TRUSTS
Trusted Secure Data Sharing Space

D2.5 'Methodologies for the technological/business validation of use case results II'

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TRUSTS Trusted Secure Data Sharing Space

D2.5 'Methodologies for the technological/business validation of use case results II'

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Glossary of terms and abbreviations used

Abbreviation / Term	Description
AI	Artificial Intelligence
AML	Anti-Money Laundering
E2E	End to End
ERP	Enterprise Resource Planning
FRs	Functional Requirements
GA	Grant Agreement
GDPR	General Data Protection Regulation
GUI	graphical user interface
IP	Intellectual Property
KPIs	Key Performance Indicators
NODE	An addressable device attached to a computer network. If the node is a computer, it is more often called a "host"[1].
Org	Organization
OSs	Operations Support System(s)
PC's	Personal Communications System
QoE	Quality of Experience
QoS	Quality of Service
RDC	Regulatory Data Corp
SAR	Suspicious Activity Report
SUS	System Usability Scale
TDD	Test-Driven Development
TOC	Table of Contents
TRUSTS	Trusted Secure Data Sharing Space
UAT	User Acceptance Test
UC(s)	Use Case(s)
UI	User Interface
VMs	Virtual Machines
WP	Work Package

[1] https://encyclopedia2.thefreedictionary.com/Node+(networking)

Executive Summary

The overall objective of the 'Trusted Secure Data Sharing Space' (TRUSTS) project is to ensure trust in the concept of data markets via its focus on developing a fully operational and GDPR-compliant European Data Marketplace for personal related and non-personal related data, targeting individual and industrial use by leveraging existing data marketplaces (Industrial Data Space, Data Market Austria) and enriching them with new functionalities and services to scale out.

This objective is achieved through the demonstration and execution of actual field trials, through the use and adoption of the state-of-the-art methodology in service design, innovation as well as facilitating effective ways of innovating with industry expert users. Finally, by producing and assessing the methodologies for the testing, validation, and benchmarking of the results as well as for the technical and business validation of the use cases which this document has as its main aim to achieve and support the project's goals.

The deliverable titled D2.5 'Methodologies for the technological/business validation of use case results II' is part of the Work Package 2 "Requirements Elicitation & Specification" of the TRUSTS project and is the second version of the deliverable focusing on the methodologies for the technical and the business validation of TRUSTS.

The purpose of this deliverable is to report the updated work performed in the context of Task 2.3 "Testing Framework and benchmarking". The revised methodology defined and documented in D2.4, as well as the validation timeline and the validation results of the first cycle of the Business and the Technical validations are based on the first cycle of the Use Cases trials performed between May 2021 and November 2021.

The report starts with an overview of the first version of the same report, D2.4, defining the methodologies for the technical and business validation of the TRUSTS platform within and across each vertical use case. It includes the timeline that was followed by the WP2 and the WP5, the projects UCs partners, to perform the first Business Validation and the first Technical Validation via the execution of the first trials cycle. It also reports on the initial key findings of the first Business and the first Technical Validations performed based on the first demonstration phase of TRUSTS.

As a final note, this deliverable constitutes the second and final version of the two reports defining the methodologies for the technical and business validation of the TRUSTS platform, as foreseen to be produced in the context of the project and Task 2.3, containing the detailed analysis of the methodologies defined at an early stage of the project, concerning the technical and business validation of the TRUSTS use cases and hence the TRUSTS platform operation.

1 Introduction

The primary objective of this document is to assess the methodologies for the testing, validation, and benchmarking of the results as well as to report on the technical and business validation analysis of the TRUSTS use cases.

Deliverable 2.5 "Methodologies for the technological/business validation of use case results II" is the second version of the Project's deliverable focusing on the methodologies defined for the technical and the business validation of the TRUSTS use cases (UCs) results at an early stage in the project. The report is addressing the Work Package (WP) 2 "Requirements Elicitation & Specification" and the Task 2.3 "Testing Framework and benchmarking", along with the work that has been performed under this Task and the interrelated WP5 "Demonstration of the TRUSTS Platform in three business-oriented use cases".

TRUSTS envisions to develop a fully operational and GDPR-compliant European Data Marketplace for personal related and non-personal related data, to ensure trust in the concept of data markets targeting individual and industrial use and hence T2.3 produced and assessed the methodologies for the testing, validation, and benchmarking of the results as well as for the technical and business validation of the UCs, already defined and documented in the first version of the equivalent report D2.4 submitted in June 2020.

As the project matures and progresses through the different technology readiness levels, Task 2.3 made sure and took the opportunity using the adopted approach to re-assess, improve, and evolve the defined methodologies and concepts where needed. The corresponding updates and improvements are presented and described in this deliverable including the official final test reports along with the initial results of each of the vertical industries.

From a business validation perspective, the collection of the business information to define the needs from the business perspective of the UC participants was defined and the following four aspects were addressed:

i. **Background**: *textual description of the business process and context surrounding the UC.*
ii. **Personas**: *description and introduction of all actors/users who are directly impacted by the UC.*
iii. **Problem**: *detailed description of the problems that each persona formerly experienced before TRUSTS.*
iv. **Expected Benefit**: *the benefit that each persona hopes to achieve from the UC (after TRUSTS is implemented).*

Additionally, within TRUSTS, the technical validation refers to the technical and interoperability testing issues related to the platform, the solutions and applications developed in the framework of the data marketplace TRUSTS project. From a technical validation and the test reports format perspective, the following five aspects were addressed:

i. **Functionality Testing**: an *assessment for its correct functioning according to its functional and technical requirements.*
ii. **User Interface Testing**: an e*valuation in respect to its operation, content navigation, etc.*
iii. **Interaction Testing**: *an assessment for errors that may interact with other modules developed in TRUSTS*.
iv. **Performance Testing**: *an assessment of its performance for diverse Internet connection speeds, how its responses to different devices, OSs and browsers and stress testing.*

v. **Security Testing**: *an estimation for unauthorized access to information, unsecured provision of private data etc.*

All these aspects were addressed by presenting a process where technical and business validation goes hand in hand, focusing on methods for confirming that there is real business value, and how this can be reflected in business metrics.

1.1 Mapping Projects' Outputs

The purpose of this section is to map TRUSTS Grant Agreement (GA) commitments, both within the formal Deliverable and Task description, against the project's respective outputs and work performed.

Table 1: Adherence to TRUSTS GA Deliverable & Tasks Descriptions

TRUSTS Task		Respective Document Chapter(s)	Justification
T2.3 Testing framework and benchmarking	*This task will focus on defining the methodology and toolset for a comprehensive and robust analysis of the data marketplace technologies and the vertical use cases being created within the TRUSTS project. Working closely with the partners defining the scenarios to be trailed in the TRUSTS environment, we will specify formats for a suite of test cases to measure the functionality and performance of the innovative solutions being put forward. These test artefacts will be captured in a suitable test case management tool that will integrate seamlessly with the development process.*	*Section 2*	*sets out the foundation for the overall approach. Presents the already defined and assessed process, documented in D2.4, where technical and business validation goes hand in hand, as an agile process. Focuses on methods for confirming that there is real business value, and how this can be reflected in business metrics.*
	Based on the requirement to deliver outputs that have commercial value and potential, there will be a significant emphasis put on Quality of Service (QoS) to give a qualitative measurement of test execution and on Quality of Experience (QoE) to gauge objective data marketplace user experience. The test process will fit neatly into the project's iterative agile development process and allow for implementation of a Test-Driven Development (TDD) methodology incorporating unit tests and acceptance tests. The methodology will entail acceptance test procedures for conducting both the technological and business validation of the use cases	*Section 3*	*Is dedicated to the Business Validation templates and process followed before every cycle of trials respectively.*
		Section 4	*Is dedicated to the Technical Validation templates and process followed within every cycle of the trials respectively.*

	considering the associated service management. Threshold limits for the benchmarking of the results will also be defined per target KPI based on the requirements stemming from each vertical use case. The methodology will also define how the interaction with the vertical end-users will be achieved taking into consideration the specifics of T2.1. For the business validation, partners will use the lean start-up methodology that centres around on the main motivations of a business. The inputs will include apart from the business case itself, end-user feedback from their direct engagement in the trials of the vertical use cases. The corresponding outputs will be validations that will allow to identify the use cases that have the highest commercialisation potential to progress to the next step of creating a data marketplace service portfolio. We will use a set of questionnaires, surveys and focused group workshops directly also engaging the industrial associates of the consortium partners. A detailed set of metrics parameters considered for the business validation of each UC will be developed, such as those listed in section 1.3 for each use case, which will be interrogated and quantified as part of the business validation process with the end-users.	*Section 5*	*provides a comprehensive analysis of the test results gathered from the first cycle of the UC trials based on the methodologies defined for the first business and technical validation of TRUSTS.*
TRUSTS Deliverable			
D2.5 'Methodologies for the technological/business validation of use case results II' Second version of the two reports defining the methodologies for the technological and business validation of the TRUSTS platform within and across each vertical use case. They also include the definition of test reports format and benchmarking for the validation of the KPIs.			

1.2 Deliverable Overview and Report Structure

The following section provides an overview of the Deliverable's structure as well as a detailed description of the plan of action in compliance with the expected outcomes of the T2.3.

Special attention is given on the key elements of the well-balanced methodologies defined for the technical and business validation of the TRUSTS platform via the three business-oriented UCs results along with the end-user feedback, which are the metric and parameters as well as the KPI's validation and threshold limits.

A summary of the sections is included below.

The current **Section 1** introduces the deliverable with an overview to its structure and envisioned outcome.

Section 2 offers an overview of the project scope and analyses the methodologies processes and dependencies with respect to the Business and Technical Validation and their life cycle as they have been defined in the first version of D2.4.

Section 3 gives information on the TRUSTS data marketplace Business Validation using the Lean Start-up Methodology defined in D2.4. Furthermore, business validation templates are provided and the KPI's are also presented as a business validation method for the three business-oriented UCs.

Section 4 gives information on the TRUSTS data marketplace Technical Validation based on Test Driven Development Methodology with focus on testing and user acceptance tests along with templates to be utilized by the three UCs, as defined in D2.4. This section also presents the Quality of Experience (QoE) and the Quality-of-Service (QoS) questionnaires for the purposes of the measurement of test executions.

Section 0 provides a comprehensive analysis of the test results gathered from the first cycle of the UC trials based on the methodologies defined for both the business and technical validation of the current version of the TRUSTS developments.

Section 0 offers the documents conclusion and next actions regarding the validation of the TRUSTS.

The document concludes with the following Annexes:

- Annex I: Task 2.3 Gantt Chart
- Annex II: First Business Validation
- Annex III: First Technical Validation

2 TRUSTS validation methodology and processes

This section briefly introduces the methodologies adopted for the validation of TRUSTS and for the three business-oriented UCs measurements, namely ***Business Validation***, and ***Technical Validation***.

It addresses the objectives of producing and assessing the methodologies for the testing, validation, and benchmarking of the project results as well as for the technical and business validation of the UCs through an agile-based iterative process approach. Moreover, to provide the necessary business framework, strategy, plans and information to identify post-project opportunities, exploit potential results and to ensure a long-term sustainability, whilst protecting their IP.

2.1 Task 2.3 scope

This task focuses on defining the methodology and toolset for a comprehensive and robust analysis of the data marketplace technologies and the vertical UCs being created within the TRUSTS project. Working closely with the UC partners defining the scenarios to be trailed in the TRUSTS environment, T2.3 specifies formats for a suite of test cases to measure the functionality and performance of the innovative solutions being put forward integrating them seamlessly with the development process.

Based on the requirement to deliver outputs that have commercial value and potential, a significant emphasis was put on QoS to give a qualitative measurement of test execution and on QoE to measure the objective data marketplace user experience.

Validation is the process where a provider matches the hypothesis with reality. The corresponding outputs are validations that will allow to identify the UCs that have the highest commercialisation potential to progress to the next step of creating a data marketplace service portfolio.

A detailed set of metrics parameters considered for the business and technical validation of each UC were developed, such as those are listed in the following section 3 and 4.

2.2 Testing the TRUSTS Use Cases

The validation process can give the project and precisely WP7 reasonable certainty as to whether the TRUSTS E2E data marketplace service will have a sustainable, growing, paying audience. Knowing what the TRUSTS users need and building a solution to fulfil those needs right from the beginning is the foundation of a well-established business and allows for future growth.

The three business-oriented UCs that were defined for the TRUSTS project are set to follow the methodology documented in D2.4 to technically and business wise validate the TRUSTS, depending on the nature of each individual UC. TRUSTS solutions and business aspects will be thoroughly tested via a wide range of use cases involving actors that represent all targeted sectors:

- UC1: Smart big-data sharing and analytics for Anti-Money Laundering (AML) compliance
- UC2: Agile marketing activities through correlation of anonymized banking and operators' data
- UC3: Buying data from a data marketplace to improve Natural Interaction

The defined and documented in D2.4 TRUSTS validation methodologies and dependencies addresses the objectives of T2.3 as per the GA related to project Objective 1[2], on defining the methodology and toolset for a comprehensive and robust analysis of the data marketplace technologies and the vertical UC's being produced within the TRUSTS project.

This is an analytic introduction information about how the validation aims to be performed over the project lifecycle along with the toolset that will be utilized. All the methodologies and validation activities along with the progressive way of working are analysed in detail in the following sections including the relevant templates that enable those validations for the Consortium.

The Validation Toolset is a set of methodologies to be applied and templates to be used by the partners of the Consortium to validate the progress on the implementation, the data marketplace services and UCs and the overall alignment with the projects' outputs and objectives.

2.3 TRUSTS Validation time plan

A Gantt Chart was created (see Annex I: Task 2.3 Gantt Chart), for Task 2.3, that ends in December 2021, to present the time plan of three sets of business validations and the two sets of technical validations that were identified, over the projects' lifecycle.

The first business validation was performed between July and October 2020 and the first technical validation within July and October 2021 aligned with the first Cycle of the TRUSTS UC trials performed between May 2021 and November 2021.

Then the second business validation will be performed right before the second cycle of the TRUSTS trials (January 2022 – August 2022), between November and December 2021. And later the second technical validation will be performed in parallel with the UC trials starting on January 2022 ending May 2022.

While finishing the second UC trials cycle by August 2022, the third and final business validation is set to perform between July and September 2022.

As mentioned before, the technical and business validation go hand in hand allowing us to capture the project objectives and satisfy end-user needs via the overall data marketplace evaluation over the three UCs. These validations will give feedback to WP2 and WP3 accordingly for the platform implementation.

These sets of validations are performed by the UC participants before and after each UC trial period, allowing them to check and validate the outcome of the existing technical implementation through predefined scenarios and to document the results.

Figure 1 below is a summary of the above-mentioned plan.

[2] Objective 1: To analyze the EU & worldwide challenges and trends for data-sharing and define the requirements for the provision of a multi, concurrent and cross-domain, secure and scalable end-to-end data marketplace service. Achieving this objective will require capturing and eliciting end-user requirements, as well as a detailed analysis of end-user needs in view of transforming these into specific functional requirements and an architectural design.

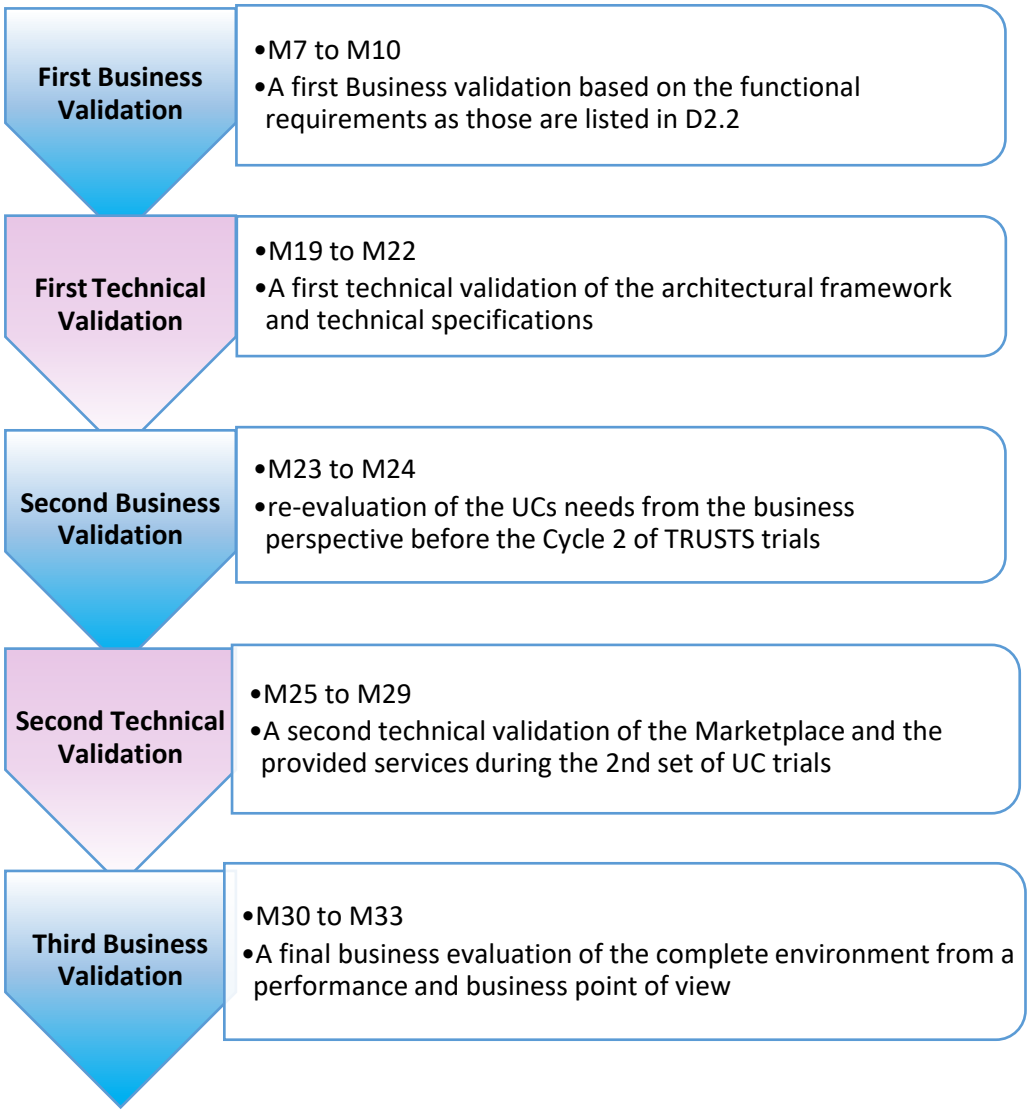

Figure 1: TRUSTS Validation time-plan

In conclusion, the Validation Toolset is basically a set of methodologies to be applied and templates to be used by the partners of the Consortium to validate the progress on the implementation, the data marketplace services and the UCs and the overall alignment with the projects' outputs and objectives. To design those templates, a set of validation methods and procedures combined with validation methodologies have been adopted, as documented in D2.4.

3 TRUSTS Business Validation

This section serves as the key information on the TRUSTS data marketplace Business Validation using Lean Start-up Methodology as defined in D2.4. Furthermore, business validation templates are provided and the KPI's are also presented as a business validation method for the three business-oriented UCs.

3.1 Business Validation Toolset

From a business validation perspective, the collection of the business information to define the needs from the business perspective of each UC participants was defined and the following four aspects were addressed:

i. **Background**: textual description of the business process and context surrounding the UC.
ii. **Personas**: description and introduction of all actors/users who are directly impacted by the UC.
iii. **Problem**: detailed description of the problems that each persona formerly experienced before TRUSTS.
iv. **Expected Benefit**: the benefit that each persona hopes to achieve from the UC (after TRUSTS is implemented).

The Business Validation templates circulated within the UCs is shown in Table 2, Table 3 and Table 4.

Table 2: Business Validation Template

Background *Please provide a textual description of the business process and context surrounding the UC.*	
What is the general context of the UC? (Describe the Organization / business situation) ***Under what circumstances does the UC arise?*** ***How often?*** ***Other information?***	
Describe the Personas *Please describe ALL personas who are **directly** impacted by the UC.* *Describe each persona of the TRUSTS (Consumer? Org/Business operations? Technology? Etc.).* *Please be as specific and detailed as possible about exactly what each persona does.*	
*Describe the **end user personas** (e.g., different types of consumers; operators in a data marketplace?)*	
Persona Name	*Persona Role*
*Describe the **application provider(s)** (who builds and supports the application?)*	
Persona Name	*Persona Role*
*Describe the **data provider(s)** (who will provide data to the application?)*	
Persona Name	*Persona Role*

Describe the Problem *Describe in detail the problems that* each persona*/stakeholder currently experiences (AS-IS today before TRUSTS)* **Personas** (who exactly?) experience this **problem** (what exactly?) when doing this **task** (when does it occur?) OR **Personas** (who exactly?) experience this **problem** (what exactly?) because of this **constraint** or limitation (when does it occur?)	
End user Persona	
Problem	
Task / Constraint	
How is it addressed now? (Pre- TRUSTS)	
Application Provider Persona	
Problem	
Task / Constraint	
How is it addressed now? (Pre- TRUSTS)	
Other Personas	
Problem	
Task / Constraint	
How is it addressed now? (Pre- TRUSTS)	

Describe the Expected Benefit *Describe the benefit that each persona hopes to achieve from the UC (**after** TRUSTS is implemented). Please try to be specific on the benefits that may apply … Cost? Time? Agility? Safety? Security?*	
End user personas	
Describe benefit	
Specific benefit	*Quantify the potential benefit*
Cost reduction?	
Revenue Increase?	
Time saved?	
Faster Time-to-Market?	
Safety?	
Security?	
Accessibility?	
Persona experience?	
Other …	
App. Provider Personas	
Describe benefit	
Specific benefit	*Quantify the potential benefit*
Cost reduction?	
Revenue Increase?	
Time saved?	
Faster Time-to-Market?	
Safety?	
Security?	
Accessibility?	
Persona experience?	

Other …	
Other Provider Personas	
Describe benefit	
Specific benefit	*Quantify the potential benefit*
Cost reduction?	
Revenue Increase?	
Time saved?	
Faster Time-to-Market?	
Safety?	
Security?	
Accessibility?	
Persona experience?	
Other …	

Marketplace Expectations *Please attempt to define what are the expected (required or nice to have) functionalities provided by the TRUST data Marketplace which will benefit in a business level the involved parties of the UC.*		
Functionality	**Beneficiary**	***Required | Nice to Have***

Additional to the Business Validation template the below business questionnaire (see Table 3) was defined in collaboration with WP4 "Privacy preserving technologies", for each UC to respond to in terms of data and security aspects.

Table 3: Business Questionnaire

Question	**Answer**	**Comment**
What is the approximate amount of data expected to have in each data set?		
Is the data public or private?		
What kind of data are we going to have in the TRUSTS marketplace? (Full data, metadata etc.)		
Will access be given to all the use-case datasets?		
For each use case - How often/frequently do the datasets are being updated?		
Will data be privacy preserved by means of the platform or at the bank, insurance company… etc?		
Are the database attributes going to be fixed and standardized, or will the data providers (sellers) decide on which attributes to input to the market?		

Many member states of the European Union do not use the Euro as currency. So, is the market designed to provide insights on financial data with different currencies? Or is it a further step for after the implementation is done?		
How is the communication between data sellers and data customers (buyers) going to take place in the market? Will it be assisted to avoid confidential information leaks during the interactions? For instance, in UC 3, there will be a chatbot to allow the communication, but how about UC 1 and UC 2?		
How do you see the objective of WP4 "this WP is to investigate, design and improve cryptographically secure protocols that enable data analysis of privacy-sensitive data." integrated with your use case? (How does your use case relate to data analysis of privacy-sensitive data?)		

The "Functional Requirements applicability template" (see Table 4) is also set to be circulated for the Business Validation of each UC where the UC leaders map the FRs initially defined in D2.2 and later updated in D2.3 (as per the UCs and end-users' feedback after the first cycle of the projects trials), with the UC applicability.

Table 4: Functional Requirements applicability template

Functional Requirements			**UC1**	**UC2**	**UC3**
#	*Description*	*Tasks involved*	*Applicable/needed or non-applicable/not needed*		
FR1			Yes/No	Yes/No	Yes/No
FR2			Yes/No	Yes/No	Yes/No
FR3			Yes/No	Yes/No	Yes/No
FR#			Yes/No	Yes/No	Yes/No

3.2 First Business Validation

The first Business Validation as per the T2.3 plan and the Gantt Chart (see Annex I: Task 2.3 Gantt Chart) was performed ahead of the launching of the first cycle of the TRUSTS trials, between July – October 2021 (M7-M10) collecting the business information following the above-mentioned templates by the UC leaders. This validation was aligned with the Milestones timeline since it was initiated right after Milestone 1 "Project setup" (M6) and concluded before Milestone 2 "End of first period" (M12).

A detailed collection of business information about the UCs and a definition of several scenarios to be executed on each UC was compiled. The output enabled the business modelling under WP7 (in collaboration with T7.1 Sustainable Business Models) and supported the technical engagement as inputted back to WP2, but also to WP3, and WP4. It is further elaborated in Section 5, "Comprehensive Analysis of the Validation results". The completed versions (input from UCs) are available in Annex II: First Business Validation.

3.3 Second Business Validation

Moving on, the second Business Validation, is set to be performed within November and December 2021 (M23-24), starting prior the second cycle of the trials, and finalised by the end of task 2.3 and WP2, in December 2021. It will be performed by the UC leaders based on the first cycle outcome as well as the plan for the second cycle.

For this re-evaluation, the templates completed during the first Business Validation were modified (when applicable based on UC participants business needs) and were circulated early November to the UCs to re-evaluate their needs from the business perspective that might be slightly changed or enhanced in a year from their first input (First Business Validation). It was initiated after Milestone 3 "First Pilot Deployment" (M18), and during the period of the first UCs Trials, and ends on Milestone 4 "End of second period" (M24).

The outputs of the second business validation will also give input to the D5.2 "*Pilot planning and operational management reports II*" (due January 2022) as per the planning of the second cycle of the project's trials starting January 2022, as well as to the respective deliverables of each UC reporting on the actual field trials and environment, concluding in August 2022. The UCs input is set to be collected by December 2021 and the actual outcome will be reported in the closing deliverable of WP5 concluding the final cycle of the UCs trials.

3.4 Third Business Validation

The third Business Validation is set to be performed from July – September 2022 (M30 to M33), allowing the evaluation of the complete environment from a performance and business point of view, via the measurement of the UCs KPIs and validation of their results, to define the gap towards commercializing the environment. This last round of business validation will be performed again by the UC participants by utilizing the KPIs evaluation templates defined shown in Table 5, Table 6, Table 7 and will input back to final version of the deliverable D5.3, and in D5.11 final performance evaluation of the TRUSTS, both due September-October 2022.

The output of this final business validation will be an input to WP7.

Table 5: TRUSTS UC1 KPIs

KPI	Baseline Value	Target Value (M36)	Calculation Method	Validation Method	Validation Results
Number of alerts per scenario	Number of alerts per scenario issued by WiseBOS ERP solution	Decreased by 50% from baseline	Predefined Scenarios before and after AI will be executed to validate these values	After AI applicability the number of alerts meet the target value.	
Detection accuracy	Detection accuracy from WiseBOS ERP solution	Increased by 50% from baseline	Predefined Scenarios before and after AI will be executed to validate these values	After AI applicability the number of alerts meet the target value.	

Number of false positives	Number of false positives flagged by WiseBOS ERP solution	Reduced by 30% from baseline	Predefined Scenarios before and after AI will be executed to validate these values	After AI applicability the number of alerts meet the target value.	
Number of false negatives	Number of false negatives flagged by WiseBOS ERP solution	Reduced by 30% from baseline	Predefined Scenarios before and after AI will be executed to validate these values	After AI applicability the number of alerts meet the target value.	
SAR (Suspicious Activity Report) capture	70%	>95%	Predefined Scenarios before and after AI will be executed to validate these values	After AI applicability the number of alerts meet the target value.	
Losses due to fraud	As per self-assessment from end-users	Reduced by 30% from baseline	Predefined Scenarios before and after AI will be executed to validate these values	After AI applicability the number of alerts meet the target value.	
Number of data providers interacting with the Platform	2 at the start of the use case	Minimum 10 by M36 (+400%)	2 data providers for UC trials (RDC & InBestMe)	Final measurements need the solution to be installed at production and run for a period	
Number of end-users interacting with the Platform	1 at the start of the use case	Minimum 10 by M36 (+400%)	(NOVA & InBestMe)	Final measurements need the solution to be installed at production and run for a period	

Table 6: TRUSTS UC2 KPIs

KPI	Baseline Value	Target Value (M36)	Calculation Method	Validation Method	Validation Results
Number of target marketing analysis	2 per month	>10 per month	Number of analysis request per month in the TRUSTS data marketplace.	Extraction of the respective log files at	

			The number of the transactions should be logged in the respective TRUSTS module that performs logging and quality assurance of the transactions	the end of each month	
Data readiness for correlation	Low (1 week for data to become ready)	High (1 day for data to become ready)	It refers to the datasets/ metadata sets onboarding process (including contracting and quality checks). The logging module will be used to calculate the KPIs. On boarding process should improve according to the envisaged KPIs	Extraction of the respective log files at the end of each month	
Data valuations	2 per month	>10 per month	It refers to the datasets/ metadata sets requesting data valuation. The logging module will be used to calculate the KPIs.	Extraction of the respective log files at the end of each month	
Data anonymizations/ deanonymizations	<1 per month	>10 per month	It refers to the datasets/ metadata sets requesting anonymization/deanonymisation. The logging module will be used to calculate the KPIs.	Extraction of the respective log files at the end of each month	
Number of data providers interacting with the Platform	2	>10	It refers to the datasets/ metadata sets providers subscribed to the platform. The logging module will be used to calculate the KPIs	Extraction of the respective log files at the end of each month	
Number of end-users interacting with the Platform	2	>10	It refers to users enrolled in the platform to the platform. Each subscribe should enrol at least 1 user. The logging module will be used to calculate the KPIs	Extraction of the respective log files at the end of each month	

Table 7: TRUSTS UC3 KPIs

KPI	Baseline Value	Target Value (M36)	Calculation Method	Validation Method	Validation Results
Decrease (X%) operational cost for the same collectability.	Decrease (estimated at 5%) operational cost for the same	Decrease (estimated at 20-25%) operational cost for the same collectability.	Base line will be taken during analysis phase from the Creditor, to register current KPI metrics (AS IS) and to be able to	Final measurements of KPI needs the solution to be installed at production and run for a period to	

	collectability 5%.		compare with new results (TO BE).	fine-tune and afterwards measure the KPIs.	
Increase (X%) efficiency and productivity.	The human agent's efficiency will be increased by 5% with the help of the Virtual Assistant.	The human agent's efficiency will be increased 15% with the help of the Virtual Assistant.	Base line will be taken during analysis phase from the Creditor, to register current KPI metrics (AS IS) and to be able to compare with new results (TO BE).	Final measurements of KPI needs the solution to be installed at production and run for a period to fine-tune and afterwards measure the KPIs.	
Cost reduction (X%) for process costs on debt management services.	Decrease in wealth management operat-ional costs (through a 20% increase in process au-tomation).	Decrease in wealth management operational costs (Through a 40% increase in process automation).	Base line will be taken during analysis phase from the Creditor, to register current KPI metrics (AS IS) and to be able to compare with new results (TO BE).	Final measurements of KPI needs the solution to be installed at production and run for a period to fine-tune and afterwards measure the KPIs.	
Complaints Rate KPI	Decrease of 5% to 10%.	Decrease of 5% to 10%.	Base line will be taken during analysis phase from the Creditor, to register current KPI metrics (AS IS) and to be able to compare with new results (TO BE).	Final measurements of KPI needs the solution to be installed at production and run for a period to fine-tune and afterwards measure the KPIs.	
Process automation increased (X%).	Estimated increase in efficiency and productivit y by over 15%.	Estimated increase in efficiency and productivity by over 25%.	Base line will be taken during analysis phase from the Creditor, to register current KPI metrics (AS IS) and to be able to compare with new results (TO BE).	Final measurements of KPI needs the solution to be installed at production and run for a period to fine-tune and afterwards measure the KPIs.	
Increase (X%) collectability of debt.	Estimated increase in collectabilit y of debt by 10%.	Estimated increase in collectability of debt by 20%.	Base line will be taken during analysis phase from the Creditor, to register current KPI metrics (AS IS) and to be able to	Final measurements of KPI needs the solution to be installed at production and run for a period to	

			compare with new results (TO BE).	fine-tune and afterwards measure the KPIs.	
Improve (X%) at default predictability.	Foreseeing the end-customer's probability to default in at least 20% of the cases.	Foreseeing the end-customer's probability to default in at least 60% of the cases.	Base line will be taken during analysis phase from the Creditor, to register current KPI metrics (AS IS) and to be able to compare with new results (TO BE).	Final measurements of KPI needs the solution to be installed at production and run for a period to fine-tune and afterwards measure the KPIs.	
Number of data providers interacting with the Platform.	1 at the start of the use case.	Minimum 3 by M36.			
Number of end-users interacting with the Platform.	1 at the start of the use case.	Acquisition 3 customers by M36.			

4 TRUSTS Technical Validation

This section serves as the key information used for the TRUSTS data marketplace Technical Validation performed by the UC participants. A common document template was used among all the UCs to technically evaluate and report the outcomes of these tests back to WP2 and the interrelated WP3, WP5 and WP7. Likewise, a QoS and a QoE surveys as well as a usability scale questionnaire were used collectively.

4.1 Technical Validation

The technical validation refers to the technical and interoperability testing issues related to the platform, the solutions and applications developed in the framework of the data marketplace TRUSTS project. From a technical validation and the test reports format perspective, the following five aspects were addressed:

i. **Functionality Testing**: an *assessment for its correct functioning according to its functional and technical requirements.*
ii. **User Interface Testing**: an e*valuation in respect to its operation, content navigation, etc.*
iii. **Interaction Testing**: *an assessment for errors that may interact with other modules developed in TRUSTS*.
iv. **Performance Testing**: *an assessment of its performance for diverse Internet connection speeds, how its responses to different devices, OSs and browsers and stress testing.*
v. **Security Testing**: *an estimation for unauthorized access to information, unsecured provision of private data etc.*

The structure of these templates is highlighted in the below sections.

4.1.1 User Acceptance Tests (UAT's)

The User Acceptance Tests (UAT's) template helps the UC participants to identify, define and execute test cases based on the defined requirements. In TRUSTS the UAT's will be used by the UC participants to check if the client needs are met with the developed solution. Table 8 presents the defined UAT template to be used during the life cycle of the project. A well-documented UAT test case enables the product or the TRUSTS team to conclude on the next steps and define next actions depending on the test results.

Table 8: Technical UAT Template

UAT Scope	
UAT - In Scope	**UAT - Out of Scope**
In Scope *List features that are tested.*	Out of Scope *List features that are not tested.*
UAT Assumptions and Constraints	
UAT Assumptions	
Assumption *List the UAT assumptions/expectations.*	
UAT Constraints	
Constraint	

List the UAT constraints/limitations.
UAT Risks

Description	Probability High | Medium | Low	Impact High | Medium | Low	Mitigation
Risk *List the risks of UAT.*	*How likely is the risk to occur?*	*What is the impact of the risk on the UAT?*	*Steps to avoid the risk.*
Add more rows if needed.			

UAT Team Roles & Responsibilities		
Name	**Roles**	**Responsibilities**
List names of people involved in testing.	*i.e., UC leader, stakeholder, observer, technical prs etc.*	
List names of people involved in testing.		
Add more rows if needed.		

UAT Entry Criteria
Criteria
Entry Criteria *Factors that must be present to enable the start of the UAT.* ***Example**: Testing environment/VMs/nodes/data available etc.*
UAT Requirements-Based Test Cases
Test Cases
Test Case 1 *Identify the test cases along with the expected results.* *Test Procedure:* *Login with a corporate user account.* *Expected Results:* *An error will be displayed for the wrong credentials.*
Test Case 2 *Identify the test cases along with the expected results.* *Test Procedure:* *Expected Results:*
Test Case 3 *Identify the test cases along with the expected results.:* *Test Procedure:* *Expected Results:*
Add more rows if needed.

UAT Test Results			
Test Cases	**Pass/Fail**	**Tested By**	**Date Tested**
Test Case 1 *Name the test case.:* *Test Procedure:* *Expected Results:*			
Test Case 2 *Name the test case.:* *Test Procedure:* *Expected Results:*			

Test Case 3 *Name the test case.:* *Test Procedure:* *Expected Results:*			
Add more rows if needed.			
Addendums & Appendices			
Include any additional documents or link to screenshots/video to support the above			

4.1.2 Usability Scale Questionnaire

Additionally, TRUSTS validation as part of commercial value and user's experience will be held based on the System Usability Scale (SUS) scoring methodology as mentioned in section 4.1.2. SUS Methodology will enable the overall scoring of TRUSTS marketplace and the offered services based on QoE and QoS as presented in section QoE and QoS Survey4.1.3.

The principal value of the SUS is that it provides a single reference score for participants' view of the usability of a product or a service[3].

Table 9: SUS Standardized Questionnaire, The TRUSTS platform Usability Scale

		Strongly Agree				Strongly Disagree
		1	2	3	4	5
1	I think that I would like to use this platform frequently					
2	I found the platform unnecessarily complex					
3	I thought the platform was easy to use					
4	I think that I would need the support of a technical person to be able to use this platform					
5	I found the various functions in this platform were integrated					
6	I thought there was too much inconsistency in this platform					
7	I would imagine that most people would learn to use this platform very quickly					
8	I found the platform very awkward to use					
9	I felt very confident using the platform					
10	I needed to learn a lot of things before I could get going with this platform					

4.1.3 QoE and QoS Surveys

In the section below an emphasis is given to the QoE and to the QoS, as part of the entire validation process that aims to be followed during projects' lifecycle for the Platform and the offered services in the framework of commercial value testing and user experience.

The user's **QoE** (see Table 10) is directly related to how a user judges the provided service, measures total system performance using subjective and objective measures of customer satisfaction. QoE

[3] https://www.sciencedirec.com/science/article/pii/S1877050915031191

depends on customer experience and within TRUSTS, the QoE is set to evaluate the data marketplace along with the UCs to deliver outputs that have commercial value and potential.

The **QoS** (see Table 11**Error! Reference source not found.**) is set to measure the whole performance of the TRUSTS, regarding the necessity of paying attention to service quality to provide high quality services.

The major requirement is for the project to deliver outputs that have commercial value and potential based on the QoE to measure objective data marketplace user experience and the QoS that will give a qualitative measurement of test execution.

As previously mentioned, these validation methods will be used by the partners, especially the UC participants during the different phases of the TRUSTS Platform implementation. Thus, the SUS Standardized Questionnaire along with the marketplace surveys will be used in parallel with the defined business and technical validation templates during the life cycle of the project. The goal is to validate that the implemented solution is viable and TRUSTS services are sufficient.

Table 10: Quality of Experience, Marketplace Validation Questionnaire

1. Usability of service/application files (code) uploading									
1	2	3	4	5	6	7	8	9	10
2. UI Design of service/application files (code) uploading									
1	2	3	4	5	6	7	8	9	10
3. Usability of service/application test data uploading									
1	2	3	4	5	6	7	8	9	10
4. UI design of service/application test data uploading									
1	2	3	4	5	6	7	8	9	10
5. Usability of smart contract formatting									
1	2	3	4	5	6	7	8	9	10
6. UI Design of smart contract formatting									
1	2	3	4	5	6	7	8	9	10
7. Usability of Terms & Conditions formatting									
1	2	3	4	5	6	7	8	9	10
8. UI Design of Terms & Conditions formatting									
1	2	3	4	5	6	7	8	9	10
9. Usability of service/application on-boarding completion and testing									
1	2	3	4	5	6	7	8	9	10
10. UI Design of service/application on-boarding completion and testing									
1	2	3	4	5	6	7	8	9	10
11. Usability of service/application added in the marketplace catalogue									

1	2	3	4	5	6	7	8	9	10

12. UI Design of service/application added in the marketplace catalogue

1	2	3	4	5	6	7	8	9	10

13. Operation completeness of service/application added in the marketplace catalogue

1	2	3	4	5	6	7	8	9	10

14. Service excellence of service/application added in the marketplace catalogue

1	2	3	4	5	6	7	8	9	10

Table 11: Quality of Service, Marketplace Validation Questionnaire

1. Usability of service/application files (code) uploading

1	2	3	4	5	6	7	8	9	10

2. Security of service/application files (code) uploading

1	2	3	4	5	6	7	8	9	10

3. Easy setup of service/application files (code) uploading

1	2	3	4	5	6	7	8	9	10

4. Usability of service/application test data uploading

1	2	3	4	5	6	7	8	9	10

5. Security of service/application data uploading

1	2	3	4	5	6	7	8	9	10

6. Easy setup of service/application test data uploading

1	2	3	4	5	6	7	8	9	10

7. Usability of smart contract formatting

1	2	3	4	5	6	7	8	9	10

8. Contract quality of smart contract formatting

1	2	3	4	5	6	7	8	9	10

9. Security of smart contract formatting

1	2	3	4	5	6	7	8	9	10

10. Easy setup of smart contract formatting

1	2	3	4	5	6	7	8	9	10

11. Usability of Terms & Conditions formatting

1	2	3	4	5	6	7	8	9	10

12. Contract quality of Terms & Conditions formatting

1	2	3	4	5	6	7	8	9	10

13. Security of Terms & Conditions formatting

1	2	3	4	5	6	7	8	9	10

14. Easy setup of Terms & Conditions formatting

1	2	3	4	5	6	7	8	9	10

15. Usability of service/application on-boarding completion and testing

1	2	3	4	5	6	7	8	9	10

16. Security of service/application on-boarding completion and testing

1	2	3	4	5	6	7	8	9	10

17. Easy setup of service/application on-boarding completion and testing

1	2	3	4	5	6	7	8	9	10

18. Usability of service/application added in the marketplace catalogue

1	2	3	4	5	6	7	8	9	10

19. Security of service/application added in the marketplace catalogues

1	2	3	4	5	6	7	8	9	10

20. Easy setup of service/application added in the marketplace catalogue

1	2	3	4	5	6	7	8	9	10

4.2 First Technical Validation

The first technical validation was performed by the UC participants during the first trial period (May - November 2021), aligned with Milestone's timeline since it is initiated right after Milestone 3 "First Pilot Deployment" (M18). It allowed the test and validation outcome of the existing technical implementation through predefined scenarios and templates, allowing the validation of the architectural framework and technical specifications (T2.4) along with the work under the T3.5 "Initial Platform and integration", assessing its correct functioning according to its functional and technical requirements, User Interface, Interaction (errors), Compatibility, Performance, Security (unauthorized access to information, unsecured provision).

The objective was to validate the three UC's technical wise with technical and interoperability testing issues since before transferring the technology to the market, it first must be validated.

This validation gave feedback to T2.4 and WP3, and it is further elaborated in section 0 "

Comprehensive Analysis of the Validation results". A completed set of these templates are also available in the Annex III: First Technical Validation.

4.3 Second Technical Validation

The second Technical Validation is planned to be performed between January 2022 (M25) to May 2022 (M29), allowing the validation of the Marketplace and the provided services during the second set of UC trials by utilizing the defined test procedures and the reporting structure, and validation of results regarding technology.

This validation will be aligned with the milestone's timeline since it is initiated right after Milestone 4 "End of second period" (M24) and performed by the UC participants during the second set of UCs trial period, allowing them to check and validate the outcome of the technical implementation through predefined scenarios and document the results using the above templates as per Table 8, Table 9, Table 10, Table 11.

This last round of technical validation will also evaluate the complete environment from a technical, performance, expandability (e.g., federation etc.) point of view and define the quality of the implementation. The output will be an input back to WP3 and WP4 for the refinement of the implemented solution (marketplace).

5 Comprehensive Analysis of the Validation results

This section provides a comprehensive analysis of the test results gathered from the first cycle of the TRUSTS UC trials based on the methodologies defined for the business and technical validation mentioned in the above sections 3 and 4.

The technical and business validation go hand in hand allowing us to capture project objectives and satisfy end-user needs via the overall data marketplace evaluation over the three defined UCs.

5.1 Expected outcome

The first business validation outputs to the interrelated WPs, (WP3, WP4, WP5 and WP7) and to the Consortium as a whole, were:

- A detailed collection of business information about the UCs including the description of the problem (before TRUSTS) and the expected benefit (after TRUSTS), different personas, their role and who is directly impacted by the UC.
- A definition of several scenarios to be executed on each UC along with the expected results and a mapping of requirements and functionalities for each scenario.
- An attempt to define what are the expected (required or nice to have) functionalities provided by the TRUSTS data marketplace which will benefit at a business level the involved parties of each UC.
- The revised KPIs per UC by giving some more information about them (including the Baseline value, target value by M36, calculation and validation method).

The following table summarizes the results of the first iteration phase of the technical validation tests that were based on validating the MVP v1 of the platform which is not the final product:

Table 12: Comprehensive evaluation

TRUSTS	First cycle of trials evaluation
UC1	• The flow of the trials and the sequence of the steps was excellent • The usability and simplicity of the UI in the applications, as well as the presentation of the results in the AML applications and the distribution of information in them was adequate • Data seems protected by the encryption used in the Apps, and that Threat models appear to have been considered. • insights as to what to expect is interesting although, not a mature operational enough "platform" where a technical person should accompany the end-user, not user-friendly
UC2	• The consensus was that the procedure was straightforward with well-defined steps and that all the functionalities needed are there and performed well. • The search process had convenient filters when searching for applications and data. • The responders had mixed feelings about the current usability aspect. Overall, it is not considered acceptable, and the use of GUI to access all functionality was essential for the success of the endeavour.

	• The graphical presentation (maps) in the banking application of the respective data analysis was mentioned as a strongpoint. However, it was suggested that a more in-depth presentation of the platform's analytics capabilities should be provided, regarding the graphs and heatmaps of the correlated data. • The process of adding administrator rights needs improvement. In general, it was suggested that procedures should become more familiar to the average user. • More focus should be given to the GDPR principles, and it is required that instructions are provided for non-technical or the non-business users
UC3	• Users can connect to the site with no problem, no connectivity issues occurred to the whole span of the trials. New user accounts can be created easily and can edit the information about the user. • During the service creation, users can upload the pre-defined files and the system creates the relative metadata. User and Bank NODE are securely communicating through the central NODE based on the proper keys provided on both sides. Searching a service is fully functional, and the Bank can request and get the response for the service, through the secure channel already defined in central NODE from the previous steps. • Most of the stakeholders responded regarding the colour scheme of the TRUSTS marketplace. Some button placements were not ideal as there are better places to have them to grab the user's attention. Also, most of the titles/button names did not have the appropriate description to them. As a result, the user was unable to easily find the next step needed to proceed. There were also some mislabelled sections that should be fixed with the appropriate names.

From the Usability scale Questionnaire, the users rated their experience on average with:

Table 13: Usability Scale Questionnaire, users experience of Cycle 1

	UC1	UC2	UC3
would like to use this platform frequently	Neither Agree nor Disagree	Agree	Agree
found the platform unnecessarily complex	Agree	Neither Agree nor Disagree	Disagree
platform was easy to use	Disagree	Neither Agree nor Disagree	Agree
need the support of a technical person to be able to use this platform	Strongly Agree	Agree	Neither Agree nor Disagree
the various functions in this platform were integrated	Disagree	Disagree	Agree
there was too much inconsistency in this platform	Agree	Agree	Neither Agree nor Disagree
most people would learn to use this platform very quickly	Neither Agree nor Disagree	Neither Agree nor Disagree	Agree
the platform was very awkward to use	Agree	Disagree	Neither Agree nor Disagree
felt very confident using the platform	Strongly Disagree	Strongly Agree	Disagree

needed to learn a lot of things before I could get going with this platform	Neither Agree nor Disagree	Agree	Neither Agree nor Disagree

5.2 Recommendations

Several **recommendations** to improve the trials and the marketplace as a product, regarding both Business and Technical evaluation were:

- To become a fully operational European Data Marketplace, providing Intellectual Property management for personal and non-personal related data.
- Act as a platform Federator, laying the groundwork for an ecosystem that will enable federation of independent data marketplaces.
- Even if the comments were positive regarding the steps followed and the flow, the current stage of the TRUSTS marketplace environment development, which is still non-operational as an integrated platform, allowed only selected basic functionalities to be tested (i.e., service onboarding, companies' registration, metadata uploading). Several key functionalities were missed, like subscription, federation even the limitation of needing a technical person to execute the trial sessions was pessimistic.
- More decentralised and clear processes with a user-friendly UI should be considered for the next cycle.
- The User Interface during the Trials was characterized as not acceptable. In fact, an advanced UI has been designed for TRUSTS, with a complete set of menus and flows but was not functional during the trials. It is strongly recommended that it will be integrated in the next MVP version.
- The search process demonstrated convenient filters. There is certainly room for improvement, adding further attributes e.g., keywords, dataset lifecycle, etc.
- Overall, the business applications that were demonstrated met with notable success but there is room for improvements.

The complete documentation provided by the three TRUSTS UCs can be found in Annex II: First Business Validation and Annex III: First Technical Validation.

Additionally, a more detailed report regarding the operational and technical aspects of the lessons learned derived from the three UCs during the first Cycle of the TRUSTS trials, can be found in D5.10 in parallel submitted by December 2021.

6 Conclusions and Next Actions

This deliverable presented the second and final version of the strategy for producing and assessing the methodologies for the testing, validation, and benchmarking of the results as well as for the technical and business validation of the use cases.

This report is under the "Testing framework and benchmarking" Task 2.3 of WP2 "Requirements Elicitation & Specifications" where the base for the overall TRUSTS data marketplace evaluation has been defined in alignment with the scope of the WP2 as per the Grant Agreement.

The document presented the initial process (based on D2.4) where technical and business validation goes hand in hand, starting with templates for the business validation before the technical validation. It laid out the foundation for approaching the trials in a structured approach, focusing on defining the initial test phases namely the test analysis, design and test case specification with their respective activities and the production of the different test artefacts such as the necessary templates. The proposed testing process aligns with the agile methodology allowing for incremental improvements within the defined test methodology but also more importantly within the outcomes namely, the tests to be carried out and the results. It is a documentation of the first Business and the first Technical Validation of the TRUSTS developments as of the first cycle of TRUSTS trials, following the Task 2.3 plan and Gantt Chart (see Annex I: Task 2.3 Gantt Chart), where the results were also documented and will be assisting the execution of the second cycle of TRUSTS trials and improvements.

From the evaluation process and the methodologies followed TRUSTS Consortium and more precisely the related WPs (WP2, WP3, WP4, WP5 and WP7) received valuable feedback therefore, the defined methodology and templates created will be further revised and improved if necessary and used for the next validation iterations for a full business and technical TRUSTS validation.

The next steps considering the Validation process as per the T2.3 Gantt Chart, and the reporting period, is for the UC participants to gather (by December 2021) the second Business Validation information and then execute the test strategy of the second Technical Validation (section 4.2) between January 2022 and May 2022. The third and final Business Validation is set to be performed between June 2022 and September 2022 focusing on the second UC trial cycle concluding in August 2022, with input back to final version of the deliverable D5.3, and in D5.11 final performance evaluation of the TRUSTS, both due September-October 2022.

Respective output will be given to the interrelated WP3 "TRUSTS platform implementation", regarding the platform development and the functionality and performance of the innovative solutions being put forward, including to WP7 "Business Model, Exploitation & Innovation Impact Assurance", with the outputs that have commercial value and potential.

Task 2.3 focused on defining the methods confirming that there is real business value, and how this can be reflected in business metrics. Task 2.3 concludes with this report offering to the TRUSTS Consortium the methodology for the technical and business validation of TRUSTS as well as the comprehensive analysis of the first cycle of trials executed.

Annex I: Task 2.3 Gantt Chart

Validation Type	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15	M16	M17	M18
	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21
						MS1						MS2						MS3
WP2 - T2.3																		
Business Validation (BV)							1st BV											
UC trials											*Preparatory activities - planning, setup of UC's + deployment*					1st phase		
Deliverables						D2.4 (eBOS)												

Validation Type	M19	M20	M21	M22	M23	M24	M25	M26	M27	M28	M29	M30	M31	M32	M33	M34	M35	M36
	Jul-21	Aug-21	Sept-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22
							MS4											MS5
WP2 - T2.3																		
Business Validation (BV)					2nd BV							3rd BV						
Technological Validation (TV)	1st TV						2nd TV											
UC trials				*Preparatory activities - planning, setup of UC's + deployment*			2nd phase											
Deliverables						D2.5 (eBOS)												

Annex II: First Business Validation

UC1: The Anti-Money Laundering (AML) compliance use case

Business Validation

Background *Please provide a textual description of the business process and context surrounding the UC.*	
What is the general context of the UC? (describe the Organization / business situation) UC1 will leverage the power of the TRUSTS Platform in view of securely sharing data between organisations, applying smart big data analytics for AML compliance purposes as well as fairly trading the resulting data to end-users such as the professionals, the Financial Institutions, internal/external auditors, fiduciaries, audit firms, etc. The ambition of EBOS, NOVA and InBestMe is to classify the business and the technical opportunities that are derived from the TRUSTS data marketplace. UC1 aims at establishing and validating how data shared via the Platform can feed into an existing AML solution enhanced with big data analytics, for providing faster and more accurate detection of financial crime and money laundering, and how these enriched data can be securely traded via the Platform. Artificial Intelligence (AI) and Machine Learning (ML) techniques will be applied and are expected to make a significant and valuable difference in AML. Data sharing and trading platforms such as TRUSTS Platform, represent an opportunity to securely share and trade data for AML purposes and thus to maximize operational effectiveness whilst maintaining or reducing costs. ***Under what circumstances does the UC arise?*** The lack of a consolidated and widely viable data marketplace, secure and GDPR compliant adequate to benefit various business collaborations in the framework of AML services enhanced with Artificial Intelligence consist of a necessity to the data market. Such marketplace collaboration will be a benefit for the whole economy since innovative procedures and productions with added value will be inaugurated into the market. Financial institutions, corporate audit departments, tax advisors and many more, need to do AML checks. ***How often?*** It is very common in daily operational procedures of such organisations, to perform profiling customers, monitoring transactions etc. ***Other information?***	
Describe the Personas *Please describe ALL personas who are **directly** impacted by the UC.* *Describe each persona of the TRUSTS (Consumer? Org/Business operations? Technology? Etc.).* *Please be as specific and detailed as possible about exactly what each persona does.*	
*Describe the **end user personas** (e.g., different types of consumers; operators in a data marketplace?)*	
Persona Name	*Persona Role*
InBestMe - a securities agency providing personalized and automatized investment services and portfolio management, will act as data provider.	*Will act as end-user to demonstrate and validate the TRUSTS platform capabilities and effectiveness. As part of its role InBestMe will provide input data about physical and legal entities information (KYC, etc.). AML checks will be performed on those provided input data.*
NOVA - NOVA is one of the largest alternative fixed operators that provides broadband and pay TV services in Greece.	*Will act as an end-user.* NOVA *will search for the AML services either directly or with key words through the search engine.* NOVA *will proceed with smart contract,*

	billing and then will be able to use the adequate AML services through the TRUSTS data marketplace.
TRUSTS	*Will act as user administrator allowing the subscription and user enrolment of companies and with specific roles within the subscribed companies' users/employees. Will also act as service administrator to accept the adequate services.*
*Describe the **application provider(s)** (who builds and supports the application?)*	
Persona Name	*Persona Role*
EBOS Technologies Ltd - an innovative and client-focused Information Technology company providing technically advanced e-business software solutions to enterprise customers on a worldwide basis.	*will act as a service provider by on boarding to the TRUSTS data marketplace the WiseBOS AML services. (Risk Assessment, Screening and Transaction Monitoring).*
*Describe the **data provider(s)** (who will provide data to the application?)*	
Persona Name	*Persona Role*
InBestMe - securities agency providing personalized and automatized investment services and portfolio management	*Transaction Data Provider for companies/person investments and personal information. This will be input data to the TRUSTS services to execute the scenarios.*
NOVA - NOVA is one of the largest alternative fixed operators that provides broadband and pay TV services in Greece with more than 1 million subscriptions. Using state-of-the-art technologies and fully exploiting its knowhow, Forthnet offers a set of individual or bundled fixed telephony, broadband internet, and TV-content services (primarily DTH and recently OTT), to customers, enterprises, and Public Bodies throughout Greece.	*Provide telecommunications data and personal information. This will be input data to the TRUSTS services to execute the scenarios.*
EBOS - (RDC)	*Will act as a data provider, by utilizing data from RDC (3rd party data provider). To do that, EBOS has a signed agreement to access those data. Those data is related to PEP lists, Sanction lists, Adverse Media and all of them are considered as private data (since a subscription to access them is required). The input data (provided by the end-users) includes physical and legal entities information (KYC, etc.), will be evaluated/ checked for any AML suspicious activities. Those checks will be based on provided RDC data and will be used as the main source for the calculations performed by TRUSTS services to provide the necessary results back to the end users (risk volume, etc.).*
Describe the Problem *Describe in detail the problems that* each persona*/stakeholder currently experiences (AS-IS today before TRUSTS)* The lack of a consolidated and widely viable data marketplace, secure and GDPR compliant adequate to benefit various business collaborations in the framework of AML services enhanced with Artificial Intelligence and machine learning techniques.	

Personas (who exactly?) experience this **problem** (what exactly?) when doing this **task** (when does it occur?) OR • Financial Institutions • Corporate offices • Audit and Law firms • Estate agents • Automotive dealers, etc All the above, are struggling daily to prevent money laundering activities and financial crime by their clients. **Personas** (who exactly?) experience this **problem** (what exactly?) because of this **constraint** or limitation (when does it occur?)

End user Persona	
Problem	*Not an easily access to services with consolidated information related to AML.*
Task / Constraint	*Provide AML operations in daily basis.*
How is it addressed now? (Pre- TRUSTS)	*Purchases services from different providers and manually combine them.*
Application Provider Persona	
Problem	*Advance and more accurate resulting AML services.*
Task / Constraint	*Application of ML and AI on historical data in* data-driven *AML services.*
How is it addressed now? (Pre- TRUSTS)	*It is not addressed.*
Other Personas	
Problem	
Task / Constraint	
How is it addressed now? (Pre- TRUSTS)	

Describe the Expected Benefit
*Describe the benefit that each persona hopes to achieve from the UC (**after** TRUSTS is implemented). Please try to be specific on the benefits that may apply … Cost? Time? Agility? Safety? Security?*

End user personas	
Describe benefit	➢ *a next generation Anti-Money Laundering data-driven model* ➢ *provide better evaluation of the risk score/assessment* ➢ *better man-power management* ➢ *Better detection accuracy* ➢ *more efficient investigations through intelligent advanced AML customer monitoring techniques.* ➢ *reduce the number of false positives and false negatives through better detection accuracy.* ➢ *Detect real-time transaction - based KYC anomalies,* ➢ *Detect even unknown behavioural and* ➢ *Detect more complex money laundering patterns* ➢ *competitive advantage* ➢ *all interested businesses will be fully compliant to the AML regulations so,* ➢ *the fines will drop* ➢ *lead to reduced compliance costs,* ➢ *SME's will gain access through TRUSTS to an affordable dedicated solution.*
Specific benefit	*Quantify the potential benefit*

Cost reduction?	*Cannot be quantified currently*
Revenue Increase?	*Cannot be quantified currently*
Time saved?	*Cannot be quantified currently*
Faster Time-to-Market?	*Cannot be quantified currently*
Safety?	*Cannot be quantified currently*
Security?	*Cannot be quantified currently*
Accessibility?	*Cannot be quantified currently*
Persona experience?	
Other …	
App. Provider Personas	
Describe benefit	*Provision of advance and more accurate resulting AML services via a secured platform in multiple companies at the same time and with the enhanced analysis and combination of examined data*
Specific benefit	*Quantify the potential benefit*
Cost reduction?	*YES but cannot be quantified currently*
Revenue Increase?	*YES but cannot be quantified currently*
Time saved?	*YES but cannot be quantified currently*
Faster Time-to-Market?	*YES but cannot be quantified currently*
Safety?	
Security?	
Accessibility?	
Persona experience?	
Other …	
Other Provider Personas	
Describe benefit	
Specific benefit	*Quantify the potential benefit*
Cost reduction?	
Revenue Increase?	
Time saved?	
Faster Time-to-Market?	
Safety?	
Security?	
Accessibility?	
Persona experience?	
Other …	

Marketplace Expectations

Please attempt to define what are the expected (required or nice to have) functionalities provided by the TRUSTS data Marketplace which will benefit in a business level the involved parties of the UC.

Functionality	**Beneficiary**	***Required | Nice to Have***
Advance AML services and more accurate resulting with access via a secured	Both service providers and organisations that are supposed to purchase those services.	

environment. ML and AI enhanced analysis and combination of examined data for better results.		
an opportunity to securely share and trade data for AML purposes and thus to maximize operational effectiveness whilst maintaining or reducing costs.		

UC1_Business Questionnaire

Question	Answer	Comment
What is the approximate amount of data expected to have in each data set?	Approximately a couple of hundreds of records per data set.	
Is the data public or private?	Mostly Private data. Data from 3rd party provider are private since a subscription is needed to retrieve them. The data provider is RDC (https://rdc.com/)	
What kind of data are we going to have in the TRUSTS marketplace? (Full data, metadata etc.)	Full data related to personal information. Minimum input for screening service: For physical person (name, surname, and nationality) For legal entity (name and jurisdiction of the company) Minimum input for risk assessment service: For physical person (nationality) For legal entity jurisdiction of the company.	
Will access be given to all the use-case datasets?	Secure access needs to be initiated	
How often/frequently do the datasets are being updated?	The data of the RDC provider are being updated daily	
Will data be privacy preserved by means of the platform or at the bank, insurance company… etc?	By platform	
Are the database attributes going to be fixed and standardized, or will the data providers (sellers) decide on which attributes to input to the market?	The database attributes are fixed.	

Many member states of the European Union do not use the Euro as currency. So, is the market designed to provide insights on financial data with different currencies? Or is it a further step for after the implementation is done?	For the project/UC1 and the validation of the Marketplace we believe that there is no need to go into that details.	
How is the communication between data sellers and data customers (buyers) going to take place in the market? Will it be assisted to avoid confidential information leaks during the interactions? For instance, in UC 3, there will be a chatbot to allow the communication, but how about UC1?	There are not data sellers apart from RDC. Furthermore, TRUSTS marketplace will offer services such as services catalogue, smart contracting, transaction logging, etc.	
How do you see the objective of WP4 "this WP is to investigate, design and improve cryptographically secure protocols that enable data analysis of privacy-sensitive data." integrated with your use case? (how does your use case related to data analysis of privacy-sensitive data?)	Data analysis and machine learning techniques shall be implemented for UC1 for Risk Assessment and Transaction Monitoring. The difficult part here is that in UC1 there is no Financial Institution to provide transaction information. All the transactions are injected by the user and the AML services are not performing any cross checks to validate those transactions. All calculations are based on user input. This will further be discussed between EBOS and WP4.	

UC2: "The agile marketing through data correlation use case"

Background *Please provide a textual description of the business process and context surrounding the UC.*
What is the general context of the UC? (describe the Organization / business situation) The challenging envisioned business process of correlating external data sources in a GDPR and other respective regulations compatible manner e.g., anonymised, and aggregated CRM data of NOVA and PB, has been chosen as a base evaluation scenario. Current practices e.g., absence of a unified and commonly acceptable technical and business framework able to assist such business collaboration, make it difficult to explore such business opportunities since all respective negotiations must start each time from the beginning. Nevertheless, both NOVA and PB understand that such collaboration will be beneficial for both the companies and the clientele since it will lead to better products targeting real subscriber/client needs. The whole economy will be benefited as well since innovative process and product production value chains will be established. Such innovative processes will be tested through UC2 trials for their user friendliness, completeness, and business effectiveness. ***Under what circumstances does the UC arise?*** The UC arises when two external companies would like to correlate in a GDPR compatible way dataset using standardized and trustworthy processes. ***How often?***

We cannot estimate the frequency for the time being since such processes are not currently applied. *Other information?*
Describe the Personas *Please describe ALL personas who are **directly** impacted by the UC* *Describe each persona of the TRUSTS (Consumer? Org/Business operations? Technology? Etc.).* *Please be as specific and detailed as possible about exactly what each persona does.*
*Describe the **end user personas** (e.g., different types of consumers; operators in a data marketplace?)*

Persona Name	*Persona Role*
NOVA & PB IT department executive (and their potential external support)	*Produce the datasets and use the TRUSTS services*
NOVA & PB Marketing executive	*Analyze the correlation results*

*Describe the **application provider(s)** (who builds and supports the application?)*	
Persona Name	*Persona Role*
TRUSTS (The application should be provided by TRUSTS even using third party applications. Processes, quality standards, help desk and operations should be provided by TRUSTS).	*TRUSTS operation, application, and processes provision.*

*Describe **other actors** directly involve/impacted by the UC?*	
Persona Name	*Persona Role*
End user personas	
N/A	

Describe the Problem

Describe in detail the problems that each persona*/stakeholder currently experience (AS-IS today before TRUSTS)*

Personas (who exactly?) experience this **problem** (what exactly?) when doing this **task** (when does it occur?) OR

Personas (who exactly?) experience this **problem** (what exactly?) because of this **constraint** or limitation (when does it occur?)

End user Persona	
Problem	*The correlation of external datasets will provide further insight for targeted marketing activities*
Task / Constraint	*Currently not standardized and GDPR compliant processes exist for external datasets correlation. Not a trust organization that will undertake the provision of such services.*
How is it addressed now? (Pre- TRUSTS)	*Not addressed currently.*
Application Provider Persona	
Problem	*The correlation application e.g., MPC should be provided by TRUSTS*
Task / Constraint	
How is it addressed now? (Pre- TRUSTS)	
Other Personas	
Problem	
Task / Constraint	
How is it addressed now? (Pre- TRUSTS)	

Describe the Expected Benefit

*Describe the benefit that each persona hopes to achieve from the UC (**after** TRUSTS is implemented).*

Please try to be specific on the benefits that may apply … Cost? Time? Agility? Safety? Security?	
End user personas	
Describe benefit	*The benefit will be the ability to augment business by receiving better insight in a standardized way. The provision of standard trustworthy and GDPR compliant processes by TRUSTS will be the real benefit beyond the specific UC.*
Specific benefit	*As above*
Cost reduction?	*Cannot be quantified currently*
Revenue Increase?	*Cannot be quantified currently*
Time saved?	*Cannot be quantified currently*
Faster Time-to-Market?	*Cannot be quantified currently*
Safety?	*Cannot be quantified currently*
Security?	*Cannot be quantified currently*
Accessibility?	*Cannot be quantified currently*
Persona experience?	*Cannot be quantified currently*
Other …	
App. Provider Personas	
Describe benefit	*This information should be provided by TRUSTS operations*
Specific benefit	*Quantify the potential benefit*
Cost reduction?	
Revenue Increase?	
Time saved?	
Faster Time-to-Market?	
Safety?	
Security?	
Accessibility?	
Persona experience?	
Other …	
Other Provider Personas	
Describe benefit	
Specific benefit	*Quantify the potential benefit*
Cost reduction?	
Revenue Increase?	
Time saved?	
Faster Time-to-Market?	
Safety?	
Security?	
Accessibility?	
Persona experience?	
Other …	
Marketplace Expectations	

Please attempt to define what are the expected (required or nice to have) functionalities provided by the TRUST data Marketplace which will benefit in a business level the involved parties of the UC.		
Functionality	**Beneficiary**	***Required | Nice to Have***
It is envisaged to provide all the FR functionalities described in D2.2 and in particular: Service Onboarding Companies' subscription Service catalogue usage Service usage Contract fulfilment, service performance tracking, quality evaluation	All personas	*Required*

UC2_Business Questionnaire

Question	**Answer**	**Comment**
What is the approximate amount of data expected to have in each data set?	NOVA's anonymized CRM data that will be used in the trials are in the order of MBytes or GBytes. The complete CRM volume is to TBytes but only an indicative subset with adequate volume is meaningful to be used in the UC2 trials.	
Is the data public or private?	NOVA: Private	
What kind of data are we going to have in the TRUSTS marketplace? (Full data, metadata etc.)	NOVA: Full anonymised CRM data	
Will access be given to all the use-case datasets?	NOVA: only secure access e.g., using MPC/PSI will be allowed	
For each use case - How often/frequently do the datasets are being updated?	NOVA: The CRM data are updated monthly	
Will data be privacy preserved by means of the platform or at the bank, insurance company… etc?	NOVA: Only anonymised CRM data will be offered to the trials. Within the UC2 trials no data will be exchanged. The analysis will be done using MPC/PSI services offered by the TRUSTS data marketplace. In addition, the de-anonymisation risk analysis service that will be offered by TRUSTS will be used on premises.	
Are the database attributes going to be fixed and standardized, or will the data providers (sellers) decide on which attributes to input to the market?	NOVA: The database attributes are fixed. The analysis through MPC/PSI will be based on the Postal Code attribute.	

Many member states of the European Union do not use the Euro as currency. So, is the market designed to provide insights on financial data with different currencies? Or is it a further step for after the implementation is done?	NOVA: Not applicable in UC2	
How is the communication between data sellers and data customers (buyers) going to take place in the market? Will it be assisted to avoid confidential information leaks during the interactions? For instance, in UC 3, there will be a chatbot to allow the communication, but how about UC 1 and UC 2?	NOVA: In UC2 there are no data sellers. There will be application sellers/providers through the TRUSTS data marketplace e.g., MPC/PSI, data anonymization risk analysis, etc. In addition, the TRUSTS data marketplace will offer services e.g., services catalogue, data catalogue, federation, service onboarding or liaising, subscription, smart contracting, transaction logging, etc.	
How do you see the objective of WP4 "this WP is to investigate, design and improve cryptographically secure protocols that enable data analysis of privacy-sensitive data." integrated with your use case? (how does your use case related to data analysis of privacy-sensitive data?)	NOVA: As we describe in D2.2 in the UC2 section (Section 9.2) the envisaged services that the TRUSTS data marketplace will offer are (page 65): • Anonymization: Nice to have. Anonymization in the trial will be done prior to data entering TRUSTS but is a feature that TRUSTS must have • Deanonymization risk analysis: All data must be checked for potential risks • MPC/PSI: secure intersection of data without having access to the other party data • Reporting: Transaction logging compliant to GDPR • Operational/Subscription/Federation/Quality services Among others, MPC and PSI implementations/offered services provide the required cryptography and security for the analysis of private-sensitive data. Of course, we are open to WP4 proposals for additional services following the analysis of the D2.2 Functional Requirements (or any other complementary WP4 initiative)	

UC3: "The data acquisition to improve customer support services use case"

Background *Please provide a textual description of the business process and context surrounding the UC.*

What is the general context of the UC? (describe the Organization / business situation)
The TRUSTS Data Marketplace vision is to create a platform for sharing data, and through them to support the development of innovative ways of human-computer interaction currently in their infancy, e.g., chatbots that can act as automated assistants to support customers to resolve issues relating to their arrears at their own pace and with a personalized experience, through the analysis of Big Data using machine learning.
Under what circumstances does the UC arise?
When there is a need for Automated Debt Collection "service".
How often?
On demand
Other information?
The purpose of this demonstrator is the development of an innovative offering in the field of debt collections – that is a fully automated debt collections resolution center, leveraging the power of the TRUSTS Platform. The idea is that through enhanced analytics, AI and the integration of bots, a Creditor will be able to run their debt collection department without needing to employ a very large number of agents to contact and negotiate with customers their debt resolution.

Describe the Personas
*Please describe ALL personas who are **directly** impacted by the UC*
Impacted directly by the UC are Alpha Bank customers that will benefit from the service.
*Describe each **persona** of the TRUSTS (Consumer? Org/Business operations? Technology? Etc.).*
Alpha Bank (Data Provider/Consumer), Relational ("Service" provider), NOVA (tester)
Please be as specific and detailed as possible about exactly what each persona does.
The actors involved in Use Case 3 are:
Data Provider/End User (Banking Organization/Creditor: Alpha Bank): Provider of financial/personal data, purchase of anonymized telecommunication customer data and targeted marketing analysis. Anonymization of data for privacy preservation. Use of Chatbot Service to handle debt resolution process. REL: Data cleaning and pruning to reduce noise and useless entries. Model training and iteration of extraction/cleaning process if needed.
Service Provider (REL): Extraction of key data from core banking systems, REL main contribution is to provide and advance in their products. Relational Romania will bring the AroTRON Collection & Recoveries to test and validate improved and more natural ways of communications and debt collection for banks. REL will be the leading partner of WP2 on Natural Interaction and will coordinate the work under this demonstrator. REL is an experienced partner both in terms of coordination and management of collaborative European projects as well as software provider to the finance and banking sector.
NOVA (Tester): will test the service e.g., providing communication channel from web customers that will allow agents to handle many conversations with end-customers at the same time.

FORTH (Developer): Will contribute to the improvement of the conversational UI's usability by conducting evaluation sessions with UX experts. FORTH will also provide anonymization services for the data to be provided by NOVA.
To this end, NOVA will use the REL service to evaluate it for technical usability.

*Describe the **end user personas** (e.g., different types of consumers; operators in a data marketplace?)*

Persona Name	*Persona Role*
Alpha Bank	Data Consumer
Alpha Bank	Data Provider

*Describe the **application provider(s)** (who builds and supports the application?)*

Persona Name	*Persona Role*
REL	Automated Debt Collection provider (AI/ML)

*Describe **other actors** directly involve/impacted by the UC?*

Persona Name	*Persona Role*

End user personas	*Alpha Bank*
Testers for UC3	Forth, NOVA
Describe the Problem *Describe in detail the problems that* each persona*/stakeholder currently experience (AS-IS today before TRUSTS)* **Personas** (who exactly?) experience this **problem** (what exactly?) when doing this **task** (when does it occur?) OR **Personas** (who exactly?) experience this **problem** (what exactly?) because of this **constraint** or limitation (when does it occur?)	
End user Persona	Alpha Bank
Problem	High costs to manage the Debt Collection Process due to the need of many Agents to contact them. High number of complaints due to the nature of the communication.
Task / Constraint	
How is it addressed now? (Pre- TRUSTS)	Agents are calling the Customers to negotiate the debt resolution.
Application Provider Persona	
Problem	
Task / Constraint	
How is it addressed now? (Pre- TRUSTS)	
Other Personas	
Problem	
Task / Constraint	
How is it addressed now? (Pre- TRUSTS)	
Describe the Expected Benefit *Describe the benefit that each persona hopes to achieve from the UC (**after** TRUSTS is implemented). Please try to be specific on the benefits that may apply … Cost? Time? Agility? Safety? Security?*	
End user personas	
Describe benefit	Lower cost of Debt Collection expenses (KPI: Expenses (€) / Collected Amount (€). Improve Customer Satisfaction due to personalized, 24x7 and discrete service.
Specific benefit	*Quantify the potential benefit*
Cost reduction?	Decrease operational cost for the same collectability, decrease in debt management operational costs
Revenue Increase?	Increase in collectability of debt and better foresee the end-customer's probability to default
Time saved?	
Faster Time-to-Market?	
Safety?	
Security?	Due to the elimination of the human factor the security process can be fully applied.
Accessibility?	Also enables people with special needs to get serviced.
Persona experience?	
Other …	Better KPIs of Capital which will position better the Bank in the market / evaluations.
App. Provider Personas	

Describe benefit	***Same as for End User***
Specific benefit	*Quantify the potential benefit*
Cost reduction?	
Revenue Increase?	
Time saved?	
Faster Time-to-Market?	
Safety?	
Security?	
Accessibility?	
Persona experience?	
Other …	
Other Provider Personas	
Describe benefit	
Specific benefit	*Quantify the potential benefit*
Cost reduction?	
Revenue Increase?	
Time saved?	
Faster Time-to-Market?	
Safety?	
Security?	
Accessibility?	
Persona experience?	
Other …	

Marketplace Expectations

Please attempt to define what are the expected (required or nice to have) functionalities provided by the TRUST data Marketplace which will benefit in a business level the involved parties of the UC.

Functionality	**Beneficiary**	***Required | Nice to Have***
TRUSTS operational functions/operations: To sustain its operation TRUSTS should support the following operational functionality: • On-boarding of external data • Services on-boarding • Metadata discovery (catalogue) and maintenance (descriptions, tags etc.) • Service usage and billing • GDPR related certifications • Logging and auditing	**Alpha Bank**	• On-boarding of external data: required • Services on-boarding: required • Metadata discovery (catalogue) and maintenance: required (descriptions, tags etc.) • Service usage and billing: required • GDPR related certifications: nice to have • Logging and auditing: required

UC3_Business Questionnaire

Question	Answer	Comment
What is the approximate amount of data expected to have in each data set?	TBD in more details later during project. Estimations are 100-300 GBs for financial related information, loans, credit limits, risk events, amounts, maturity rates etc	
Is the data public or private?	Private	
What kind of data are we going to have in the TRUSTS marketplace? (Full data, metadata etc.)	Both Relational, in collaboration with the Creditor/Banking Organization will perform data anonymization/masking techniques that will protect and anonymize input data owned by the Creditor, just before any interaction with TRUSTS data market to prevent any issues regarding data privacy. Moreover, the models behind AI can be trained on anonymized data and it makes sense for Use Case 3. Relational will provide anonymized benchmarks related to debt collection, on combined data, during post processing and final analysis of all input data involved in Use Case 3.	
Will access be given to all the use-case datasets?	The input datasets will not be accessible but will be used only for processing and machine learning. Moreover, Anonymized data will be used (just before any interaction with TRUSTS data market to prevent any issues regarding data privacy)	
For each use case - How often/frequently do the datasets are being updated?	Daily	
Will data be privacy preserved by means of the platform or at the bank, insurance company… etc?	Both. Considered as means of the bank; considered as means by platform for later phases of the project	
Are the database attributes going to be fixed and standardized, or will the data providers (sellers) decide on which attributes to input to the market?	Fixed and standardized, supporting data subsets by means of formatting.	
Many member states of the European	Regarding UC3, multicurrency should be	

Union do not use the Euro as currency. So, is the market designed to provide insights on financial data with different currencies? Or is it a further step for after the implementation is done?	supported as the value of the financial data is important factor for decision purposes.	
How is the communication between data sellers and data customers (buyers) going to take place in the market? Will it be assisted to avoid confidential information leaks during the interactions? For instance, in UC 3, there will be a chatbot to allow the communication, but how about UC 1 and UC 2?	TBD Chatbot – the communication channels should be secured, and the data stored encrypted.	
How do you see the objective of WP4 "this WP is to investigate, design and improve cryptographically secure protocols that enable data analysis of privacy-sensitive data." integrated with your use case? **(How does your UC relate to data analysis of privacy-sensitive data?)**	TBD Chatbot – the communication channels should be secured, and the data stored encrypted.	

Functional Requirements applicability per UC

Functional Requirements		**UC1**	**UC2**	**UC3**
#	*Description*	*Applicable/ needed or non-applicable/not needed*	*Applicable/ needed or non-applicable/not needed*	*Applicable/ needed or non-applicable/not needed*
FR1	The system should provide standardized API descriptions for enabling providers to onboard their datasets and services	Yes	Yes	Yes
FR2	The system should provide APIs that enable its interoperability/federation with other industrial marketplaces and external sources	Yes	Yes	Yes
FR3	The system should be able to provide datasets and services descriptions	Yes	Yes	Yes
FR4	The system should provide reference mechanisms to open data from 3rd sources, so as to make available as an option	Yes	Yes	Yes

	through its data exploration, profiling and provision mechanisms			
FR5	The system should provide rich search mechanisms across all federated nodes for available datasets and services	Yes	Yes	Yes
FR6	The system should be able to provide datasets and services recommendations to its' users pertaining to their profile and needs	Yes	Yes	Yes
FR7	The system should employ matchmaking mechanisms through which hosted datasets are matched with hosted services (e.g., suitable for their analysis) and vice versa.	Yes	Yes	Yes
FR8	The system should identify and match related datasets to provide combined and enriched data	Yes	Yes	Yes
FR9	The system should be able to improve datasets and services profiles based on extracted information originating from the available data	Yes	Yes	Yes
FR10	The system should provide smart contract mechanisms as a validation means of sellers/buyer's agreements	Yes	Yes	Yes
FR11	The system should ensure the integrity and authenticity of the smart contracts signed by its users	Yes	Yes	Yes
FR12	The system should provide a human friendly representation of smart contracts (e.g., natural language)	Yes	Yes	Yes
FR13	Signed smart contracts should be legally valid, enforceable, and interpretable	Yes	Yes	Yes
FR14	The system should encompass mechanisms for keeping transactions performed ensuring that they cannot be infringed	Yes	Yes	Yes
FR15	The system should provide billing mechanisms for enabling consumers to pay providers according to the agreed smart contract.	Yes	Yes	Yes

FR16	The system must provide alternative and flexible pricing models taking into consideration the diversity of the available datasets and services	Yes	Yes	Yes
FR17	The system should provide brokerage mechanisms for addressing the offerings and demands of the hosted datasets and services	Yes	Yes	Yes
FR18	The system should provide explicit metadata information for each dataset or service is accommodated in the platform	Yes	Yes	Yes
FR19	The system should incorporate models, ontologies and taxonomies for the classification and semantic representation of the accommodated datasets and services in the platform	Yes	Yes	Yes
FR20	The system should be able to incorporate well established or standardized ontologies from different scientific, industrial, and business domains for the description of the semantic representation of the hosted datasets and services	Yes	Yes	Yes
FR21	The system should provide mechanisms capable to identify the provenance of the hosted datasets	Yes	Yes	Yes
FR22	The system should provide mechanisms capable to identify the lifecycle of the hosted datasets	Yes	Yes	Yes
FR23	The system should harvest metadata extraction from external datasets	Yes	Yes	Yes
FR24	The system should be able to provide semantic information even for unstructured datasets	Yes	Yes	Yes
FR25	The system should be able to keep continuously updated profiles of the hosted datasets and services based on related interactions performed with the system	Yes	Yes	Yes
FR26	Dataset discovery should be based on the FAIR principle	Yes	Yes	Yes

FR27	TRUSTS datasets and services should be provided to the users on demand, regardless of geographic or organizational separation between provider and consumer considering all potential territorial legislation/ regulatory restrictions.	Yes	Yes	Yes
FR28	TRUSTS should be able to be deployed as a federation of distributed, interconnected, and interoperable nodes.	Yes	Yes	Yes
FR29	The system should enable its users to explore data and services openly, providing public descriptions. However, purchased data and services need to be exchanged point-to-point, between the seller and the buyer. Users should be rated for their quality of transactions.	Yes	Yes	Yes
FR30	The system should support mechanisms for users' (producers/consumers) subscription opting different schemes (e.g., annual, monthly, etc.) and authentication	Yes	Yes	Yes
FR31	The system should support corporate accounts that fall under one subscription/enrolment per organization	Yes	Yes	Yes
FR32	The system should enable users to create, read, update, and delete (withdraw or make unavailable) datasets, services, and user profile records	Yes	Yes	Yes
FR33	The system should provide validation criteria for the new enrolled users, as well as reputation schemes regarding available datasets and services.	Yes	Yes	Yes
FR34	The system should allow consumers to announce their need for specific datasets / services if there are not any available, already.	Yes	Yes	Yes
FR35	The system should provide notifications regarding datasets / services updates to users that have granted access to them	Yes	Yes	Yes

FR36	The system should provide easy to use UIs (ensuring effectiveness, efficiency, and user satisfaction) that will help users to accomplish their tasks effectively and prevent them from committing errors	Yes	Yes	Yes
FR37	TRUSTS UIs and workflows have to follow a business-wise rational (e.g., one stop shop), for coherently mapping the market's needs.	Yes	Yes	Yes
FR38	The system must provide cryptographic and secure protocols for the analysis of sensitive data as required by the respective stakeholders.	Yes	Yes	Yes
FR39	The system should provide de-anonymization attack assessment and risk analysis for the private / sensitive datasets to be on board	Yes	Yes	Yes
FR40	The system should employ anonymization tools and guidelines for data anonymization	Yes	Yes	Yes
FR41	The system should provide means for converting algorithms that might compromise the data privacy into safe privacy preserving ones without harming their functionality	Yes	Yes	Yes
FR42	The system should incorporate well established ML algorithms that can be used by the TRUSTS customers for data analysis and classification.	Yes	Yes	Yes
FR43	The system must incorporate a secure infrastructure for the distributed analysis of data based on ML approaches	Yes	Yes	Yes
FR44	Mechanisms provided by the TRUSTS platform regarding personal data, non-personal data and services exploration, exchange agreements and purchase, should be compliant with the following regulations (when applicable)	Yes	Yes	Yes

Annex III: First Technical Validation

UC1:

User Acceptance Test

UAT Scope	
UAT - In Scope	**UAT - Out of Scope**
In Scope ● Companies' subscription ● Application search on catalogue ● Data onboarding and app execution	Out of Scope ● Smart contracts and payment - non implemented yet
UAT Assumptions and Constraints	
UAT Assumptions	
Assumption ● Successful access to the TRUSTS portal ● User friendly platform UI with clear processes ● Successful subscription/enrolment of the companies ● Contract fulfilment, service performance tracking ● Successful access to the platform by the end-user ● Successful application search on the TRUSTS catalogue ● Successful onboarding of data ● Successful application downloads and execution ● User friendly app UI with clear processes	
UAT Constraints	
Constraint ● Non-user-friendly UI or clear process ● Non implemented functionalities (i.e., smart contract) ● Need of a technical person to execute the trial overall	

UAT Risks			
Description	**Probability** **High | Medium | Low**	**Impact** **High | Medium | Low**	**Mitigation**
Risk *List the risks of UAT.*	*How likely is the risk to occur?*	*What is the impact of the risk on the UAT?*	*Steps to avoid the risk.*
Add more rows if needed.			

UAT Team Roles & Responsibilities		
Name	**Roles**	**Responsibilities**
GIANNA AVGOUSTI	UC LEADER	TRIALS DIRECTIONS AND FUNCTIONALITIES TO TEST
MICHALIS SPYROU	TECH PERSON	TECH GUIDANCE AND EXECUTION OF STEPS
KONSTANTINOS THEODOROPOULOS	NOVA	Observer, participant

UAT Entry Criteria
Criteria
It is required to have the TRUSTS platform or the VM platform environment), required data input, required applications, required parameterization, etc.
UAT Requirements-Based Test Cases

Test Cases			
Test Case 1 **Companies' subscription** *Test Procedure:* Access to the TRUSTS portal. Access the registration area of the portal and selection of the appropriate subscription service Selection of the appropriate contract and enrolment *Expected Results:* Successful access, selection of contract and subscription			
Test Case 2 **Application search on catalogue** *Test Procedure:* Access to the TRUSTS portal. Login with a corporate user account. Application search on catalogue *Expected Results:* Successful access, login, and search result			
Test Case 3 **Data onboarding and app execution** *Test Procedure:* Access as a Consumer User into the Trust Platform Navigation into the Platform for searching Apps, Services and Datasets. Download of the three AML applications on premises, upload of data onboarding and application execution *Expected Results:* Successful download of the three apps, successful upload of data onboarding and execution of the three AML applications on premises			
UAT Test Results			
Test Cases	**Pass/Fail**	**Tested By**	**Date Tested**
Test Case 1 **Companies' subscription** ***Example***: *Test Procedure:* End-users' enrolment *Expected Results:* Successful subscription of an end-user. Successful definition of roles. Successful enrolment of end-user's representatives	PASS	GIANNA AVGOUSTI + MICHALIS SPYROU + KONSTANTINOS THEODOROPOULOS	14-10-2021
Test Case 2 **Application search on catalogue** *Test Procedure:* Application search on catalogue by the end-user *Expected Results:* End user successfully accesses the TRUSTS platform End user searches the word "AML" in the catalogue The search result to be successful	PASS	GIANNA AVGOUSTI + MICHALIS SPYROU + KONSTANTINOS THEODOROPOULOS	14-10-2021
Test Case 3 **Data onboarding and app execution** *Test Procedure:*	PASS	GIANNA AVGOUSTI + MICHALIS SPYROU +	14-10-2021

Download of the three AML applications on premises and successful execution of the services/solution *Expected Results:* Successful download of the three AML applications on premises Successful access to the AML applications UI on premises Successful upload of data onboarding Successful execution of their services/solution		KONSTANTINOS THEODOROPOULOS	
Addendums & Appendices			
Link to screenshot and trials documentation = TRUSTS_UC1_14-10-2021 - Google Drive			

SUS Standardised Questionnaire

The TRUSTS platform Usability Scale

		Strongly Agree 1	2	3	4	Strongly Disagree 5
1	I think that I would like to use this platform frequently			■		
2	I found the platform unnecessarily complex		■			
3	I thought the platform was easy to use				■	
4	I think that I would need the support of a technical person to be able to use this platform	■				
5	I found the various functions in this platform were integrated				■	
6	I thought there was too much inconsistency in this platform		■			
7	I would imagine that most people would learn to use this platform very quickly			■		
8	I found the platform very awkward to use		■			
9	I felt very confident using the platform					■
10	I needed to learn a lot of things before I could get going with this platform			■		

Quality of Experience
Marketplace Validation Questionnaire

1. Usability of service/application files (codes) uploading

best 1 2 3 **4** 5 6 7 8 9 10 worst

2. UI Design of service/application files (code) uploading

1 2 3 4 5 6 **7** 8 9 10

3. Usability of service/application test data uploading

1 2 3 **4** 5 6 7 8 9 10

4. UI design of service/application test data uploading

1 2 3 4 5 6 **7** 8 9 10

5. Usability of smart contract formatting

1 2 3 4 5 6 7 8 9 10

6. UI Design of smart contract formatting

1	2	3	4	5	6	7	8	9	10

7. Usability of Terms & Conditions formatting

1	2	3	4	5	6	7	8	9	10

8. UI Design of Terms & Conditions formatting

1	2	3	4	5	6	7	8	9	10

9. Usability of service/application on-boarding completion and testing

1	2	3	4	5	6	7	8	9	10

10. UI Design of service/application on-boarding completion and testing

1	2	3	4	5	6	7	8	9	10

11. Usability of service/application added in the marketplace catalogue

1	2	3	4	5	6	7	8	9	10

12. UI Design of service/application added in the marketplace catalogue

1	2	3	4	5	6	7	8	9	10

13. Operation completeness of service/application added in the marketplace catalogue

1	2	3	4	5	6	7	8	9	10

14. Service excellence of service/application added in the marketplace catalogue

1	2	3	4	5	6	7	8	9	10

Quality of Service
Marketplace Validation Questionnaire

1. Usability of service/application files (code) uploading

best

1	2	3	4	5	6	7	8	9	10

worst

2. Security of service/application files (code) uploading

1	2	3	4	5	6	7	8	9	10

3. Easy setup of service/application files (code) uploading

1	2	3	4	5	6	7	8	9	10

4. Usability of service/application test data uploading

1	2	3	4	5	6	7	8	9	10

5. Security of service/application data uploading

1	2	3	4	5	6	7	8	9	10

6. Easy setup of service/application test data uploading

1	2	3	4	5	6	7	8	9	10

7. Usability of smart contract formatting

1	2	3	4	5	6	7	8	9	10

8. Contract quality of smart contract formatting

1	2	3	4	5	6	7	8	9	10

9. Security of smart contract formatting

1	2	3	4	5	6	7	8	9	10

10. Easy setup of smart contract formatting

1	2	3	4	5	6	7	8	9	10

11. Usability of Terms & Conditions formatting

1	2	3	4	5	6	7	8	9	10

12. Contract quality of Terms & Conditions formatting

1	2	3	4	5	6	7	8	9	10

13. Security of Terms & Conditions formatting

1	2	3	4	5	6	7	8	9	10

14. Easy setup of Terms & Conditions formatting

1	2	3	4	5	6	7	8	9	10

15. Usability of service/application on-boarding completion and testing

1	2	3	4	5	6	7	8	9	10

16. Security of service/application on-boarding completion and testing

1	2	3	4	5	6	7	8	9	10

17. Easy setup of service/application on-boarding completion and testing

1	2	3	4	5	6	7	8	9	10

18. Usability of service/application added in the marketplace catalogue

1	2	3	4	5	6	7	8	9	10

19. Security of service/application added in the marketplace catalogues

1	2	3	4	5	6	7	8	9	10

20. Easy setup of service/application added in the marketplace catalogue

1	2	3	4	5	6	7	8	9	10

UC2:

User Acceptance Test

UAT Scope	
UAT - In Scope	**UAT - Out of Scope**

In Scope	Out of Scope
The scope of the trials is to contribute the TRUSTS development process and verify that the produced environment complies with the project scope	Logs, Smart contracts, and payment - non implemented yet

UAT Assumptions and Constraints

UAT Assumptions

Assumption

- At least **PSI/MPC, deanonymization risks analysis applications** are successfully on-boarded on TRUSTS nodes.
- Successful subscription of NOVA, PB, FORTH and LST.
- Successful definition of roles.
- Successful enrolment of NOVA, PB, FORTH and LST representatives.
- Successful upload of metadata and introduction to the catalogue

UAT Constraints

Constraint

- Non-user-friendly UI or clear process
- Non implemented functionalities (i.e., logs)
- Need of a technical person to execute the trial

UAT Risks

Description	Probability High | Medium | Low	Impact High | Medium | Low	Mitigation
Risk *List the risks of UAT.*	*How likely is the risk to occur?*	*What is the impact of the risk on the UAT?*	*Steps to avoid the risk.*
Add more rows if needed.			

UAT Team Roles & Responsibilities

Name	Roles	Responsibilities
Konstantinos Theodoropoulos	UC Leader	Trial organising
George Margetis, Xavi Olivaresd	Tech Person	Tech guidance and steps execution
Evangelos Kotsifakos, George Kostopoulos,	Stakeholders	
Manos Papadakis, Manos Adamakis, Takis Kanakakis	Participants – Technical observers	Observers
Panayotis Katopis,	Participant - business observer	Observer

UAT Entry Criteria

Criteria

Entry Criteria
.VM platform environment,
Required: Data, Apps, Metadata, Services

UAT Requirements-Based Test Cases

Test Cases

Test Case 1
Service Onboarding
On boarding of MPC/PSI (onboarding, smart contract, inclusion to the service catalogue, quality test). Federation issues should be tested e.g., service onboarding in different federated nodes

Expected Results: The MPC/PSI service is successfully checked for security and malfunction issues and on-boarded to TRUSTS using the provided UI. A respective smart contract is issued, and the service usages rules are defined.
Test Case 2 **Companies' subscription** *NOVA and PB subscription (selection of plan, subscription, signing the contract/smart contract, companies' representative's definition, and roles). Federation issues should be tested e.g. companies subscribed in different federated nodes* *Expected Results:* NOVA, PB, FORTH and LST are subscribed to a specific subscription service using the UI provided by TRUSTS. NOVA and PB users are subsequently enrolled according to the rules of the subscription that each company chose.
Test Case 3 **Metadata uploading** *NOVA and PB onboard the metadata. Federation issues should be tested e.g. companies subscribed in different federated nodes.* *Expected Results:* The metadata upload process is successfully performed, their lifecycle is defined, and they are discoverable in the catalogue
Test Case 4 **Service catalogue usage** *Search in service catalogue by NOVA and PB for discovering the appropriate metadata, the adequate PSI, deanonymization risk analysis, etc. services. Federation issues should be tested e.g. transparently searching to all federated nodes* *Expected Results:* NOVA and PB search through the catalogue for the required service transparently to all federated nodes. In addition, they may see the T&Cs of the services usage.
Test Case 5 **Service usage** *Schedule service usage (MPC, PSI, De-anonymization risk analysis, end to end TRUSTS service), deploy any necessary modules, use the service, evaluate the outcome* *Expected Results:* The involved parties purchase the service usage and use it according to the contract. Transactions are logged. At the end of the transaction the respective billing is issued.

UAT Test Results			
Test Cases	**Pass/Fail**	**Tested By**	**Date Tested**
Test Case 1 **Service Onboarding** *Step 1. The application provider (PSI, de-anonymisation risk analysis) accesses the TRUSTS portal* *Step 2. The application provider reads the portal information and informative text* *Step 3. The application provider reads standards that the TRUSTS marketplace complies to and privacy policies e.g. GDPR, etc.*	Steps 1, 6, 9 Pass Non implemented steps 2,3,4,5,7,8,10	Xavi Olivares, George Margetis	1-10-2021

Step 4. The application provider accesses the registration area of the portal and selects the appropriate application upload subscription service *Step 5. The application provider selects the appropriate contract (price is set by the application provider, TRUSTS compensation scheme is defined as standard term in the contract) and electronically signs it.* *Step 6. The application provider uploads the application in the TRUSTS application introduction area. Alternatively the application can be externally linked* *Step 7. TRUSTS operators check the application quality and security issues. This could be done manually and offline by TRUSTS operators.* *Step 8. TRUSTS accepts the application* *Step 9. TRUSTS introduces the application in the catalogue to be available to all federated nodes. Terms of usage of the application are included in the application description as well* *Step 10.All transactions above are logged to ensure quality and traceability.* *Expected Results:* User friendliness, Clear processes			
Test Case 2 **Companies' subscription** *Step 11.The subscriber (NOVA, PB, FORTH, LST) accesses the TRUSTS portal* *Step 12.The subscriber reads the portal information and informative text* *Step 13.The subscriber reads standards that the TRUSTS marketplace complies to and privacy policies e.g. GDPR, etc.* *Step 14.The subscriber accesses the registration area of the portal and selects the appropriate subscription service (the trial should be done on both standalone TRUSTS installation and federated mode where the subscribers will enrol in different federated marketplaces)* *Step 15.The subscriber selects the appropriate contract and electronically signs it.* *Step 16.The subscriber enrols its representative and respective roles* *Step 17.The subscriber verifies if he/she wants to be included in the catalogues (suppose YES)* *Step 18.The TRUSTS platform system activates the contract and introduces the subscriber into the catalogue to be visible in all federated nodes*	Steps 11,16,17,19 Pass Step18, PARTLY Achieved (contracts aren't yet implemented) Steps 12, 13, 14, 15 aren't yet implemented	Konstantinos Theodoropoulos George Kostopoulos George Margetis Evangelos Kotsifakos	1-10-2021

Step 19.All transactions above are logged to ensure quality and traceability. *Expected Results:* User friendliness, Clear processes			
Test Case 3 **Metadata uploading** *Step 20.The subscriber representatives (NOVA, PB) access the TRUSTS portal and login* *Step 21.The platform verified credentials and validity of subscription* *Step 22.The subscribers reach the metadata upload area and describes the appropriate information* *Step 23.TRUSTS platform automatically checks if the information is complete and introduced to the metadata to the catalogues in order to the discovered in all federated marketplaces* *Step 24.All transactions above are logged to ensure quality and traceability.* *Expected Results:* Successful access of actors to TRUSTS Successful upload of NOVA and PB metadata Successful upload of NOVA and PB metadata to the catalogue	Pass step 20,22,23 Steps 21,24 aren't yet implemented	Xavi Olivares, George Margetis	1-10-2021
Test Case 4 **Service catalogue usage** *Step 25.The subscriber representatives (NOVA, PB) accesses the TRUSTS portal and login* *Step 26.The platform verified credentials and validity of subscription* *Step 27.The subscribers accesses the catalogues and searches for appropriate metadata and PSI application in a user friendly manner* *Step 28.NOVA and PB select the appropriate metadata and service and initiate the usage process* *Step 29.All transactions above are logged to ensure quality and traceability.* *Expected Results:* Successful access of actors to TRUSTS	Pass step 25,27,28 Steps 26,29 aren't yet implemented	George Margetis, Xavi Olivares	1-10-2021
Test Case 5 **Service usage** *Step 30* The subscriber representatives (NOVA, PB) access the TRUSTS portal and login *Step 31.*The platform verified credentials and validity of subscription *Step 32.*The subscribers access the catalogues and search for appropriate metadata and applications in a user-friendly manner	Pass step 30,32,33 Step 31 not yet implemented	Evangelos Kotsifakos, Manos Adamakis, George Margetis, Xavi Olivares,	1-10-2021

*Step 33.*NOVA and PB select the appropriate metadata and service and initiate the usage process *Expected Results:* Successful access of actors to TRUSTS Applications are successfully deployed in the respective corporate nodes 3 applications are used			
Addendums & Appendices			
Link to screenshots and trials documentation https://drive.google.com/drive/folders/1koEQ1QjuQ_j9kX3Ef4T8655k6vvq1RW8?usp=sharing			

The TRUSTS platform Usability Scale

		Strongly Agree				Strongly Disagree
		1	2	3	4	5
1	I think that I would like to use this platform frequently		X			
2	I found the platform unnecessarily complex			X		
3	I thought the platform was easy to use			X		
4	I think that I would need the support of a technical person to be able to use this platform		X			
5	I found the various functions in this platform were integrated				X	
6	I thought there was too much inconsistency in this platform		X			
7	I would imagine that most people would learn to use this platform very quickly			X		
8	I found the platform very awkward to use				X	
9	I felt very confident using the platform	X				
10	I needed to learn a lot of things before I could get going with this platform		X			

Quality of Experience

Marketplace Validation Questionnaire

1. Usability of service/application files (code) uploading

best 1 2 3 4 5 6 7 8 9 10 worst

	X								

2. UI Design of service/application files (code) uploading

1 2 3 4 5 6 7 8 9 10

X									

3. Usability of service/application test data uploading

1 2 3 4 5 6 7 8 9 10

	X								

4. UI design of service/application test data uploading

1 2 3 4 5 6 7 8 9 10

		X							

5. Usability of smart contract formatting

1 2 3 4 5 6 7 8 9 10

6. UI Design of smart contract formatting

1 2 3 4 5 6 7 8 9 10

7. Usability of Terms & Conditions formatting

1	2	3	4	5	6	7	8	9	10

8. UI Design of Terms & Conditions formatting

1	2	3	4	5	6	7	8	9	10

9. Usability of service/application on-boarding completion and testing

1	2	3	4	5	6	7	8	9	10
			X						

10. UI Design of service/application on-boarding completion and testing

1	2	3	4	5	6	7	8	9	10
	X								

11. Usability of service/application added in the marketplace catalogue

1	2	3	4	5	6	7	8	9	10
		X							

12. UI Design of service/application added in the marketplace catalogue

1	2	3	4	5	6	7	8	9	10
		X							

13. Operation completeness of service/application added in the marketplace catalogue

1	2	3	4	5	6	7	8	9	10
	X								

14. Service excellence of service/application added in the marketplace catalogue

1	2	3	4	5	6	7	8	9	10
		X							

Quality of Service
Marketplace Validation Questionnaire

1. Usability of service/application files (code) uploading

1	2	3	4	5	6	7	8	9	10
	X								

best worst

2. Security of service/application files (code) uploading

1	2	3	4	5	6	7	8	9	10
				X					

3. Easy setup of service/application files (code) uploading

1	2	3	4	5	6	7	8	9	10
		X							

4. Usability of service/application test data uploading

1	2	3	4	5	6	7	8	9	10
X									

5. Security of service/application data uploading

1	2	3	4	5	6	7	8	9	10
				X					

6. Easy setup of service/application test data uploading

1	2	3	4	5	6	7	8	9	10
	X								

7. Usability of smart contract formatting

1	2	3	4	5	6	7	8	9	10

8. Contract quality of smart contract formatting

1	2	3	4	5	6	7	8	9	10

9. Security of smart contract formatting

1	2	3	4	5	6	7	8	9	10

10. Easy setup of smart contract formatting

1	2	3	4	5	6	7	8	9	10

11. Usability of Terms & Conditions formatting

1	2	3	4	5	6	7	8	9	10

12. Contract quality of Terms & Conditions formatting

1	2	3	4	5	6	7	8	9	10

13. Security of Terms & Conditions formatting

1	2	3	4	5	6	7	8	9	10

14. Easy setup of Terms & Conditions formatting

1	2	3	4	5	6	7	8	9	10

15. Usability of service/application on-boarding completion and testing

1	2	3	4	5	6	7	8	9	10
		X							

16. Security of service/application on-boarding completion and testing

1	2	3	4	5	6	7	8	9	10
				X					

17. Easy setup of service/application on-boarding completion and testing

1	2	3	4	5	6	7	8	9	10
		X							

18. Usability of service/application added in the marketplace catalogue

1	2	3	4	5	6	7	8	9	10
	X								

19. Security of service/application added in the marketplace catalogues

1	2	3	4	5	6	7	8	9	10
		X							

20. Easy setup of service/application added in the marketplace catalogue

1	2	3	4	5	6	7	8	9	10
		X							

UC3:

User Acceptance Test

UAT Scope	
UAT - In Scope	**UAT - Out of Scope**

In Scope	Out of Scope
• Actors Onboarding and maintenance • Services onboarding and maintenance • Catalogue search for data and services • Download/Consume data	-

UAT Assumptions and Constraints

UAT Assumptions

Assumption
- User friendly platform UI with clear processes
- User friendly app UI with clear processes

UAT Constraints

Constraint
- Non-user-friendly UI or clear process
- Non-implemented functionalities (i.e., smart contract)

UAT Risks

Description	Probability High | Medium | Low	Impact High | Medium | Low	Mitigation
-	-	-	-

UAT Team Roles & Responsibilities

Name	Roles	Responsibilities
Manos Paschalakis	*UC leader*	
Konstantinos Argyropoulos	*Technical Person*	
Nikolaos Fourlataras	*Technical Person*	

UAT Entry Criteria

Criteria

It is required to have the TRUSTS platform or the VM platform environment), required data input, required services running, required parameterization, etc.

UAT Requirements-Based Test Cases

Test Cases

Test Case 1

Actors Onboarding and maintenance

Test Procedure:

Users connect to the TRUSTS UI, register, log in.

Expected Results:

Users successfully connect to the TRUSTS UI, register, log in.

Test Case 2

Services onboarding and maintenance

Test Procedure:

Users connect to the TRUSTS UI; they can create a service and can edit a service.

Expected Results:

Users successfully connect to the TRUSTS UI; they create a service and edit a service.

Test Case 3

Catalogue search for data and services

Test Procedure:

Users can search for a dataset or a service

Expected Results:

Users can successfully search and get results for a dataset or a service

Test Case 4

Download/Consume data *Test Procedure:* *Users can download the service's resources* *Expected Results:* *Users can successfully download the service's resources*			
UAT Test Results			
Test Cases	**Pass/Fail**	**Tested By**	**Date Tested**
Test Case 1 **Actors Onboarding and maintenance** *Test Procedure:* *Users connect to the TRUSTS UI, register, log in.* *Expected Results:* *Users successfully connect to the TRUSTS UI, register, log in.*	Pass	Konstantinos Argyropoulos	29/09/21
Test Case 2 **Services onboarding and maintenance** *Test Procedure:* *Users connect to the TRUSTS UI, they can create a service and can edit a service.* *Expected Results:* *Users successfully connect to the TRUSTS UI, they create a service and edit a service.*	Pass	Konstantinos Argyropoulos	29/09/21
Test Case 3 **Catalogue search for data and services** *Test Procedure:* *Users can search for a dataset or a service* *Expected Results:* *Users can successfully search and get results for a dataset or a service*	Pass	Konstantinos Argyropoulos	29/09/21
Test Case 4 **Download/Consume data** *Test Procedure:* *Users can download the service's resources* *Expected Results:* *Users can successfully download the service's resources*	Pass	Konstantinos Argyropoulos	29/09/21
Addendums & Appendices			
Link to trial's folder: https://drive.google.com/drive/u/0/folders/1YPwO2SAEvlYvtteigqudI7XD9Iir9Lqw			

The TRUSTS platform Usability Scale

		Strongly Agree				Strongly Disagree
		1	2	3	4	5
1	I think that I would like to use this platform frequently		x			
2	I found the platform unnecessarily complex				x	
3	I thought the platform was easy to use		x			

4	I think that I would need the support of a technical person to be able to use this platform			x		
5	I found the various functions in this platform were integrated		x			
6	I thought there was too much inconsistency in this platform			x		
7	I would imagine that most people would learn to use this platform very quickly		x			
8	I found the platform very awkward to use			x		
9	I felt very confident using the platform				x	
10	I needed to learn a lot of things before I could get going with this platform			x		

Quality of Experience
Marketplace Validation Questionnaire

1. Usability of service/application files (code) uploading

best

1	2	3	4	5	6	7	8	9	10
	x								

worst

2. UI Design of service/application files (code) uploading

1	2	3	4	5	6	7	8	9	10
			x						

3. Usability of service/application test data uploading

1	2	3	4	5	6	7	8	9	10
	x								

4. UI design of service/application test data uploading

1	2	3	4	5	6	7	8	9	10
			x						

5. Usability of smart contract formatting

1	2	3	4	5	6	7	8	9	10
			x						

6. UI Design of smart contract formatting

1	2	3	4	5	6	7	8	9	10
			x						

7. Usability of Terms & Conditions formatting

1	2	3	4	5	6	7	8	9	10
									x

8. UI Design of Terms & Conditions formatting

1	2	3	4	5	6	7	8	9	10
									x

9. Usability of service/application on-boarding completion and testing

1	2	3	4	5	6	7	8	9	10
		x							

10. UI Design of service/application on-boarding completion and testing

1	2	3	4	5	6	7	8	9	10
				x					

11. Usability of service/application added in the marketplace catalogue

1	2	3	4	5	6	7	8	9	10
	x								

12. UI Design of service/application added in the marketplace catalogue

1	2	3	4	5	6	7	8	9	10

				x					

13. Operation completeness of service/application added in the marketplace catalogue

1	2	3	4	5	6	7	8	9	10
		x							

14. Service excellence of service/application added in the marketplace catalogue

1	2	3	4	5	6	7	8	9	10
		x							

Quality of Service
Marketplace Validation Questionnaire

1. Usability of service/application files (code) uploading

best worst

1	2	3	4	5	6	7	8	9	10
		x							

2. Security of service/application files (code) uploading

1	2	3	4	5	6	7	8	9	10
				x					

3. Easy setup of service/application files (code) uploading

1	2	3	4	5	6	7	8	9	10
				x					

4. Usability of service/application test data uploading

1	2	3	4	5	6	7	8	9	10
		x							

5. Security of service/application data uploading

1	2	3	4	5	6	7	8	9	10
				x					

6. Easy setup of service/application test data uploading

1	2	3	4	5	6	7	8	9	10
				x					

7. Usability of smart contract formatting

1	2	3	4	5	6	7	8	9	10
					x				

8. Contract quality of smart contract formatting

1	2	3	4	5	6	7	8	9	10
					x				

9. Security of smart contract formatting

1	2	3	4	5	6	7	8	9	10
					x				

10. Easy setup of smart contract formatting

1	2	3	4	5	6	7	8	9	10
					x				

11. Usability of Terms & Conditions formatting

1	2	3	4	5	6	7	8	9	10
									x

12. Contract quality of Terms & Conditions formatting

1	2	3	4	5	6	7	8	9	10
									x

13. Security of Terms & Conditions formatting

1	2	3	4	5	6	7	8	9	10
									x

14. Easy setup of Terms & Conditions formatting

1	2	3	4	5	6	7	8	9	10
									x

15. Usability of service/application on-boarding completion and testing

1	2	3	4	5	6	7	8	9	10
			x						

16. Security of service/application on-boarding completion and testing

1	2	3	4	5	6	7	8	9	10
		x							

17. Easy setup of service/application on-boarding completion and testing

1	2	3	4	5	6	7	8	9	10
			x						

18. Usability of service/application added in the marketplace catalogue

1	2	3	4	5	6	7	8	9	10
		x							

19. Security of service/application added in the marketplace catalogues

1	2	3	4	5	6	7	8	9	10
		x							

20. Easy setup of service/application added in the marketplace catalogue

1	2	3	4	5	6	7	8	9	10
			x						