbone	Seeker Account Logout	Data Seeker	log out from my DataVaults account on my device	I can exit my account and no other user of the device can enter without going through the authentication/authorisation process.	5	5	1	User shall be provided with a log out option/button in her user management/settings tab, that will disconnect her from DataVaults Cloud account on the device.
US_129	DV Cloud Platform Backbone	Seeker Account Logout	Data Seeker	log out from my DataVaults account on all logged in devices	I can exit my account and no other user a device I have used to log in my account, can enter without going through the authentication/authorisation process.	5	5	2	User shall be provided upon logout with the option to disconnect from all devices.
US_130	DV Cloud Platform Backbone	Seeker Account Deletion	Data Seeker	erase my account and remove all data from DataVaults	my data and profile are no longer part of the DataVaults platform.	5	5	3	User shall be provided with the option in her user management/settings tab, to erase her profile and all associated and collected data from DataVaults.

US_131	DV Cloud Platform Backbone.	Cloud Output	Data Seeker	download from my storage container the asset I have already purchased/stored	I can use it offline	3	4	4	User shall be able to download the data from his secure space
US_132	DV Cloud Platform Backbone.	Cloud Output	Data Seeker	access the contents of my storage container through an API	I can retrieve them automatically and use them in another system	3	3	4	User shall be able to connect through an API to his secure space
US_133	Notification System	Alerts	Data Provider	received notifications related to my data	I know when my data are downloaded	4	3	4	User shall receive notifications about new data download
US_134	DV Cloud Platform Backbone	Orchestration	DataVaults Cloud Platform	be sure that the platform components are properly running	the components can be used in the integrated platform	3	4	4	Components status should be known
US_135	DV Cloud Platform Backbone	Orchestration	DataVaults Cloud Platform	be able to perform synchronous requests to other components	I receive direct responses when possible	4	4	3	Support for synchronous operations
US_136	DV Cloud Platform Backbone	Orchestration	DataVaults Cloud Platform	be able to perform asynchronous requests to other components with the usage of a message queue	messages and data are shared in a secure way between components	4	4	3	Setup and usage of a message bus
US_137	DV Cloud Platform Backbone	Orchestration	DataVaults Cloud Platform	have a resilient message bus for exchange of messages and data	messages and data are not lost if a node of the message bus fails	3	4	4	Resilient setup with at least 2 nodes

5.2.9 User Stories for Persona Generator

ID #	Related Component	Related Epic	User Story			Priority	Value	Complexity	Acceptance Criteria
			As a <Role>	I want to <Action>,	so that <Reason>				
US_138	Persona Generator	Persona Generation	Data Provider	share insights as part of a group	my underlying personal data is not shared.	5	5	3	A Persona should not include information that could lead to the identification of an Individual.
US_139	Notification System	Alerts	Data Provider	be notified whenever a new Persona uses my data	I keep control of how my data are processed.	3	2	3	User shall receive a notification whenever a new Persona that integrates her data is created.
US_140	Persona Generator	Persona Sharing	Data Seeker	have access to generated Personas	I get insights on a particular group of people, demographic etc.	5	5	2	User shall be able to have access to existing Personas.
US_141	Persona Generator	Persona Exploration / Data Exploration	Data Seeker	search for Personas in the DataVaults Cloud	I find the aggregated information I want, at a lower price that buying the separate datasets it consists of.	3	3	5	User shall be able to search through the Query Builder for Personas.
US_142	Persona Generator	Persona Generation	DataVaults Data Scientist	mix personas	I create integrated Personas with enriched content.	3	4	4	User shall be able to choose more than one Personas to be combined
US_143	Persona Generator	Persona Exploration / Data Exploration	Data Seeker	see a list of all Personas available in the DataVaults Cloud Platform	I can select the one that best fits my needs.	3	4	3	User shall be provided with a list of Personas in the Data Exploration interface.
US_144	Persona Generator	Persona Exploration	Data Seeker	view some preview details about a Persona	I can decide whether it fits me needs before I purchase it.	4	4	3	User shall be able to select one of the enlisted Personas that he does not acquire yet and see the information that is available for preview.
US_145	Persona Generator	Persona Exploration	Data Seeker	be able to contact Individuals that contributed a Persona I have purchased	I can send them custom data requests.	5	5	2	The user shall be able to send custom requests to Individuals that participate in a Persona, but

									without knowing any information about their identity.
US_146	Persona Generator	Persona Request	Data Seeker	request the creation of a Persona-on-demand	a Persona that matches my specific needs is created.	5	5	5	The user shall be able to create a request for a Persona-on-demand and define the specific attributes she wants.
US_147	Persona Generator	Persona Request	Data Seeker	request adjustments to an existing Persona	the Persona matches my specific needs	5	5	5	The user shall be able to create a request for a Persona-on-demand, based on an existing Persona and specifying the modifications she wants.
US_148	Persona Generator	Alerts	Data Seeker	be notified about the progress of my request for a Persona	I keep track of its current status.	3	3	3	User shall receive a notification whenever the status of the Persona-on-demand changes (in progress, complete)
US_149	Persona Generator	Persona Exploration	Data Seeker	see how a Persona has evolved over time	I identify any existing trends.	2	4	5	User shall be able to view the progress of a Persona from the moment it was created.
US_150	Persona Generator	Persona Generation	DataVaults Data Scientist	execute Persona generation queries on the data stored on the platform	I can create Personas.	4	4	3	User shall be able to create Personas with the use of queries
US_151	Persona Generator	Persona Generation	DataVaults Data Scientist	set a threshold for the minimum members necessary for a Persona to be constructed	anonymity of Individuals is ensured.	3	4	3	The persona generation queries shall incorporate the min participants factor.
US_152	Persona Generator	Persona Generation	DataVaults Data Scientist	set a threshold for the maximum members necessary for a Persona to be constructed	high quality of the produced Persona is ensured.	3	4	3	The persona generation queries shall incorporate the max participants factor.
US_153	Persona Generator	Persona Editing	DataVaults Data Scientist	re-run the Persona generation queries	The Persona is updated with new data values, and any changes in the members take effect.	2	3	3	The persona is updated, and contains new values and possibly a new members synthesis

US_154	Persona Generator	Persona Editing	DataVaults Data Scientist	Delete a Persona	It is no longer available.	2	3	2	User shall be able to delete a Persona from DataVaults.
US_155	Persona Generator	Persona Sharing	DataVaults Data Scientist	set a price and share a persona I have created	It is available to Data Seekers.	4	5	3	User shall be able to set the price and the terms for a Persona she has created and share it through the DataVaults Cloud Platform.
US_156	Notification System	Alerts	DataVaults Data Scientist	receive notifications regarding important events	I become aware of updates in near real-time.	3	3	3	User shall receive notification, from the DataVaults components, for events such as the success/failure of a persona creation/update/sharing etc.
US_157	Notification System	Alerts	Data Seeker	be notified about a new Persona-request	I start working on it.	3	3	2	User shall receive a notification whenever a persona-on-demand request is appointed to her.

5.2.10 User Stories for Access Policy Engine

ID #	Related Component	Related Epic	User Story			Priority	Value	Comple xity	Acceptance Criteria
			As a <Role>	I want to <Action>,	so that <Reason>				
US_158	Access Policy Engine	Trusted Sharing	DataVaults Cloud Platform	Identify the data involved in the request	APE accesses the policies associated to the selected data	5	5	3	The seeker has selected the data. A component calls the APE informing about the data.
US_159	Access Policy Engine	Trusted Sharing	DataVaults Cloud Platform	Identify the attributes of a given Seeker	APE can use them for deciding on granting access or not.	5	5	3	The attributes are stored in a known place or somehow accessible by the APE
US_160	Access Policy Engine	Trusted Sharing	DataVaults Cloud Platform	Identify the information stored in the public ledger	APE retrieves any active sharing contracts, associated to the data asset	5	5	3	APE searches for any active contracts related to the data asset, and the sharing terms.
US_161	Access Policy Engine	Trusted Sharing	DataVaults Cloud Platform	compare the Seeker's attributes with the access policies of the data	APE gives or denies access to the Seeker.	5	5	5	APE has access to the attributes and the policies and executes a smart contract to decide on granting access or denying access to the requesting Seeker.
US_162	Access Policy Engine	Trusted Sharing	Data Seeker	know why I was denied access, in case my request was denied	I can reconsider my profile attributes (ex. Submit documents to become a verified user)	3	3	3	The Data Seeker gets a response with a clarification why access was denied
US_163	Access Policy Engine	Trusted Sharing	DataVaults Cloud Platform	call the ABE mechanism for sharing data, if the access is granted (by execution of the smart contract), and the data are encrypted under the ABE scheme	the second access privacy and security layer is activated, to provide access to the user.	4	4	4	A resolution from the ABE engine is provided depending on the access and decryption authorisations for a specific Data Seeker
US_164	Access Policy Engine	Trusted Sharing	DataVaults Cloud Platform	gather the information about the access request resolution process after a Seeker's access request	the Contract Composer can register the information in a contract regarding the transaction.	3	3	3	An Access Contract is registered for a specific data asset

US_165	Access Policy Engine	Privacy/Security	DataVaults Cloud Platform	trigger the component for creating the contract for an access request resolution process and provide the related information	the responsible component for the creation of the contract registers the access authorisation/deny process.	3	3	3	An Access Contract is registered for a specific data asset
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5.2.11 User Stories for Risk Management Monitor

ID #	Related Component	Related Epic	User Story			Priority	Value	Complexity	Acceptance Criteria
			As a <Role>	I want to <Action>,	so that <Reason>				
US_166	Risk Management Monitor	Risk Assessment	DataVaults Cloud Platform	assess the overall privacy exposure on the platform	I understand the current risk status	5	5	2	Privacy exposure calculation based on the overall platform assets
US_167	Risk Management Monitor	Risk Assessment	DataVaults Cloud Platform	assess the privacy exposure of certain user, based on the provided data	risk metrics are provided to the administrator	4	4	4	Privacy risk calculation based on the data provided by the user
US_168	Risk Management Monitor	Risk Assessment	DataVaults Cloud Platform	update the privacy exposure of certain user, based on the downloads of data by a Data Seeker	risk metrics are provided to the administrator	3	3	4	Privacy risk calculation based on the data downloading
US_169	Risk Management Monitor	Risk Assessment	DataVaults Cloud Platform	assess the privacy exposure of certain user, based on the updates of the data	risk metrics are provided to the administrator	4	4	4	Privacy risk calculation updates when data are modified
US_170	Risk Management Monitor	Risk Assessment	DataVaults Cloud Platform	assess the privacy exposure of certain user, based on the provided data	risk metrics are provided to the user	3	3	4	Same as RM2, but provide risk to the user

US_171	Risk Management Monitor	Risk Assessment	DataVaults Cloud Platform	update the privacy exposure of certain user, based on the downloads of data by a Data Seeker	risk metrics are provided to the user	4	4	4	Same as RM3, but provide risk to the user
US_172	Risk Management Monitor	Risk Assessment	DataVaults Cloud Platform	assess the privacy exposure of certain user, based on the updates of the data	risk metrics are provided to the user	3	3	4	Same as RM4, but provide risk to the user

5.2.12 User Stories for Secure Analytics Playground

ID #	Related Component	Related Epic	User Story			Priority	Value	Complexity	Acceptance Criteria
			As a <Role>	I want to <Action>,	so that <Reason>				
US_173	Secure Analytics Playground	Analytics Configuration	Data Seeker	be able configure an analytics task	I can perform analytics and gain insights from my data.	3	5	4	The user shall have a dashboard where she can choose any of the available algorithms implemented for DataVaults
US_174	Secure Analytics Playground	Analytics Configuration	Data Seeker	select the data on which I want to run an analysis	I can generate intelligence out of the data purchased	3	4	5	Provide a way for the user to select the data to run algorithms on (select box in a dashboard, API request...)
US_175	Secure Analytics Playground	Analytics Configuration	Data Seeker	configure and execute a visualisation task	I can gain visual insights from my data.	2	3	4	The user shall be provided with a Dashboard where she can select a visualisation method and the data to visualise
US_176	Secure Analytics Playground	Analytics Execution	Data Seeker	run an analytics task over my requested data	I can get my needed information from DataVaults	5	4	3	The user has the possibility to run integrated algorithms in the platform
US_177	Secure Analytics Playground	Analytics Execution	Data Seeker	run aggregation/filtering algorithms on the cloud	the amount of data I need to download is reduced	3	3	3	There is a way to download result data from algorithms available to the user

US_178	Secure Analytics Playground	Analytics Results	Data Seeker	see graphics and visualizations of the analytics task	I avoid running visualisations in-house	4	4	4	The user can see graphical representation of the results after some of the algorithms run
US_179	Secure Analytics Playground	Analytics Execution	Data Seeker	be able to run my own algorithms on the cloud	I can easily use specialized algorithms over the gathered data	5	5	5	The user is able to upload their own algorithms and run them over their requested data
US_180	Secure Analytics Playground	Analytics Execution	Data Provider	run algorithms over my own data and compare it to other "open" data in the platform	I can gain some insights about my data	1	2	4	The user has the possibility to run integrated algorithms in the platform
US_181	Secure Analytics Playground	Analytics Results	Data Provider	see graphics and visualizations of the algorithms results	I can gain some insights about my data	1	2	4	The user can see graphical representation of the results after some of the algorithms run
US_182	Secure Analytics Playground	Analytics Results	Data Seeker	download the results of an analysis to my storage container	I can reuse the in the future	2	2	3	Provide a download button for the results of the algorithms or an API endpoint.
US_183	Secure Analytics Playground	Analytics Results	Data Seeker	download the results of an analysis to my local device	I can use them offline	2	3	4	Provide a download button for the results of the algorithms or an API endpoint.
US_184	Secure Analytics Playground	Analytics Results	Data Seeker	save a visualisation in my storage container	I can use it in the future	2	2	3	Provide a download button for the graphical results
US_185	Secure Analytics Playground	Analytics Results	Data Seeker	download a visualisation to my local device	I can use it offline	2	3	4	Provide a download button for the graphical results

5.2.13 User Stories for DataStream and Contract Composer

ID #	Related Component	Related Epic	User Story			Priority	Value	Complexity	Acceptance Criteria
			As a <Role>	I want to <Action>,	so that <Reason>				
US_186	DataStream & Contract Composer	Currency Transaction	Data Seeker	have a contract created every time I purchase data through DataVaults	the transaction and terms are recorded for logging and auditing purposes.	5	5	2	The user shall be able to find a record with all the terms of the data purchases she has performed.
US_187	DataStream & Contract Composer	Currency Transaction	Data Seeker	have the contract stored in a secure manner	I am sure that it will not be tampered with.	5	5	3	The user's transaction contract shall be logged from the contract composer to the Public DLT Engine.
US_188	DataStream & Contract Composer	Currency Transaction	Data Provider	have a contract created every time my data are purchased through DataVaults	the transaction and terms are recorded for logging and auditing purposes.	5	5	2	The user shall be able to find a record with all the terms of the data purchase that involves her data assets.
US_189	DataStream & Contract Composer	Currency Transaction	Data Provider	have the contract stored in a secure manner	I am sure that it will not be tampered with.	5	5	3	The user's transaction contract shall be logged from the contract composer to the Private DLT Engine.
US_190	DataStream & Contract Composer	Custom Contract	Data Seeker	be able to compose a draft contract for a request for data that are not yet available through DataVaults	I can make an offer to an Individual for data assets.	3	4	4	The user shall be provided with a UI to input the terms of her offer. This contract will be sent as a request to the Individual.
US_191	DataStream & Contract Composer / Notification System	Custom Contract, Personal App Alerts	Data Provider	receive a data sharing request with a predefined sharing configuration	I can quickly accept or decline the request	3	5	2	The user receives a notification for an incoming request with information on the possible contract
US_192	DataStream & Contract Composer	Custom Contract	Data Provider	automatically share the requested asset in case I have accepted the request	I skip the sharing configuration step.	3	3	4	The user's data asset is shared from his Personal DataVaults app to the DataVaults Platform with the predefined sharing configuration to give access only to the requesting Data Seeker.

US_193	Notification System	Cloud Alerts	Data Seeker	I want to receive a notification based on the outcome of a request	I can find out whether I possess the data or not	4	5	1	A notification for a sharing request outcome is shown to the Data Seeker
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5.2.14 User Stories for DataVaults Private DLT Engine

ID #	Related Component	Related Epic	User Story			Priority	Value	Complexity	Acceptance Criteria
			As a <Role>	I want to <Action>,	so that <Reason>				
US_194	Personal DataVaults Wallet	Pseudonym Management	Data Provider	use multiple blockchain addresses	I keep the data from unrelated sources separate.	5	5	3	The application must support the usage of multiple addresses ("pseudonyms") for every user.
US_195	Personal DataVaults Wallet	Pseudonym Management	Data Provider	see a list of all my blockchain addresses	I can view my previously used addresses.	3	3	1	The application lists all previously used addresses with the associated data categories.
US_196	Personal DataVaults Wallet	Individual Account Exploration	Data Provider	display the value of all accounts in my wallet	I can evaluate the worth of the previous sharing activities.	5	5	1	An overview must inform the user about the total currency value held in the individual accounts.
US_197	Personal DataVaults Wallet	Individual Account Creation	Data Provider	create a new account	a new pseudonym is used for subsequent data uploads.	5	5	1	The application must provide a functionality to create new ledger accounts.
US_198	Personal DataVaults Wallet	Currency Transaction	Data Provider	exchange the funds into real-world goods or money	a real value is obtained from the data.	5	5	5	The application must support exchange of the digital tokens to currency.
US_199	Personal DataVaults Wallet	Trusted Sharing	Data Provider	securely store the private keys for my accounts	they cannot be leaked by other applications on the device.	5	5	2	Keys must be stored encrypted or managed by hardware security modules (e.g., Smartcard, TPM)

US_200	Notification System	Personal App Alerts	Data Provider	have a clear indication when my private key is used for signing a Blockchain transaction	no immutable actions are performed accidentally.	3	3	3	The application must request a clear consent when the wallet is unlocked for signing a new transaction (e.g., authentication PIN or interaction with a Smartcard).
US_201	Personal DataVaults Wallet	Currency Transaction	Data Provider	spend my earnings, preserving my anonymity	the use of compensations does not leak information about me	3	3	2	The application should protect my privacy
US_202	Private Ledger	Sharing Execution	Data provider	a record to be created each time my data are shared to the Cloud	the activity is securely logged.	4	5	3	A record should be registered in the private ledger with information about the executed sharing configuration
US_203	Private Ledger	Sharing Execution	Data Provider	have transaction privacy	my personal information (configuration, account value) is hidden from other users.	5	5	5	Transaction data must not be stored as plain-text on the ledger.
US_204	DataVaults Private Brokerage Engine	Currency Transaction	Data Provider	have the agreed amount of currency transferred to my wallet	I receive the agreed compensation for my data.	5	5	2	The value received from the public ledger must be distributed correctly to all users.
US_205	DataVaults Private Brokerage Engine	Currency Transaction	Data Provider	use a privacy-preserving value transfer	my earnings are kept secret.	3	3	2	The value transfer must not be publicly readable.

5.2.15 User Stories for DataVaults Public DLT Engine

ID #	Related Component	Related Epic	User Story			Priority	Value	Complexity	Acceptance Criteria
			As a <Role>	I want to <Action>,	so that <Reason>				
US_206	DataVaults Open Brokerage Engine	Currency Transaction	DataVaults Cloud Platform	collect the agreed compensation before the asset is transferred	fraudulent payment default is not possible.	3	5	2	Data access must only be granted after the currency transfer was performed.
US_207	Open Ledger	Trusted Sharing	DataVaults Cloud Platform	restrict the access to the ledger	the functionalities are only provided to authorized Data Seekers.	5	5	5	Access control needs to restrict interaction with the open ledger.
US_208	Open Ledger	Seeker Account Creation	Data Seeker	have an open ledger account created when I register	I can make currency transactions to purchase data	5	5	3	The application must provide a functionality to create new ledger accounts.
US_209	Open Ledger	Trusted Data Sharing	Data Provider	sell my asset only to verified data seekers	only trusted individuals receive my data.	3	3	2	The identity of Data Seekers needs to be verified before giving them access to the ledger.
US_210	Open Ledger	Currency Transaction	Data Seeker	transact the agreed amount of currency from my wallet to DataVaults	I can purchase a data asset from a Provider.	2	2	1	Currency transaction from the Seeker's wallet to DataVaults. This currency will then be transferred to the Provider's private wallet.
US_211	Open Ledger	Seeker Account Exploration	Data Seeker	display the value of my wallet account	I can evaluate the worth of the previous sharing activities	5	5	3	An overview must inform the user about the total currency value held in her individual account.

5.2.16 User Stories for Query Builder and Data Explorer

ID #	Related Component	Related Epic	User Story			Priority	Value	Complexity	Acceptance Criteria
			As a <Role>	I want to <Action>,	so that <Reason>				
US_212	Query Builder and Data Explorer	Asset Display	Data Seeker	see a list of all data assets available in the DataVaults Cloud Platform	I can see if any data asset(s) could be useful for me.	5	5	3	User shall be able to see a list with the previews (as provided/allowed by the Data Providers) of all data assets that are available in the encrypted + unencrypted data lake.
US_213	Query Builder and Data Explorer	Asset Display	Data Seeker	purchase/acquire one of the enlisted data assets	I get access to the data.	5	5	4	User shall be able to select a data asset and perform a request to buy it. The compensation/transaction mechanisms must be initiated.
US_214	Query Builder and Data Explorer	Asset Display	Data Seeker	filter the enlisted data assets by choosing from the available values in various categories (such as domain - e.g., health - , format -e.g., json-, anonymisation level - e.g., none, digital twin, persona-, language - e.g., GR, DE,- etc.)	I can limit the list of enlisted data assets to those that match my needs.	4	5	2	User shall be able to select from various filters that will limit the list of data assets to only those that match the selected values.
US_215	Query Builder and Data Explorer	Query Configuration	Data Seeker	search the data assets available in the DataVaults Cloud based on their name, using keywords or the exact title	I can easily find data assets that I know their name or their name indicates they could be useful for me.	5	5	3	User shall be able to perform keyword searches on the name of the data assets.
US_216	Query Builder and Data Explorer	Query Configuration	Data Seeker	search the data assets available in the DataVaults Cloud based on metadata (e.g., description, author,	I can easily find data assets that their metadata match my needs.	5	5	3	User shall be able to perform keyword searches on the metadata of the data assets.

				domain, tags) using keywords					
US_217	Query Builder and Data Explorer	Query Configuration	Data Seeker	search the data assets available in the DataVaults Cloud based on metadata such as age group, price, etc. using ranges	I can easily explore data assets that their metadata match my needs, even when I do not want to provide an exact value, but I am interested in a group.	5	5	3	User shall be able to perform numerical value searches on the metadata of the data assets.
US_218	Query Builder and Data Explorer	Query Configuration	Data Seeker	search the data assets available in the DataVaults Cloud based on their content, using keywords	I can easily find data assets that contain information that could be useful for me.	5	5	3	User shall be able to perform keyword searches on the content of the data assets. This will be facilitated by the SSE scheme.
US_219	Query Builder and Data Explorer	Query Configuration	Data Seeker	search the data assets available in the DataVaults Cloud Platform using complex queries, i.e., by defining more than one criterion in my search	I can find data assets that match to various aspects.	3	4	5	User shall be able through the UI to create complex searches using more than one of the search options above. Also, user shall be able to use multiple values in one search (such as ranges, multiple keywords etc.). This will be facilitated by translating the query parameters to AND, OR causes.
US_220	Query Builder and Data Explorer	Query Results	Data Seeker	see a list of all the data assets matching to my search criteria	I can explore the results of my search.	5	5	1	User shall be provided with a list of the data assets matching to her criteria, in descending order of relation/matching.
US_221	Query Builder and Data Explorer	Query Results	Data Seeker	select one of the enlisted data assets and see all the information about this data asset that is available for preview	I can see if this data asset contains the information I need.	3	4	2	User shall be able to select a data asset from the search results list and view its preview, as defined by the data provider.

US_222	Query Builder and Data Explorer	Query Management	Data Seeker	save queries	I can use them again in the future.	2	4	2	User shall be provided with the option to "Save search". The query will be available for future use.
US_223	Query Builder and Data Explorer	Query Management	Data Seeker	load and edit saved queries	I can add or remove any search criteria that I do not need for my new search.	5	5	2	User shall be able to select one of the saved queries, and the search criteria will be loaded. Then the user shall be able to edit the various fields.
US_224	Query Builder and Data Explorer	Query Management	Data Seeker	delete saved queries	I can remove a query I no longer need	5	5	1	User shall be able to select a saved query and delete it.
US_225	Asset Display	Data Exploration	Data Seeker	retrieve through an API the list of all data assets available in the DataVaults Cloud Platform	I can utilise the list in another system	3	4	1	User shall be able to make an API call to the DataVaults Cloud Platform and retrieve a list with all data assets available for sharing in the DataVaults Cloud and their metadata.

6 DATAVAULTS REQUIREMENTS

This section presents the functional of non-functional requirements of the DataVaults Platform, as derived from the user stories.

The functional requirements are placed under macro-functionalities (larger functional groups) that have been identified from the Epics, in order to provide a holistic view of the main operations that should be translated into technical requirements. These macro-functionalities may also be used to drive the architecture definition steps for the platform and the design of the various components.

More specifically, the recognized macro-functionalities are the following:

- Edge Analytics: requirements that refer to data processing activities for the creation of analytics results and visualisations on the edge
- Cloud Analytics: requirements about data processing activities for the creation of analytics results on the cloud
- Persona Management: requirements evolving around the creation, management and exploration of aggregated data assets that protect anonymity, i.e., Personas
- Sharing: requirements related to activities of data asset sharing from the DataVaults Personal App to the Cloud Platform, and the recording of the activity in contracts.
- Compensation and Custom Contract: it entails requirements for the function of the DataVaults compensation mechanism through currency transactions and contract creation. It also includes the management of custom contracts by Data Seekers.
- Input/Output: it refers to desired import and export capabilities, such as data fetching from external data sources, export through APIs and downloads
- Data Exploration: requirements that enable the searching of the available data on the DataVaults Cloud Platform
- Individual Profile: requirements about Individuals' user account creation, management and the exploration of owned data assets in the DataVaults Personal App
- Seeker Profile: requirements about Seekers' user account creation, management and the exploration of owned data assets on the DataVaults Cloud Platform
- Privacy /Security: requirements concerning security/privacy of data and transactions inside DataVaults, involving trusted sharing and secure data management aspects
- Orchestration: backend services to ensure proper operation of all DataVaults Components
- Alerts: the provision of notification services to the users, making them aware of various events from all the DataVaults components

6.1 FUNCTIONAL REQUIREMENTS

This section provides the functional requirements grouped by macro-functionality, as listed above.

6.1.1 Edge Analytics

ID	Epic	Description	Related User Stories	Comments
FR_01	Edge Analytics Configuration	DV should provide the users of the Personal DataVaults App with a list of the available predefined algorithms and statistical methods to select from.	US_82	
FR_02	Edge Analytics Configuration	DV should provide the users of the Personal DataVaults App with an interface to choose which of their data assets will be used in an analytics task.	US_83	
FR_03	Edge Analytics Execution	DV should retrieve data assets from the Personal DataVaults App storage of the user and execute the analytics/statistical analysis task on them, as defined by the user.	US_82 US_83 US_84	
FR_04	Edge Analytics Results	DV should display the results of an executed analytics task to the user of the Personal DataVaults App through an interface.	US_84	
FR_05	Edge Analytics Results	DV should display a visualisation of the results of an executed analytics task to the user of the Personal DataVaults App through an interface.	US_87	
FR_06	Edge Analytics Results	DV should create a new data asset from the results of an executed analytics task and make it available to the users for download/export or storage in the Personal DataVaults App.	US_88 US_05	
FR_07	Edge Analytics Execution	DV should retrieve data assets from the Personal DataVaults App storage of the users and execute the visualisation task on them.	US_85 US_86 US_87	
FR_08	Edge Analytics Results	DV should create a new data asset from the results of an executed visualisation task and make it available to the users for storage in the Personal DataVaults App.	US_05 US_89	

6.1.2 Cloud Analytics

ID	Epic	Description	Related User Stories	Comments
FR_09	Cloud Analytics Configuration	DV should allow the user of the Cloud Platform upload their custom, specialised algorithms/analytics.	US_179	
FR_10	Cloud Analytics Configuration	DV should provide the users of the Cloud Platform in the analytics configuration dashboard with a list of the available algorithms/statistical methods to select from, the data assets that will be used and the parameters of the analytics task.	US_173 US_174	
FR_11	Cloud Analytics Configuration	DV should execute aggregation/filtering algorithms on the Cloud Platform that reduce the size of data.	US_177	
FR_12	Cloud Analytics Execution	DV should retrieve data assets from the Cloud Platform storage of the user and execute the analytics/statistical analysis task on them, as defined by the user.	US_176 US_177 US_179	
FR_13	Cloud Analytics Results	DV should provide the numerical results of an executed analytics task to the user of the DataVaults Cloud Platform through an interface.	US_178 US_181	
FR_14	Cloud Analytics Results	DV should display a visualisation of the results of an executed analytics task to the user of the DataVaults Cloud Platform through an interface.	US_178	
FR_15	Cloud Analytics Results	DV should create a new data asset from the results of an executed analytics task and make it available to the users for download/export or storage in the DataVaults Cloud Platform storage.	US_182	
FR_16	Cloud Analytics Configuration	DV should provide the users of the Cloud Platform with a dashboard to configure a visualisation task.	US_175	
FR_17	Cloud Analytics Configuration	DV should provide the users of the Cloud Platform in the visualisation task dashboard with a list of the available visualisation methods to select from, the data assets that will be used, and the parameters of the visualisation task.	US_175	
FR_18	Cloud Analytics Execution	DV should retrieve data assets from the Cloud Platform storage of the user and execute the visualisation task on them, as defined by the user.	US_175	
FR_19	Cloud Analytics Results	DV should display the results of an executed visualisation task to the user of the DataVaults Cloud Platform through the interface.	US_175	
FR_20	Cloud Analytics Results	DV should create a new data asset from the results of an executed visualisation task and make it available to the users for download/export or storage in the DataVaults Cloud Platform storage.	US_184 US_185	

FR_21	Cloud Analytics Configuration	DV should allow the users of the Personal DataVaults App run Cloud-based analytics over their personal data and “open” platform data.	US_180	
FR_22	Cloud Analytics Configuration	DV should provide to the users of the Personal DataVaults App a dashboard with a list of the available algorithms/statistical methods to select from, the data assets that will be used and the parameters of the analytics task.	US_180	
FR_23	Cloud Analytics Execution	DV should retrieve data assets from the Cloud Platform storage of the user and execute the Cloud-based analytics/statistical analysis task on them, as defined by the user.	US_180	
FR_24	Cloud Analytics Results	DV should display a visualisation of the results of an executed Cloud-based analytics task to the user of the DataVaults Cloud Platform through an interface.	US_181	

6.1.3 Persona Management

ID	Epic	Description	Related User Stories	Comments
FR_25	Persona Generation	DV should allow the DataVaults Data Scientists create personas (i.e., aggregated, anonymized data assets deriving from the combination of data assets from various users) by running Persona generation queries on the data assets shared by Data providers for this purpose.	US_150	
FR_26	Persona Generation	DV should allow the DataVaults Data Scientists to set a threshold for the minimum and maximum members necessary for a Persona to be constructed.	US_151 US_152	
FR_27	Persona Editing	DV should allow the DataVaults Data Scientists re-run Persona generation queries to update an existing Persona.	US_153	
FR_28	Persona Editing	DV should allow the DataVaults Data Scientist select more than one Persona and mix them.	US_142	
FR_29	Persona Editing	DV should allow the DataVaults Data Scientists delete a Persona they have created. DV should remove this Persona from the list of data assets available for sharing.	US_154	
FR_30	Persona Sharing	DV should allow the DataVaults Data Scientists configure the sharing terms for a Persona they have created (e.g., price, licence, usage etc.) and then make the Persona available for sharing based on the configuration.	US_140 US_141 US_155	
FR_31	Persona Request	DV should allow users of the DataVaults Cloud Platform to request from DataVaults the creation of a Persona on-demand with specific characteristics.	US_146 US_147	
FR_32	Persona Request	DV should appoint the data request to one of the available DataVaults Data Scientists.	US_146 US_147	

FR_33	Persona Request	DV should allow the DataVaults Data Scientist view the details of the request for Persona on-demand made by a user.	US_146 US_147	
FR_34	Persona Exploration	DV should allow the users of the DataVaults Cloud Platform find, acquire and explore Personas.	US_97 US_140 US_141	
FR_35	Persona Exploration	DV should allow the users of the DataVaults Cloud Platform target the users contributing to a Persona they have purchased/acquired without disclosing the identity of the users.	US_145	
FR_36	Persona Exploration	DV should allow users of the DataVaults Cloud Platform see the evolution of a Persona they have access to.	US_149	

6.1.4 Sharing

ID	Epic	Description	Related User Stories	Comments
FR_37	Sharing Configuration	DV should allow the users of the Personal DataVaults App share data assets under one of their pseudonyms.	US_194 US_196	
FR_38	Sharing Configuration	DV should provide the users of the Personal DataVaults App with an interface to create a new sharing task with all configuration fields empty.	US_46	
FR_39	Sharing Configuration	DV should allow the users of the Personal DataVaults App to select in the sharing configuration interface which data assets they want to share.	US_47	
FR_40	Sharing Configuration	DV should allow the users of the Personal DataVaults App to select in the sharing configuration interface which data sources they want to share.	US_48	
FR_41	Sharing Configuration	DV should allow the users of the Personal DataVaults App share a specific data asset, with a “Share” button in the specific asset’s view.	US_49	
FR_42	Sharing Configuration	DV should autocomplete some of the sharing configuration fields with the specific data asset’s metadata	US_49	
FR_43	Sharing Configuration	DV should allow the users of the Personal DataVaults App share data from a specific connected data source with a “Share” button next to the specific data source.	US_50	
FR_44	Sharing Configuration	DV should allow the users of the Personal DataVaults App load a saved sharing configuration.	US_67	

FR_45	Sharing Configuration	DV should provide the users of the Personal DataVaults App inside the sharing configuration with a list of available anonymisation levels (not-anonymised, anonymised/digital twin) to select.	US_51	
FR_46	Sharing Configuration	DV should allow the users select an existing pseudonym or generate a new one, under which they will share their data.	US_194 US_197	
FR_47	Sharing Configuration	DV should provide the users of the Personal DataVaults App inside the sharing configuration with the option to make their data available to be used in Persona creation.	US_138	
FR_48	Sharing Configuration	DV should allow the users of the Personal DataVaults App inside the sharing configuration select to store their data to the Cloud encrypted with the use of SSE.	US_107	
FR_49	Sharing Configuration	DV should allow the users of the Personal DataVaults App inside the sharing configuration set restrictions to searches over an encrypted data asset.	US_93	
FR_50	Sharing Configuration	DV should provide the users of the personal DataVaults App inside the sharing configuration with a list of available sharing levels (e.g., public, custom, confidential) to select.	US_52	
FR_51	Sharing Configuration	DV should provide the users of the Personal DataVaults App with an access policy editor, to define custom access policies.	US_72 US_74 US_209	
FR_52	Sharing Configuration	DV should provide pre-defined access policy templates to the users of the DataVaults personal App.	US_74	
FR_53	Sharing Configuration	DV should allow users save a custom access policy as template.	US_75	
FR_54	Sharing Configuration	DV should provide the users of the Personal DataVaults App inside the sharing configuration with the option to enforce access policies to their data on the Cloud side also with the use of ABE.	US_90 US_91 US_92 US_107	
FR_55	Sharing Configuration	DV should not allow sharing of certain, as for example banking data that will only be accessible by the user's personal wallet and cannot be shared by design.	US_95	
FR_56	Sharing Configuration	DV should provide the users of the personal DataVaults App inside the sharing configuration with a list of licenses and their details to select from.	US_55	
FR_57	Sharing Configuration	DV should allow the users of the Personal DataVaults App manually edit the license fields and create a custom license.	US_56	
FR_58	Sharing Configuration	DV should provide the users of the personal DataVaults App inside the sharing configuration with the option to define for how long the data asset will be available on the DataVaults Cloud for sharing.	US_53	

FR_59	Sharing Configuration	DV should allow the users of the Personal DataVaults App inside the sharing configuration to create a preview of the data asset, that will be viewable by Data Seekers.	US_54	
FR_60	Sharing Configuration	DV should provide to the user of the DataVaults Personal App inside the sharing configuration, her expected privacy exposure after sharing the data.	US_77	
FR_61	Sharing Configuration	DV should suggest a price for the data asset that balances maximum earning without overpricing, while considering the various sharing aspects and the nature of the data to be shared.	US_57	
FR_62	Sharing Configuration	DV should allow the users of the Personal DataVaults App to set the price for the specific data asset to be shared under the selected terms.	US_58	
FR_63	Sharing Configuration	DV should provide the users of the Personal DataVaults App the option to use Direct Anonymous Attestation for their communication with the Cloud Platform.	US_59	
FR_64	Sharing Configuration	DV should have the strictest privacy-preserving mechanism set as default for the communication with the users of the Personal DataVaults App.	US_71	
FR_65	Sharing Configuration	DV should allow the users of the Personal DataVaults App to add a sharing schedule to a sharing configuration for a connected data source.	US_63	
FR_66	Sharing Configuration	DV should allow the users of the Personal DataVaults App to pause a sharing schedule.	US_64	
FR_67	Sharing Configuration	DV should allow the users of the Personal DataVaults App to remove a sharing schedule.	US_65	
FR_68	Sharing Management	DV should allow the users of the Personal DataVaults App confirm and finalise the sharing configuration provided all required fields are complete.	US_60 US_76	
FR_69	Sharing Management	DV should allow the users of the Personal DataVaults App to save a sharing configuration at any stage.	US_62	
FR_70	Sharing Management	DV should allow the users of the Personal DataVaults App to return to a saved configuration and edit it.	US_62	
FR_71	Sharing Management	DV should allow the users of the Personal DataVaults App delete a saved sharing configuration.	US_66	
FR_72	Sharing Execution	DV should execute a sharing configuration that is defined by the users of the Personal DataVaults App.	US_60	
FR_73	Sharing Execution	DV should execute a sharing configuration in a recurring manner, if a sharing schedule applies.	US_63	
FR_74	Sharing Execution	DV should add a record in the private ledger each time a sharing configuration is executed, with information about this action.	US_202	

FR_75	Sharing Execution	DV should allow the users of the Personal DataVaults App modify some of the sharing parameters that apply to a shared asset, even after the asset has been uploaded to the Cloud Platform.	US_61 US_73	
FR_76	Sharing Execution	DV should apply the modifications to the sharing parameters of the data assets that have already been uploaded to the Cloud, and the changes should affect only new purchases/access requests by Seekers.	US_61 US_73	

6.1.5 Compensation and Custom Contract

ID	Epic	Description	Related User Stories	Comments
FR_77	Currency Transaction	DV should check that the Data Seeker has the agreed amount of currency in her Wallet, before it makes a data asset available to the Data Seeker.	US_206	
FR_78	Currency Transaction	DV should transact the agreed amount of currency from the Seeker's wallet to the DataVaults Cloud Platform	US_210	
FR_79	Currency Transaction	DV should transact the agreed amount of currency from the DataVaults Cloud Platform to the data provider. DV should transfer the currency to the specific pseudonym the user used when sharing the data asset.	US_194 US_204 US_205	
FR_80	Currency Transaction	DV should create a record in the Open Ledger every time a transaction is completed between DataVaults and a Data Seeker, recording the transaction information.	US_164 US_165 US_186 US_187	
FR_81	Currency Transaction	DV should create a record in the Private Ledger every time a transaction is completed between DataVaults and a Data Provider, recording information regarding the action.	US_188 US_189	
FR_82	Currency Transaction	DV should make the data asset available to the Data Seeker after all value transactions and contract validation are completed.	US_119 US_122	
FR_83	Custom Contract	DV should allow Data Seekers make custom data requests through an interface to create a draft contract and input their proposed sharing terms.	US_190	
FR_84	Custom Contract	DV should display to users of the Personal DataVaults App the draft contract and the proposed terms of a custom data request for their data.	US_101 US_191	
FR_85	Custom Contract	DV should allow the user to accept a contract for custom data request.	US_102	

FR_86	Custom Contract	DV should automatically validate the contract with the agreed terms, activate the compensation mechanism and make the data asset available to the requesting Data Seeker.	US_192	
FR_87	Custom Contract	DV should allow the user of the Personal DataVaults App reject a draft contract for custom data request.	US_101	
FR_88	Custom Contract	DV should allow the user of the personal DataVaults App blacklist certain Data Seekers or business sectors from performing custom data requests.	US_106	

6.1.6 Input/Output

ID	Epic	Description	Related User Stories	Comments
FR_89	Data Transformation	DV should have pre-loaded mappings of the data models used by various, selected third-party apps and data sources, to the DataVaults data model.	US_45	
FR_90	Data Transformation	DV should have pre-loaded data quality workflows.	US_44	
FR_91	Data Transformation	DV should have pre-loaded data curation workflows.	US_44	
FR_92	Input Connection	DV should provide the users of the Personal DataVaults App with a list of the available third-party apps and data sources, including both sources already connected and not connected.	US_19 US_22	
FR_93	Input Connection	DV should allow the users of the Personal DataVaults App select from the list and connect their profile to an available third-party app/data source they have not already connected. The user shall authorize DataVaults to connect to the selected source.	US_19 US_20	
FR_94	Input Configuration	DV should allow the users of the Personal DataVaults App create a new data collection task through a collection configuration interface.	US_33	
FR_95	Input Configuration	DV should allow the users of the Personal DataVaults App inside the collection configuration interface select from a list the connected data source that will be used.	US_22	
FR_96	Input Configuration	DV should display to the users of the DataVaults Personal App a snippet of the available data and their metadata in the connected data source.	US_32	
FR_97	Input Configuration	DV should allow the users of the DataVaults Personal App select manually the data that will be collected, from a list with all the available data and metadata in the connected data source.	US_33	

FR_98	Input Configuration	DV should allow the users of the DataVaults Personal App add a recurring collection schedule to a defined collection task.	US_36	
FR_99	Input Configuration	DV should allow the users of the DataVaults App configure how data from the intervals between recurring collections will be handled (e.g., collect only the data that were created on the collection date or collect all data that have been created since the latest collection date)	US_37	
FR_100	Input Configuration	DV should allow the users of the DataVaults Personal App pause a collection schedule and restart it at a later stage.	US_38	
FR_101	Input Configuration	DV should allow the users of the DataVaults Personal App remove a collection schedule from a configuration.	US_40	
FR_102	Input Configuration Management	DV should allow the users of the DataVaults Personal App save a collection configuration at any point and return to it at a later stage to continue editing.	US_35	
FR_103	Input Configuration Management	DV should allow the users of the DataVaults Personal App delete a saved collection configuration.	US_41	
FR_104	Input Configuration Management	DV should allow the users of the DataVaults Personal App edit a collection task that has already been executed.	US_39	
FR_105	Input Configuration Management	DV should adapt all related upcoming collections according to modifications of the collection task (if the configuration had an attached schedule).	US_39	
FR_106	Input Connection	DV should allow the users of the Personal DataVaults App de-authorise/disconnect it from a connected data source.	US_23	
FR_107	Input Connection	DV should delete all collection configurations related to a data source, when the user de-authorises the DataVaults Personal App from this source.	US_23	
FR_108	Input Execution	DV should execute a collection task only once if it does not have a recurring schedule. DV should execute the collection from the data-source based on the configuration.	US_34	
FR_109	Input Execution	DV should execute multiple times a collection task with a schedule, based on the configuration.	US_34	
FR_110	Data Transformation	DV should map the fetched data from the source data model to the DataVaults data model.	US_45	

FR_111	Data Transformation	DV should link the fetched data from the execution of a collection task under the specific user's profile.	US_42	
FR_112	Data Transformation	DV should semantically enrich the fetched data from the execution of a collection task with attributes such as the domain.	US_43	
FR_113	Data Transformation	DV should perform a quality check on the fetched data from the execution of a collection task.	US_44	
FR_114	Data Transformation	DV should perform predefined curation actions on the fetched data from the execution of a collection task, based on the results of the quality check.	US_44	
FR_115	Input Execution	DV should store the fetched and transformed data that have been collected from the execution of the collection task, to the specific user's DataVaults Personal App.	US_04	
FR_116	Input Execution	DV should index the fetched data using the appropriate technique.	US_30 US_31	
FR_117	Output	DV should allow the users of the Personal DataVaults App download all data from their personal storage.	US_27	
FR_118	Output	DV should allow the users of the Personal DataVaults App download a selection of data in their personal storage.	US_28	
FR_119	Input	DV should allow the users of the DataVaults Cloud Platform upload datasets to their storage container as files.	US_120	
FR_120	Input	DV should allow the users of the DataVaults Cloud Platform upload datasets to their storage container through an API.	US_121	
FR_121	Output	DV should allow the users of the DataVaults Cloud Platform download from their storage containers the assets they have already purchased or stored there.	US_131	
FR_122	Output	DV should allow the users of the DataVaults Cloud Platform access the contents of their storage containers through an API.	US_132	

6.1.7 Data Exploration

ID	Epic	Description	Related User Stories	Comments
FR_123	Asset Display	DV should display a list of all data assets available for sharing to the users of the DataVaults Cloud Platform, based on defined access policies.	US_212	

FR_124	Asset Display	DV should allow the users of the DataVaults Cloud Platform filter the enlisted data assets by choosing from the available values in various categories (such as domain - e.g., health -, format -e.g., json-, anonymisation level - e.g., none, digital twin, persona-, language - e.g., GR, DE,- etc.)	US_143 US_214	
FR_125	Asset Display	DV should allow the users of the DataVaults Cloud Platform select an asset from the list and view more details.	US_144 US_221	
FR_126	Asset Display	DV should allow the users of the DataVaults Cloud Platform retrieve through an API a list of all data assets available for sharing.	US_225	
FR_127	Asset Display	DV should allow the users of the DataVaults Cloud Platform select from the list of available assets, one asset to acquire it according to sharing terms (open, free, requiring a compensation).	US_213	
FR_128	Query Configuration	DV should provide the users of the DataVaults Cloud Platform with an interface to compose data asset search queries.	US_141 US_215 US_216 US_217 US_218	
FR_129	Query Execution	DV should execute name-based queries on the data assets available for sharing, using keywords or exact title match.	US_215	
FR_130	Query Execution	DV should execute metadata-based queries (e.g., description, author, domain, tags, anonymization level etc.) on the data assets available for sharing, using keywords and numeric values and ranges.	US_140 US_141 US_216 US_217	
FR_131	Query Execution	DV should execute content-based queries using keywords.	US_218	
FR_132	Query Execution	DV should execute complex queries (i.e., with more than one criterion)	US_219	
FR_133	Query Execution	DV should execute searches over data encrypted with SSE or/and ABE.	US_96 US_109	
FR_134	Query Results	DV should display to the users of the DataVaults Cloud Platform the results of their queries, based on defined access policies.	US_220	
FR_135	Query Management	DV should allow the users of the DataVaults Cloud Platform save a query they have composed.	US_222	
FR_136	Query Management	DV should allow the users of the DataVaults Cloud Platform load a saved query for a new search.	US_223	

FR_137	Query Management	DV should allow the users of the DataVaults Cloud Platform edit the fields of a saved data query.	US_223	
FR_138	Query Management	DV should allow the users of the DataVaults Cloud Platform discard a saved query.	US_224	

6.1.8 Individual Profile

ID	Epic	Description	Related User Stories	Comments
FR_139	Individual Account Creation	DV should allow the users of the Personal DataVaults App initiate the account creation process by providing minimal information (email, password).	US_10	
FR_140	Individual Account Creation	DV should send a verification email to the newly registered users and finalise the account creation after the verification is completed	US_11	
FR_141	Individual Account Creation	DV should allow the users of the Personal DataVaults register using an existing account at a third-party app, such as Google or Facebook account.	US_12	
FR_142	Individual Account Creation	DV should create a new pseudonym for the new account that has been created in the DataVaults Personal App	US_197	
FR_143	Individual Login	DV should allow the users of the Personal DataVaults App log in using the credentials they have provided during the registration process.	US_13	
FR_144	Individual Login	DV should allow the users of the Personal DataVaults App log in using a third-party app, whose credentials they have provided during the registration process	US_15	
FR_145	Individual Login	DV should provide the users of the Personal DataVaults App with a “Forgot Password” option which shall send a reset password email.	US_14	
FR_146	Pseudonym Management	DV should create a separate Wallet/blockchain address in the Private Ledger for every pseudonym of the user under the same account.	US_194	
FR_147	Pseudonym Management	DV should allow the users of the Personal Data Vaults App view all the pseudonyms they have created under their account.	US_195	

FR_148	Individual Account Enrichment	DV should allow the users of the Personal DataVaults App add/edit manually at any time some basic profile/account information, such as name, age, gender, country etc.	US_16	
FR_149	Individual Account Enrichment	DV should allow the users of the Personal DataVaults App populate their profile information automatically from an account in a connected data source, at any time.	US_17	
FR_150	Individual Account Enrichment	DV should display to the users of the Personal DataVaults App their profile completion status as a percentage and a completion status bar showing what is missing.	US_18	
FR_151	Individual Account Exploration	DV should display to the users of the Personal DataVaults App a list of all the personal data that have been stored on their personal storage under their account.	US_06	
FR_152	Individual Account Exploration	DV should allow the users of the Personal DataVaults App search for specific data assets using keywords.	US_07	
FR_153	Individual Account Exploration	DV should provide the users of the DataVaults Personal App with filters to display the data in their personal storage. DV should allow the users select one or multiple filters and display the matching data assets.	US_08	
FR_154	Individual Account Exploration	DV should display to the users of the Personal DataVaults App an overview about the data assets they have shared, under which pseudonym and the amount of currency they have earned from it.	US_09	
FR_155	Individual Account Exploration	DV should display to the users of the Personal DataVaults App an overview about the currency value held in the individual accounts/pseudonyms.	US_196	
FR_156	Individual Logout	DV should allow users of the DataVaults Personal App log out of their account in the device where they choose to logoff.	US_24	
FR_157	Individual Logout	DV should allow users of the DataVaults Personal App log out of their account from all logged in devices.	US_25	
FR_158	Individual Account Deletion	DV should allow the users of the Personal DataVaults App erase their account by removing all account and shared data from DataVaults	US_26	

FR_159	Individual Account Deletion	DV should ensure that the deletion of a data provider's account will not affect the availability of data shared which have a valid contract.	US_26	
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6.1.9 Seeker Profile

ID	Epic	Description	Related User Stories	Comments
FR_160	Seeker Account Creation	DV should allow the users of the Personal DataVaults App initiate the account creation process by providing minimal information (email, password).	US_110	
FR_161	Seeker Account Creation	DV should send a verification email to the newly registered users and finalise the account creation after the verification is completed	US_111	
FR_162	Seeker Account Creation	DV should allow the new Data Seeker provide verification documents to verify her identity.	US_112	
FR_163	Seeker Account Creation	DV should create a Wallet/blockchain address in the Public ledger for every new Data Seeker account in the DataVaults Cloud Platform.	US_208	
FR_164	Seeker Account Creation	DV should create a separate storage container for every new Data Seeker account in the DataVaults Cloud Platform, where the user should be able to upload her own data assets and where the data she purchases/acquires through DataVaults can be stored.	US_114	
FR_165	Seeker Login	DV should allow the users of the DataVaults Cloud Platform log in using the credentials they have provided during the Data Seeker registration process.	US_115	
FR_166	Seeker Login	DV should provide the users of the DataVaults Cloud Platform with a "Forgot Password" option. DV should send a reset password email to the email the user inputs, if an account for this email address exists.	US_116	
FR_167	Seeker Account Enrichment	DV should allow the users of the DataVaults Cloud Platform add/edit manually at any time some basic profile/account information, such as name, age, gender, country etc.	US_117	
FR_168	Seeker Account Enrichment	DV should allow the users of the DataVaults Cloud Platform populate their profile information automatically from an account in a connected data source, at any time.	US_118	
FR_169	Seeker Account Exploration	DV should allow the user of the DataVaults Cloud Platform browse through all the assets they have purchased/stored in their storage container.	US_122	
FR_170	Seeker Account Exploration	DV should allow the users of the DataVaults Cloud Platform select from available options (e.g., 'Group by source', 'Group by domain', 'Group by Provider' etc.) to view their data. DV	US_123	

		should display a list of groups based on the selection of the user, and inside each group find the relevant data assets, sorted in reverse time order.		
FR_171	Seeker Account Exploration	DV should allow the users of the DataVaults Cloud Platform search for specific data assets using keywords.	US_124	
FR_172	Seeker Account Exploration	DV should provide the users of the DataVaults Cloud Platform with filters to display the data in their personal storage. DV should allow the users select one or multiple filters and display the matching data assets.	US_125	
FR_173	Seeker Account Exploration	DV should allow the user of the DataVaults Cloud Platform to see a list of all transactions she has performed so far.	US_126	
FR_174	Seeker Account Exploration	DV should display to the users of the DataVaults Cloud Platform an overview about the total currency value held in their wallet.	US_211	
FR_175	Seeker Logout	DV should allow the users of the DataVaults Cloud Platform log out from their account in this device.	US_128	
FR_176	Seeker Logout	DV should allow the users of the DataVaults Cloud Platform log out from their account on all logged in devices.	US_129	
FR_177	Seeker Account Deletion	DV should allow the users of the DataVaults Cloud Platform erase their account, remove all account related data as well as any data purchased/stored in their storage containers	US_130	

6.1.10 Privacy/Security

ID	Epic	Description	Related User Stories	Comments
FR_178	Secure Data Management	DV should support the Searchable Encryption scheme for shared data.	US_109	
FR_179	Secure Data Management	DV should use strong encryption ciphers (based on formally verified key derivation functions) during transport sessions for data in-transit from the connected data sources to the DataVaults Personal App.	US_01	
FR_180	Secure Data Management	DV should use strong encryption ciphers (based on formally verified key derivation functions) for data-at-rest on the DataVaults Personal App.	US_02	
FR_181	Secure Data Management	DV should use strong encryption ciphers during transport sessions of data-in-transit from the DataVaults Personal App to the DataVaults Cloud Platform.	US_107	

FR_182	Secure Data Management	DV should support strong encryption schemes for data-at-rest on the DataVaults Personal App, that are to be shared encrypted.	US_107	
FR_183	Trusted Sharing	DV should support Direct Anonymous Attestation (DAA) for communications with the users of the DataVaults Personal App, without linking any of the shared data assets to the identity of the Provider.	US_68	
FR_184	Trusted Sharing	DV should provide the user of the DataVaults Personal App with an indication whether her device supports DAA.	US_69	
FR_185	Trusted Sharing	DV should support alternative authentication methods for devices without hardware-TPM.	US_70	
FR_186	Secure Data Management	DV should provide an ABE decryption engine to users of the Cloud Platform, without the need to install any specific software.	US_98 US_99	
FR_187	Secure Data Management	DV should support renewal of ABE keys based on policies conditions and master keys changes.	US_94	
FR_188	Secure Data Management	DV should support revocation of ABE keys based on policies conditions and master keys changes	US_94	
FR_189	Secure Data Management	DV should use unique ABE keys managed by the DataVaults ABE Trusted Component during data sharing with Data Seekers through the DataVaults Cloud Platform.	US_03	
FR_190	Secure Data Management	DV should allow the eligible Data Seekers view the contents of a data asset they have acquired/purchased, using ABE decryption (i.e., get the decrypted information if their attributes match the ABE key).	US_119 US_163	
FR_191	Secure Data Management	DV should perform Attribute Based Encryption on data to be shared encrypted, using the attributes from the access policies defined by the users of the DataVaults Personal App in the sharing configuration.	US_90 US_108	
FR_192	Secure Data Management	DV should support the modification of access policies for data assets available on the Cloud. The changes will affect only new purchases/ access requests by Seekers.	US_61 US_73	
FR_193	Trusted Sharing	DV should resolve the access policies of a selected data asset and compare them to the attributes of the user of the DataVaults Cloud Platform that requested access to the data asset (i.e., execute a smart contract)	US_158 US_159 US_160 US_161	
FR_194	Trusted Sharing	DV should use encryption or hardware-enabled security (e.g., using Smartcard, TPM) for the storage and management of user's account keys.	US_199	
FR_195	Trusted Sharing	DV should store transaction data in a privacy-preserving way (not as plain-text) on the Private ledger.	US_203	

FR_196	Trusted Sharing	DV should allow only authorized users of the DataVaults Cloud Platform access the Public Ledger.	US_207	
FR_197	Trusted Sharing	DV should allow only authorized users of the Personal DataVaults App access the Private Ledger.	US_203	
FR_198	Risk Assessment	DV should provide to the users of the DataVaults personal App their overall user privacy exposure.	US_81	
FR_199	Risk Assessment	DV should provide to the user of the DataVaults personal App a visualisation of the current privacy risk related to the data assets that she has provided to the Cloud platform.	US_78 US_170	
FR_200	Risk Assessment	DV should provide to the user of the DataVaults personal App the current privacy risk values related to the data assets that she has provided to the Cloud platform.	US_79 US_170	
FR_201	Risk Assessment	DV should provide to the Administrator the overall privacy exposure of the platform.	US_166	
FR_202	Risk Assessment	DV should provide to the DataVaults Administrator the individual privacy exposure of every DataVaults user	US_167	
FR_203	Risk Assessment	DV should update the privacy exposure of a user of the DataVaults Personal App, based on changes she has made to a shared asset.	US_169 US_172	
FR_204	Risk Assessment	DV should update the privacy exposure and the risk metrics of the users of the DataVaults Personal App, every time a data asset is acquired/purchased by a Seeker.	US_80 US_168 US_171	

6.1.11 Orchestration

Id	Epic	Description	Related User Stories	Comments
FR_205	Orchestration Task	DV should monitor the status of all the components.	US_134	
FR_206	Orchestration Task	DV should support synchronous operations.	US_135	
FR_207	Orchestration Task	DV should setup and use a message bus.	US_137	
FR_208	Orchestration Task	DV should support resilient setup with at least 2 nodes.	US_136	

6.1.12 Alerts

ID	Epic	Description	Related User Stories	Comments
FR_209	Personal App Alerts	DV should provide notifications to the users of the DataVaults Personal App, for significant events such as the success/failure of a collection process, the success/failure of a sharing process etc.	US_29	
FR_210	Personal App Alerts	DV should notify the users of the DataVaults Personal App to provide clear consent when their wallet is unlocked for signing a new transaction.	US_200	
FR_211	Personal App Alerts	DV should notify the users of the DataVaults Personal App whenever a data purchase is completed.	US_133	
FR_212	Personal App Alerts	DV should notify the users of the personal DataVaults App whenever a new data request is made by a Data Seeker.	US_100	
FR_213	Personal App Alerts	DV should allow the users of the DataVaults Personal App completely disable notifications for sharing requests.	US_105	
FR_214	Personal App Alerts	DV should allow the users of the DataVaults Personal App block alerts from specific data categories or specific data seekers.	US_104 US_106	
FR_215	Personal App Alerts	DV should notify the users of the DataVaults Personal App whenever a new persona is created and incorporates their shared data assets.	US_139	
FR_216	Cloud Platform Alerts	DV should provide notifications to the users of the DataVaults Cloud Platform, for significant events, such as when a data asset is available in their storage container, success/failure of a download etc.	US_127	
FR_217	Cloud Platform Alerts	DV should notify the users of the DataVaults Cloud Platform for the acceptance/rejection of the documents she has submitted to DataVaults for her verification.	US_113	
FR_218	Cloud Platform Alerts	DV should notify the user of the DataVaults Cloud Platform if the access request to a data asset has been rejected by the Access Policy Engine. DV should provide some information about the reasons it was rejected.	US_162	
FR_219	Cloud Platform Alerts	DV should provide notifications to the users of the DataVaults Cloud Platform, for the rejection of a custom data request they have made to an Individual.	US_103 US_193	
FR_220	Cloud Platform Alerts	DV should notify the requesting Data Seeker that a custom data request was accepted and indicate the new data asset.	US_102 US_192 US_193	

FR_221	Cloud Platform Alerts	DV should provide notifications to the users of the DataVaults Cloud Platform, for the status of an on-demand Persona they have requested (in progress, complete).	US_148	
FR_222	Cloud Platform Alerts	DV should provide notifications to the Data Scientists, for significant events, such success/failure of a Persona upload on the cloud etc.	US_156	
FR_223	Cloud Platform Alerts	DV should provide notification to the Data Scientists whenever they are appointed with the creation of a Persona on-demand.	US_157	

6.2 NON-FUNCTIONAL REQUIREMENTS

The following table presents the non-functional requirements pointed out for the DataVaults solution, taking into account the eight aforementioned qualities.

Table 10 – DataVaults Non-Functional requirements

Requirement Sub-category	Id	Description (Detailed description of the requirement)
Functional Suitability	NFR1	DataVaults should be able to collect data from Individuals in order to gather their data in one place
	NFR2	DataVaults should allow an Individual to select and manage how his/her data are to be shared to the DataVaults Cloud Platform
	NFR3	DataVaults should be able to share the data collected from Individuals and make them available to Data Seekers following specific data sharing contracts
Performance efficiency	NFR4	DataVaults should guarantee the timely and robust collection of data from the side of the Individuals
	NFR5	DataVaults should be able to handle and store datasets from various sources
	NFR6	DataVaults should guarantee the efficient and effective resource allocation for the sharing and encryption/decryption process execution
	NFR7	DataVaults should be able to perform analytics in a timely and efficient manner
	NFR8	DataVaults should guarantee the full optimization of the response time to ensure a functional and flexible navigation through the DataVaults solution
	NFR9	DataVaults should cater that both the Public and the Private ledgers are able to process transactions fast and within certain time limits
	NFR11	DataVaults should provide prompt transaction responses from the Brokerage Engines
Compatibility	NFR12	DataVaults should be able to interact and exchange information with other systems in a secure way (for example secure REST API)
	NFR13	The DataVaults Cloud Platform has to provide communication capabilities to allow other applications to interact with DataVaults platform

	NFR14	DataVaults should allow the Personal DataVaults App to run on devices that do not support DAA
Usability	NFR15	DataVaults shall feature a user and data protection-friendly interface, and be offering a set of user guides
	NFR16	DataVaults should provide a user interface that supports straightforward task accomplishment and facilitate user's control over his/her data
	NFR15	DataVaults should provide the suitable error protection methods for all input fields
	NFR16	DataVaults should have a Multi-language user interface
	NFR17	DataVaults should offer logs about evolution and faults history and periodically send debug reports
	NFR18	DataVaults should not influence user experience by performing all computationally intensive tasks (such as DAA authorisation) in the background
Reliability	NFR19	DataVaults should ensure high availability of the overall system
	NFR20	DataVaults should be able to handle simultaneous requests on a timely and efficient manner
	NFR21	DataVaults should provide the mechanisms to recover the system state to normal operation after a failure
	NFR22	DataVaults should keep information about transactions parties private
Security	NFR23	DataVaults should be able to handle software errors without affecting the platform overall functionality
	NFR24	DataVaults should be able to securely store uploaded Individuals' data
	NFR25	DataVaults should be able to retain the privacy of Individuals based on the privacy level they have chosen
	NFR26	DataVaults should take into account privacy and security rules according to national legislation
	NFR27	DataVaults should ensure different authorisation access to different datasets
	NFR28	DataVaults should support data seeker's account validation
	NFR29	DataVaults should be able to attest the identity of the user/subject performing any operation
	NFR30	DataVaults should provide the proper mechanisms for system upgrade/maintenance with minimum downtime
	NFR31	DataVaults should be composed by components that are operating independently
	NFR32	DataVaults should be able to raise alarms about hardware/software failures of the solution

	NFR33	DataVaults should provide strong transaction validation mechanisms
	NFR34	DataVaults should keep information about transactions encrypted
	NFR35	DataVaults should keep history of all important actions (such as transactions)
Portability	NFR36	DataVaults should be able to be deployed in a timely and efficient manner
	NFR37	DataVaults should be based on easily replaceable independent components interconnected through APIs
	NFR38	DataVaults should be able to be deployed on various Linux-based distributions
	NFR39	DataVaults should allow portability of personal data

7 CONCLUSIONS

The main objective of the deliverable at hand is to provide the user stories alongside with the functional and non-functional requirements of the DataVaults platform including also legal and ethical requirements, especially GDPR-driven ones. All these user stories and requirements will be used by the subsequent tasks of WP5 for the definition of the architecture and of WP3 and WP4 for the detailed design of the different components of the overall platform.

In this direction, a working method based on the agile development process has been selected, which started with the identification of actors and the collection of user stories, that were then distilled into functional and non-functional requirements.

It needs to be mentioned that the list of requirements in this deliverable is not exhaustive, but rather constitutes the core requirements for the DataVaults platform; this means that new requirements might be added, existing requirements might become obsolete or would need to be updated in the next phases of the project, however not to the extent that such modification will lead to a major pivoting of the project's idea and concept. As such, the contents of this deliverable (meaning the user stories and the requirements), will be also maintained in collaborative working sheets shared amongst all the consortium partners, to act as a "living" reference point that may be amended during the different development cycles. In parallel, any updated requirements and user stories will be also documented in the list of deliverables that will come out of WP5, namely in D5.3 "DataVaults Platform - Alpha Version (semi-functional mockups)", D5.4 "DataVaults Platform - DataVaults Platform - Beta Version (full functional beta)" and D5.5 "DataVaults Platform - Version 0.5".

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