Once-Only Technical System Projectathon, 15-17 May 2024, Brussels

Event report

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DOCUMENT HISTORY

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> *"Thank You to the Commission's OOTS teams for organising the best Projectathon so far, and thank you to all the other member state teams for the testing, collaboration and great discussions!".*
> (Finland, LinkedIn, May 2024)

Figure 1: The Theatre used for introduction and closure of the May 2024 Projectathon

On 15-17 May 2024, the European Commission organised the fourth Once-Only Technical System Projectathon, the first edition of 2024. The 2024 OOTS Projectathons differ from those in 2023, by focusing on specific evidence domains and inviting Competent Authorities([1]) to participate. Projectathons are marathons of peer-to-peer interoperability and compliance tests in a structured environment ([2]).

Using a dedicated testing platform, Member States teamed up to test with each other in "real" exchanges using test data. Technical experts, acting as monitors, supervised and verified the tests over

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([1]) Competent Authorities are the public bodies who provide or receive the authentic data required to complete the cross-border administrative procedures listed in the SDG Regulation.

([2]) *Notice: Please note that the OOTS Projectathons series in 2023 and the May 2024 Projectathon were testing events on a limited scale. While these Projectathons aim to support participants with their respective Once-Only implementations, the results, analysis, and figures contained within this report are not a definite benchmark of the readiness of any given Once-Only implementation.*

three days. This Projectathon focused on five evidence exchange scenarios "without a preview area", five evidence exchange scenarios "with a preview area", and two optional maintenance flow scenarios.

In total, five keynote speakers from DGs GROW, REFORM and DIGIT of the European Commission were present to open and to conclude this event.

Participants executed 215 peer-to-peer tests (tests shared between two Member States). This Projectathon concluded with a success rate of 74% for tests between participants; 19 tests failed (9%), and 22 tests were "partially verified" (10%) (these tests were close to be "verified" but were missing additional proofs from the Member States (such as evidence request or response messages)). At the closing of this event, 14 (7%) tests were still "running", meaning that the test was initiated but could not progress to a full test case validation. These tests were concluded by additional exchanges between testers and monitors in the days following the event.

1. INTRODUCTION

Figure 2: One of the plenary rooms used during the May 2024 Once-Only Technical System Projectathon

On 15-17 May 2024, the European Commission organised the fourth Once-Only Technical System (OOTS) Projectathon. This hands-on event allowed Member States to test their implementation of the technical components that underpin national Once-Only implementations.

The May 2024 Projectathon focused on Education and Population data, linking the Once-Only Technical System with related systems such as EMREX. EMREX is an independent, international network that provides an electronic data exchange solution aiming to empower individuals to control their own student data and exchange throughout the lifespan, across borders and for various purposes. For this Projectathon, the European Commission invited Competent Authorities to participate. As authentic data (such as permits or diplomas) are exchanged through the Once-Only Technical System, Competent Authorities are those organisations that either request or provide the data.

The participating Member States had differing levels of maturity in their implementations of the OOTS, as during the 2023 OOTS Projectathon series. There was an option for Member States that were not yet ready with the new specifications to participate as "observers" on site, allowing them to participate in dedicated OOTS workshops, although Member States were encouraged to join as participants where possible.

This event clearly showed the progress being made at national level in terms of implementing the Once-Only Technical System, and the great value of such large-scale testing events. In total, there were 26 Member States on site (21 participants and five observers); only one country actively participated remotely (Cyprus), and one observed remotely (Czech Republic).

The April and June 2023 Projectathons were opportunities for stakeholders to learn, make mistakes, help each other, and assess the status of their respective Once-Only implementations. Building on these events, the October 2023 event focused on assessing the production readiness of the Once-Only

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Technical System components and was stricter in evaluating Test Cases. The May 2024 event was even stricter than the October 2023 edition, also including Technical Design Document (TDD) evolutions such as the newly added cross-validation rules that can validate relations between different XML structures.

> *"Another Projectathon. Another work week well spent in Brussels. Excellent organization. "*
> *(Portugal - LinkedIn, May 2024)*

This report summarises key results from the testing that took place from 15-17 May 2024. It also provides an overview of lessons learnt and serves as inspiration for other projects aiming to utilise the concepts and methodologies used in the preparation and execution of this hands-on event.

This report contains some technical terminology, which is mostly explained in footnotes. Please consult the Once-Only implementers can access a dedicated glossary and Technical Design Documents glossary for additional information about key concepts used in the context of this report.

1.1.   CONTEXT

The Single Digital Gateway (SDG) is a critical contribution to the well-functioning of the Single Market and the long-term competitiveness of the EU as it increases transparency and cuts red tape for citizens and businesses. As mandated by Article 14 of the SDG Regulation (EU) 2018/1724, a key objective is to make administrative procedures fully online and connected to the Once-Only Technical System for the automated cross-border exchange of official documents.

The Once-Only Technical System will greatly facilitate life for everyone who is travelling, living, or learning in another EU country. It will enable citizens to transfer evidence (e.g., an official document) automatically without the need to search, retrieve and re-submit it across borders while keeping the user in control of their data. The Once-Only Technical System also supports more transparency and less red tape for companies to improve business environment in the EU.

The Once-Only Technical System is a technical framework for data sharing between Competent Authorities in the Member States to complete cross-border administrative procedures for **studying, working, moving, and doing business in the EU**. It intends to connect the authentic data sources of EU public authorities – population registers, business registers, etc. – so they can exchange official documents and evidence, for example, registering an address or vehicle when moving abroad. This eliminates complicated manual search and fetching of evidence to complete administrative procedures in other EU countries.

In 2022, the Commission adopted Implementing Regulation (EU) 2022/1463, which provides a comprehensive framework to implement the Once-Only Technical System. It drives Member States to reuse existing EU digital solutions, based on Open Standards and aligned to EU regulations to entrench EU values of trust, good governance, and smart investment (eIDAS, GDPR, procurement, etc.).

The Once-Only Technical System project is a collaboration between the Commission's Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs (DG GROW) as policy owner, and the Directorate-General for Digital Services (DIGIT) as solution provider. Other Commission services, such as DGs EMPL (Employment, social affairs, and inclusion), CNECT (Communications Networks, Content and Technology) and JUST (Justice and Consumers) also contribute to this initiative.

1.2. OBJECTIVE & BENEFITS

> Now on my way home after an intense but very good week in Brussels. Together with my fantastic colleagues, I have [...] participated in a so-called Projectathon organized by the European Commission. There, in addition to the Commission, we meet other Member States (all but one participated, i.e., 26 countries) who, like us, are working on the implementation of the SDG Regulation and the Technical System for Cross-Border Exchange of Evidence (OOTS)." (Sweden – translation from Swedish -, LinkedIn, May 2024)

The key objective of the Once-Only Technical System Projectathon series is to facilitate the implementation of the Once-Only Technical System by the Member States by offering a 'safe space' environment for testing between the various participating teams.

In 2023, Projectathons began in April. A June Projectathon allowed certain teams to perform basic tests relating to their technical implementations. Other teams could consolidate progress made in the first Projectathon in April 2023. October 2023 Projectathon focused on production-ready Once-Only components. Specifically, during the October 2023 Projectathon, EMREX ([3]) joined as a participant equivalent to the Member States, covering the testing of a technical bridge concept to their system and were present in exploratory room sessions as well (see OOTS related systems (EMREX)).The 2024 OOTS Projectathons are thematic and involve Competent Authorities. The themes are related to a subset of the 21 specific procedures laid out in the SDGR ([4]) that must be made available to users fully online, where users can provide and request supporting evidence through the OOTS, and to sign and submit the application to the Competent Authorities. Competent Authorities are the organisations who will request or provide authentic data (such as permits or diplomas) that are exchanged through the Once-Only Technical System. The May 2024 event focused on administrative procedures involving evidence related to Population registries and Education Credentials, and on linking OOTS with related systems such as EMREX. EMREX is an independent, international network that provides an electronic data exchange solution aiming to empower individuals to control their own student data and exchange throughout lifespan, across borders and for various purposes. During this specific Projectathon, several Member States participated as EMREX providers (Croatia, Netherlands, Norway, Poland, and Sweden) and requesters (like Greece and several other participating Member States).

Monitors validated the peer-to-peer transactions relevant to their areas or expertise ([5]). In addition, the Once-Only Support team assisted participants in logging issues and requests, notifying issues related to eDelivery, logging organisational requests and issues, requesting assistance in component level testing

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([3]) EMREX is a technical solution used to securely exchange educational data between students and third parties, for example between higher education institutions, admission offices or future employers. See: https://emrex.eu/

([4]) https://ec.europa.eu/digital-building-blocks/sites/display/OOTS/About+OOTS

([5]) Monitors are neutral experts who are familiar with the Once-Only Technical System specifications or with building blocks that are reused in the Once-Only Technical System architecture, such as eDelivery or eIDAS eID, or members of the OOTS Support team, TDD team or Testing team (see chapter 1.4 "Preparation" for more details).

and logging questions related to the Technical Design Documents. Participants could access the Gazelle test bed ([6]), supported by a dedicated team of Commission experts.

In addition, participants learnt about topics related to Once-Only Technical System, such as Semantic Repository, UX Lab, Common Services UX, OOTS Operational Governance and eDelivery integration, Related systems, and Onboarding of Competent Authorities (section Exploration , provides more details on this topic).

1.3.   SCOPE

The May 2024 Projectathon was based on the production version of the Once-Only Technical Design Documents. Based on this version, the Organising team prepared a mix of Test cases (TC).

Most test cases in scope of this event were taken over from the 2023 Projectathons series, as these largely reflected the Member States' requirements (as described below). There were five evidence exchange scenarios "without a preview area", five evidence exchange scenarios "with a preview area", and two optional maintenance flow scenarios (linked to Common Services updates being Evidence Broker (EB) and Data Service Directory (DSD)). The tests could be performed with static and pre-agreed data or with bilaterally agreed dynamic data. Depending on the preference of the participating teams, the Member States tested either in Acceptance or Projectathon environments.

A high-level overview and summary of test cases was made available by the testing and deployment (T&D) subgroup editor and presented to sub-group (access restricted to that sub-group on the Once-Only collaborative wiki) ([7]). The test cases are visible in the Gazelle platform (access restricted to participants).

The Once-Only Technical System Preview Space

Exchanging evidences through Once-Only Technical System will happen at the request of the user. The user should remain free to submit evidence by other means outside the technical system and, crucially, the user should have the possibility to preview the evidence and the right to choose not to proceed with the exchange of evidence in cases where the user, after previewing the evidence to be exchanged, discovers that the information is inaccurate, out-of-date, or goes beyond what is necessary for the procedure in question. The data in the preview should not be stored longer than is technically necessary.

The following test cases were dedicated to testing "without a preview area":

- TC01: Basic evidence request without preview

([6]) The "Gazelle" platform test management tool manages all the elements necessary for peer-to-peer interoperability tests. It offers a series of tools (validators and simulators) to verify the compliance of messages and documents with specifications, or to test the interoperability of an application during a controlled test. This platform originated from the eHealth domain and can be reused in different contexts where peer-to-peer interoperability tests are relevant.

([7]) The Testing & Deployment sub-group's (T&D) main objective is to define a testing approach and provide testing services to the Member State teams.

- TC02: Basic evidence request without evidence match
- TC03: Evidence request error flow due to Basic Registry error
- TC04: Evidence request error flow due to Access Point error
- TC05: Evidence request, with an additional DSD conversation

The following test cases were dedicated to testing "with a preview area":

- TC06: Basic evidence request with preview and reauthentication
- TC07: Evidence request with preview and reauthentication at <u>two</u> different Evidence Providers (note that this TC involved 3 participants: one Requesting Member State, and two Providing Member States)
- TC08: Evidence request with preview rejection by user and reauthentication
- TC09: Evidence request with preview error (closure or timeout) and reauthentication
- TC10: Evidence request with preview (including human readable transformation) and reauthentication

Section 2.3. "Testing results" provides detailed information about the tests executed.

1.4. PREPARATION

Below are listed the meetings related to this May 2024 Projectathon:

- The 16 April 2024 May Projectathon kick-off meeting was an opportunity for participants and observers to learn about preparatory and connectivity tests ahead of the Projectathon, what to expect during the three-day event, and what would come afterwards, such as the publication of test reports.
- The 2024 Once-Only Technical System Implementers' Café (IC) webinar series provided an open forum for discussion between the teams implementing the Once-Only Technical System and other stakeholders, and in particular IC8 related to engagement of Competent Authorities and implementers in OOTS Accelerators and Projectathons in 2024 and IC9 dedicated to looking back and moving forward (reflecting on the lessons learned ahead of May's Projectathon).
- The Once-Only Technical System Projectathon Participant Playbook provided detailed information about the Projectathon, including definitions, participating teams, how to undertake testing before and during a Projectathon and useful FAQs.
- The October 2023 Projectathon event report offered key results from the testing that took place from 18-20 October 2023. It also provided a useful overview of lessons learnt and recommendations for the May 2024 Projectathon.

The graph below provides an overview of the May 2024 Projectathon timeline and the various activities in preparation of this event.

FEBRUARY	MARCH	APRIL	MAY	JUNE

1 Information

27 February 2024

Attend the **Projectathon Deep-Dive session** during the **OOTS Implementers Café** on 27 Feb 2024.

Signal your intention to participate to the May 2024 Projectathon as Members States (can be with multiple teams)

Implementers Café #8
"Engaging Competent Authorities and implementers in OOTS Accelerators and Projectathons in 2024"
27/02/2024

2 Registration

26 March – 12 April 2024

Provide your consent to the Projectathon personal data privacy statement.

Register your organization and SUT operator(s) in Gazelle.

From 8 April: Register your system under test (SUT) and features to be tested in Gazelle.

Implementers Café #9
"Looking back and moving forward: Reflecting on the lessons learned ahead of May's Projectathon"
26/03/2024

3 Pre-projectathon test

Projectathon Kick-off session with all participants
On-line event on 16 April 2024

17 April - 10 May 2024

Perform **Preparatory Test** to get your system, test data and yourself ready before Projectathon.

29 April - 10 May 2024

Perform **Connectivity Test** to ensure network connection of SUTs are well configured before Projectathon.

4 Projectathon

15-17 May 2024

Game on!

Connect and perform Peer-to-Peer marathon test!

5 Post Projectathon

4 June 2024

Publication of **Test Reports**, lessons learned and best practices

Implementers Café #10

04/06/2024

Figure 3: May 2024 Projectathon - timeline

1.5. KEYNOTE SPEAKERS

"It is really the point of no return." (Hubert Gambs, deputy Director-General & SME coordinator for Internal Market, Industry, Entrepreneurship and SMEs, DG GROW) (May 2024)

Figure 4: European Commission keynote speakers from DGs GROW, DIGIT and REFORM

Five European Commission keynote speakers from DGs GROW, DIGIT and REFORM highlighted the importance of Competent Authorities and the work undertaken by national implementation teams in the realisation of the Once-Only Technical System. They also noted the importance of close cooperation between various European Commission Directorates in supporting the Member States in this initiative.

- Hubert Gambs (deputy Director-General & SME coordinator for Internal Market, Industry, Entrepreneurship and SMEs, DG GROW)
- Amaryllis Verhoeven (Head of Unit for Digital Transformation of Industry, Director (acting) for Ecosystems II: Tourism & Proximity, DG GROW)
- Veronica Gaffey (Director-General for Digital Services, DG DIGIT)
- Natalia Aristimuño Perez (Director for Digital Enablers & Innovation, DG DIGIT) Mario Nava (Director-General for Structural Reform Support, DG REFORM)

2. PROJECTATHON RESULTS

This chapter presents an overview of the Projectathon participants, tests performed and key testing results. Please note that this report summarises the test results and is therefore not exhaustive (i.e., it does not provide details of the testing). Member States can access their test upon request to the Support team.

2.1. PARTICIPATING MEMBER STATES

This event brought together 26 EU Member States, including 21 as participants and five observers, for a marathon of peer-to-peer interoperability testing. The 21 participants tested together in pairs, with a data requester Member State on one side, and a data provider on the other side (or two in the specific case of TC07). EMREX's participation was equivalent to that of a Member State.

As stated by the facilitator of the exploration room dedicated to EMREX: "EMREX providers from Croatia, Netherlands, Norway, Poland, and Sweden, and requesters from Greece and several other participating Member States managed to successfully exchange evidence in PDF or ELMO ([8]) formats. The bridge software was hosted and operated by the Netherlands. A single bridge instance was used for all EMREX providers."

The table below provides an overview of the participants in the May 2024 Projectathon, either on site or remotely. Only Bulgaria did not participate to the May 2024 session.

Table 1: Participants and observers during the May 2024 Projectathon

	Participants	Observers
On site	Austria, Belgium, Croatia, Denmark, Estonia, Finland, France, Germany, Greece, Italy, Lithuania, Malta, the Netherlands, Poland, Portugal, Romania*, Slovakia, Slovenia, Spain, and Sweden	Hungary, Ireland, Latvia, and Luxembourg**
Remotely	Cyprus	Czech Republic**

* Changed status from observer to participant.

** Due to technical problems, changed status from participant to observer.

([8]) XML schema used in EMREX

The graph below presents an overview of participants, observers, and non-participants in the May 2024 Projectathon.

Figure 5: Participants, observers, and non-participants in the May 2024 Projectathon

2.2. TESTING PROCESS
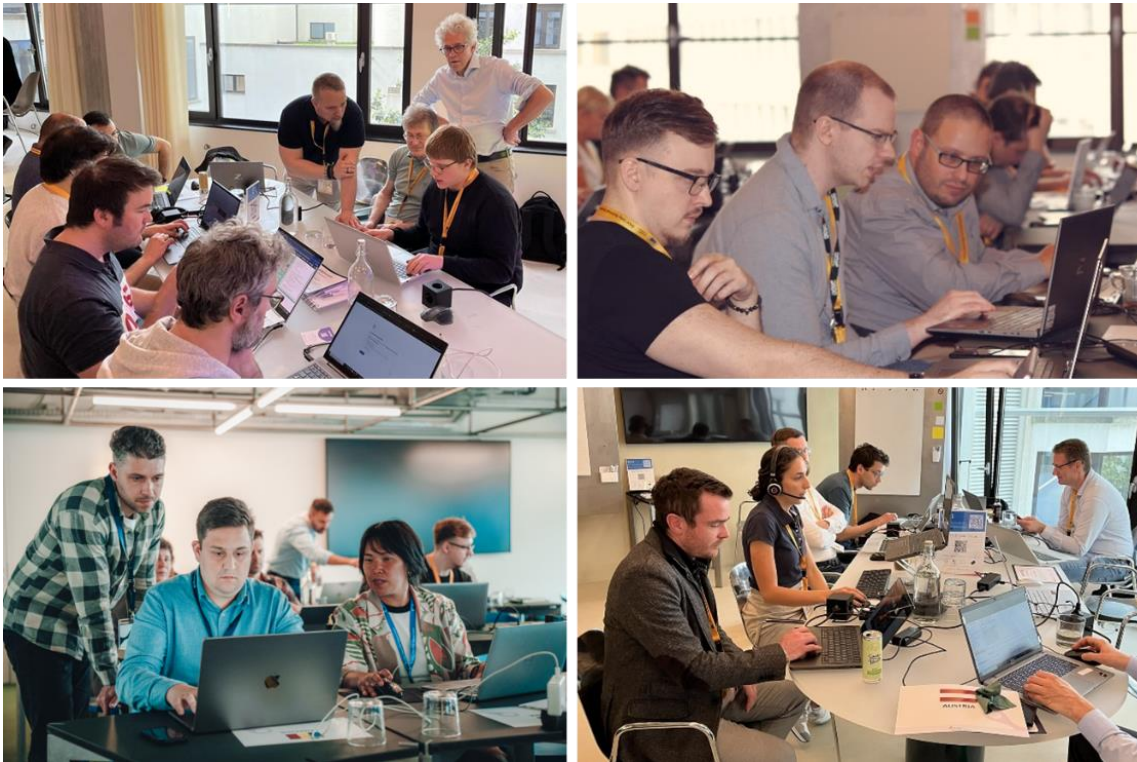
Figure 6: Projectathon testing (May 2024 Projectathon)

This three-day testing event provided a unique opportunity for participants to set up their testing in the beginning of the event, thus allowing them to carry out gradually ever more tests in a structured manner.

Based upon the feedback from the Member States on the 2023 Projectathon series, a "find your test partner" wiki page is made available to the Member States by European Commission teams during the May 2024 Projectathon to facilitate the testing process between the Member States. This wiki page included all the Member States capabilities and a Projectathon contact point before and during the May event.

On Day 1, participants started their testing in pairs by connecting their systems to ensure optimal system performance before launching their test cases. They decided bilaterally who they would test with and when. This decision was based, for example, on longstanding cooperation between some Member States. Some participants decided to test until the test was successful, while others chose to test with several Member States at the same time. The implementers jointly troubleshooted any issues, often in collaboration with other participants who were facing similar problems. Commission experts and monitors provided technical support. The participants recorded their test results in the Gazelle testbed for verification by the monitors.

Figure 7: Monitors of the testing track

The participants informed the monitors about tests with a "to be verified" status. The monitors marked these tests either as "verified" or "failed". If more evidence was needed, the monitors marked the test as "partially verified" until a final verification could be done. The respective participants and monitors then added the necessary proof, demonstrating a successful test to the test case before concluding the test (e.g., an XML resp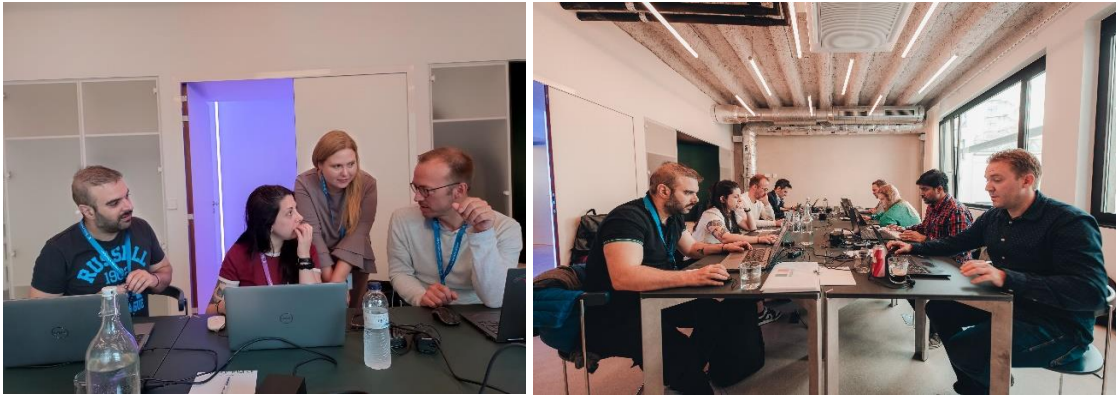onse). The May 2024 event was stricter than the October 2023 one, including TDD evolutions, such as the cross-validation business rules ([9]).

Note that before this event, participants were abled and encouraged to perform pre-Projectathon testing via the Gazelle testing platform. These pre-tests were an optional but highly recommended pre-requisite for participants to perform peer-to-peer tests during the Projectathon.

2.3.   TESTING RESULTS

The May 2024 Projectathon concluded with a success rate of 75% for tests between the participants. In total, the participants executed 215 peer-to-peer tests.

During the testing, the participants could execute five dedicated tests "without a preview area", and five tests "with a preview area" (see chapter 1.3 "Scope" for a description of "without a preview area" and "with a preview area").

Out of the total number of tests, 14 tests were still "running" (7%), where monitors could not verify them. So-called "running" tests are tests that are initiated but cannot progress to the stage where a full test case validation is possible. 19 tests failed (9%), and 22 tests were "partially verified" (10%); these tests were close to be "verified" but were missing additional proofs from the Member States (such as

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([9]) The cross-message validation framework is developed to ensure the consistency between interrelated XML examples. In the OOTS, messages are based on each other. For example, an Evidence Request may contain elements that were previously queried in the DSD/EB. An ebMS header must correctly reference the evidence request, etc. Thus, a message flow within the OOTS must share similar data. And it is important that Member States that want to connect to the OOTS can check whether the dependencies in the information flow have been implemented correctly.

evidence request or response messages). These tests were concluded by additional exchanges between testers and monitors in the days following the event.

The graph below presents an overview of the May 2024 Once-Only Technical System Projectathon test results by category.

Most tests focused on test cases "with preview area" with 59% of test case execution for Test Cases TC06 to TC10, which is new in comparison to Projectathons series of 2023 where there were more tests without preview. In the May 2024 Projectathon, the participants executed 89 tests "without a preview area", 126 "with a preview area". Generally, one can conclude that the Member States systems were more mature in the during the May 2024 Projectathon than in the 2023 Projectathon series. There were more preview spaces available (13 Member States had a preview space and tested it successfully as providers in comparison to 11 during the October 2023 Projectathon).

The figure below presents an overview of all test cases performed during the May 2024 Projectathon.
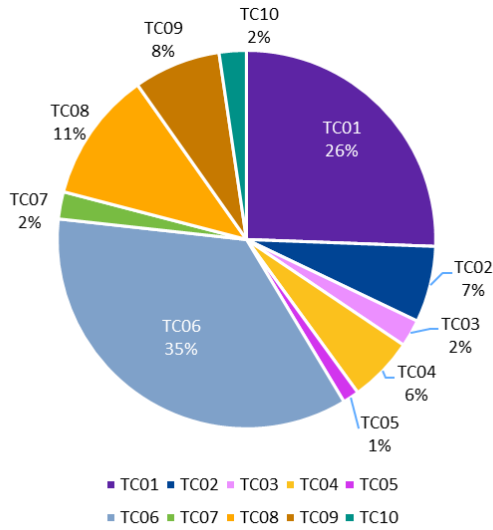
Figure 9: Test cases "with preview" and "without preview" (May 2024 Projectathon)

The figure below presents an overview of test cases "without a preview area" (41% of all tests).
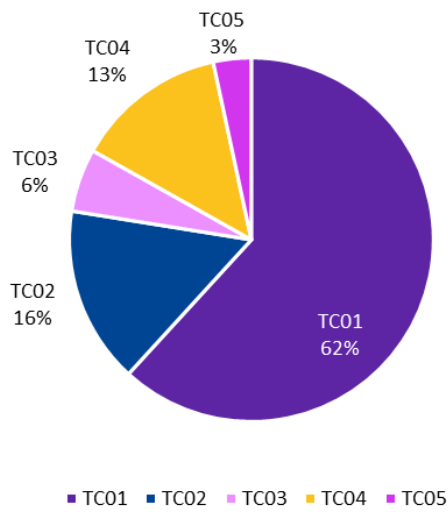
Figure 10: Tests cases "without a preview area" (May 2024 Projectathon)

The figure below presents an overview of test cases "with a preview area" (59% of all tests).

The May 2024 Projectathon testing results indicate that:

- During May Projectathon, there were more tests "with preview" than "without preview". On Day 1, the participants tested TC06 more than TC01 (TC06 was executed 26 times while TC01 was executed 22 times). Generally, on Day 1, the test cases "without preview" were executed 30 times, and test cases "with preview" 33 times.
- Member States used Day 1 for set-up, with less testing. More tests were executed on Day 2 that were concluded on Day 3 where participants performed some additional tests. Participants also used Day 3 to correct bugs and provide additional evidence to validate successful tests.

The figure below provides an overview of the test cases "without a preview area" grouped both per test case, and per day, clearly showing the progress of the tests during the three days of the May 2024 Projectathon.
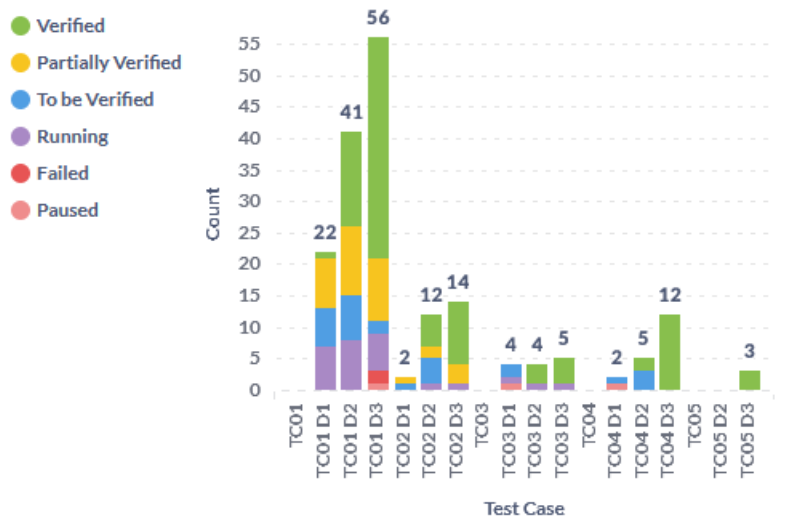
Figure 12: Test cases status "without a preview area" – days 1, 2 and 3 of the May 2024 Projectathon

The graph below presents an overview of tests "with a preview area".
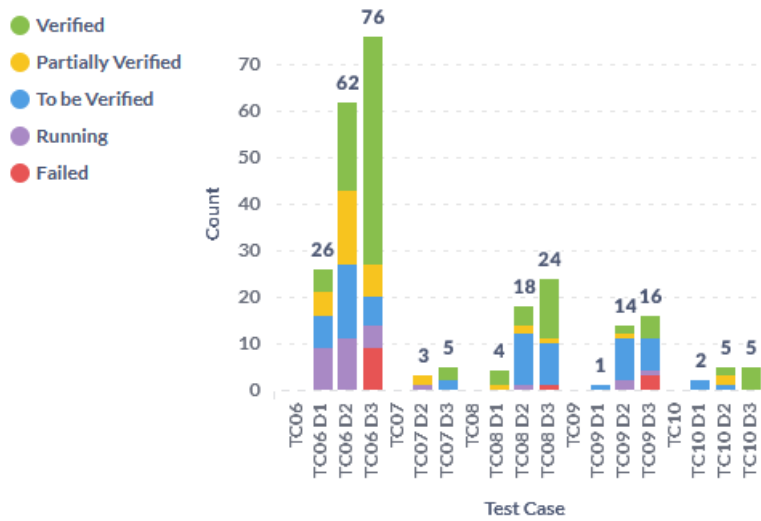
Figure 13: Test cases status "with a preview area" – days 1, 2 and 3 of the May 2024 Projectathon

Finally, below can be seen the Test Status per Actor of each Member State
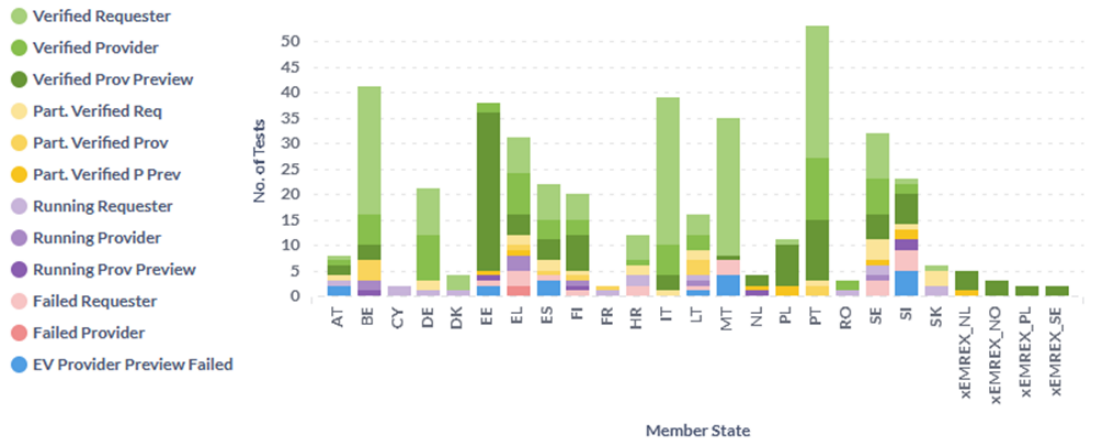
Figure 14: Test Status per Actor for each Member State

3. EXPLORATION ROOMS

In parallel to interoperability testing, this event offered so-called "exploration rooms" for the participants to learn about topics relevant for the Once-Only Technical System. This chapter summarises key results from these workshops. According to the 2024 May Projectathon satisfaction survey results, the participants found the exploratory sessions very useful to discuss specific topics with experts and other participants.

3.1.   WALK-THROUGH OF THE ONCE-ONLY TECHNICAL SYSTEM USER JOURNEY

Facilitated by Saskia Choffel, Matteo Guerino Setti, Victoire Van Houdt and Nils Mc Grath from the OOTS team in DG DIGIT.
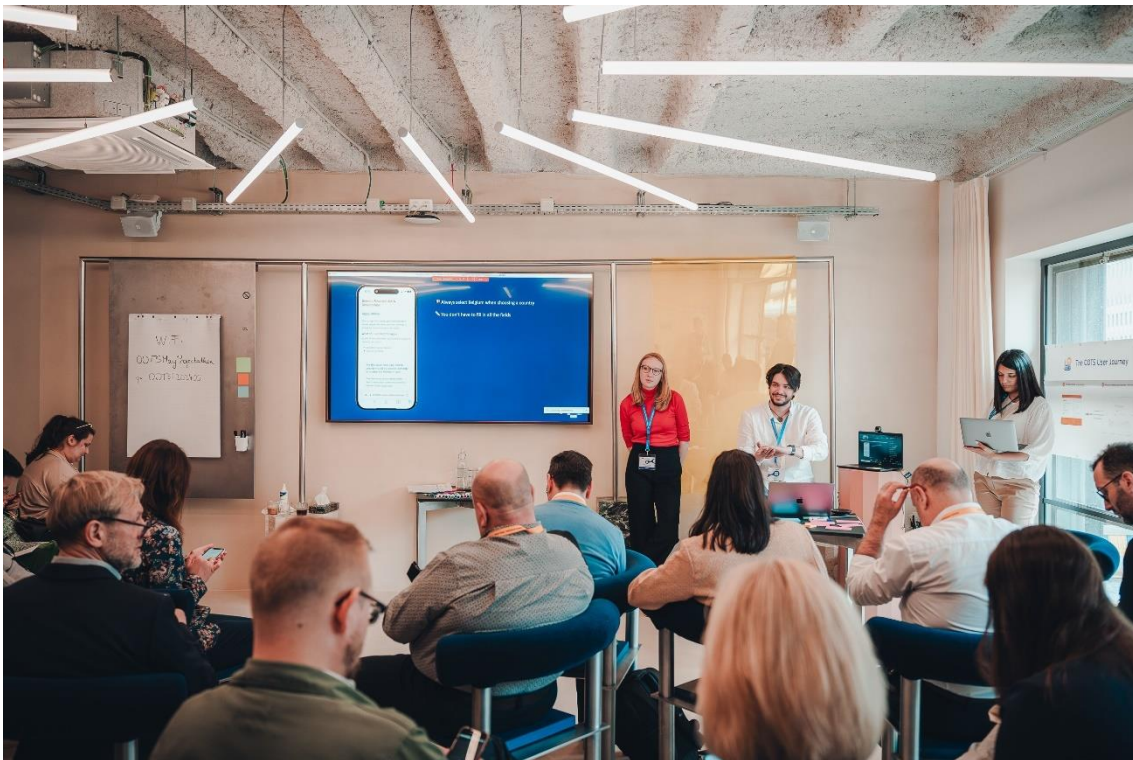
Figure 15: Exploration room "Walk-through of the OOTS user journey"

During the exploration room "Walk-through of the OOTS user journey", the participants assessed the OOTS user journey, highlighting various challenges encountered in their respective Member State.

This included issues with multiple authentication methods, prompting suggestions for a single sign-on feature and an EU-level preview space to avoid multiple logins.

The participants raised concerns about the lengthiness of the Once-Only process, the trustworthiness of the various portals visited while completing a cross-border administrative procedure using the OOTS, how to provide requirements that do not belong to the user, and lack of clarity in communicating data submissions to the Competent Authorities.

The participants also discussed the authenticity of downloaded documents, payment options, delayed responses, and navigation within the preview space. They also discussed challenges related to cross-border interactions, consent management, mobile usability, and the availability of FAQs and Help resources, emphasising the importance of trustworthiness on intermediary platforms.

You can learn more about the Once-Only User Journey on the Once-Only Hub.

Facilitated by Nils Mc Grath, Giuliano Sciurti, Victoria Howlett from the OOTS team in DG DIGIT.

3.2.1   SESSION 1: EVIDENCE MAPPING FOR EVIDENCE REQUESTERS

Figure 16: Exploration room "Evidence Mapping for Evidence Requesters"

This session discussed which Competent Authorities need to connect to the OOTS as Evidence Providers, how they can use the Once-Only Technical System Evidence Explorer to determine what evidence types need to be provided and how they can input their data to the Common Services.

This session covered the Common Services Administration Tool, an explanation of SDG procedures and what a procedural requirement is and how evidence requesters can use (and reuse) procedural requirements in the Common Services.

Specifically, this session addressed the following items:

- What actions Evidence Requesters can perform if their procedural requirement is not already listed in the Common Services;
- Best practices for Evidence Providers to create Member State version of an SDG procedure and to assess whether they need to connect their procedure to the OOTS;
- How evidence requesters can link their Member State procedure to a procedural requirement.

The suggested next steps for the Member States are to ensure that the procedural requirements are included in the Common Services.

At the end of the session, the facilitators tested the participants' knowledge acquired via an interactive quiz.

3.2.2 SESSION 2: EVIDENCE MAPPING FOR EVIDENCE PROVIDERS

This session discussed which Competent Authorities need to connect to the OOTS as Evidence Requesters, how to submit procedural requirements, how to add data to the Common Services and seek to identify challenges and solutions to make the wider Once-Only process between all stakeholders more efficient.

Specifically, this session addressed the following items:

- The Common Services Administration Tool;
- Best practices for Evidence Providers to assess whether they need to connect to OOTS;
- Process of creating and mapping evidence types;
- Process of creating and mapping Evidence Providers.

At the end of the session, the facilitators tested the participants' knowledge acquired via an interactive quiz.

The suggested next steps for the Member States are to follow up with Evidence Providers to ensure that the data in the Common Services is accurate and complete for Population and Education domains. The minimum data input into the CS is 1 evidence type from each of the 27 Member States to be mapped to each of the procedural requirements in the two domains.

3.3. ADAPTING PROCEDURE PORTALS TO THE ONCE-ONLY TECHNICAL SYSTEM

Facilitated by Saskia Choffel, Matteo, Victoire Van Houdt and Nils Mc Grath from the OOTS team in DG DIGIT.

Figure 17: Exploration room "Adapting procedure portals to the OOTS"

During the exploration room "Adapting procedure portals to the OOTS", the participants discussed various aspects of eID and digital identity, highlighting concerns about cross-country compatibility, and the need for clarity in language translation. They addressed aligning the procedure portal's language with the national language, to have a single sign-on integration and to use API to provide services and avoid unnecessary redirection through different portals.

In addition, the participants noted that there was an overwhelming amount of information available on procedure portals and recommended simplifying the content with informative links. As a possible solution, they suggested an integrated chatbot assistance, and a summary listing all the documents that were sent and the languages they were sent in.

Other ideas included the following items:

- Investigate another naming than "eID" or "digital identity" with terms that could be localised; per country for a better understanding and standardising the processes;
- Simplify the portal content and potentially improve clarity with chatbots;
- Implement mechanisms for informing users of delays and specifying submitted documents.

3.4.   AUTHENTICATION & IDENTITY MATCHING

Facilitated by Alice Vasilescu and Pim Van Der Eijk from the OOTS team in DG DIGIT.
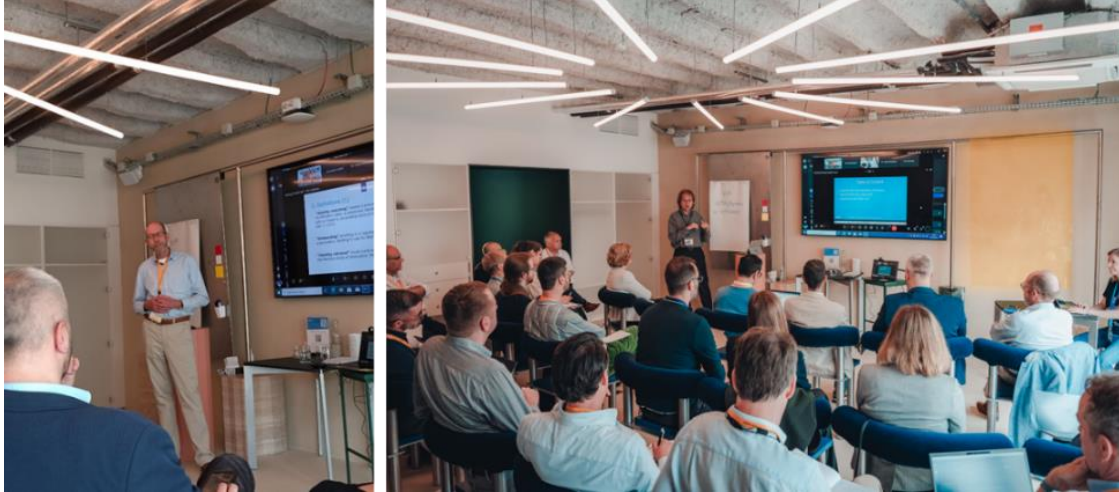
Figure 18: Exploration room "Authentication and Identity Matching" with experts in cross-border authentication and national identity matching from the Netherlands (Hans van der Burght) and Austria (Herbert Leitold)

During the exploration room "Authentication and Identity Matching", Herbert Leitold (Austria) and Hans van der Burght (the Netherlands), experts in cross-border authentication and national identity matching, explained how they are handling identity matching. Their presentations clearly showed that each Member State has its own solution for identity matching, considering the Member States' specificities and architectural choices.

Amongst others, the participants discussed the following aspects:

- Centralised/decentralised architecture: a single central service proved to have several benefits;
- Legal/organizational requirements: linked to the point above, it helps the adoption of such solutions and the user experience across various services if the use of central matching service is mandatory and its decisions should be binding;
- Additional information/attributes required – what?, when? and how?
- eIDAS unique identifier;
- Identified risks and special cases.
- The facilitators highlighted potential improvements that were supported by the participants and the presenters, including: Clearer matching information from notifications: information which attributes are available and useful for the matching
- A single or limited number of matching data profile(s) that the Member States can deliver: it is expected that for most Member States the addition of one or two additional attributes would allow all but a very small number of digital twins to be matched;
- Unique identifiers to limit user-input or manual cases to a minimum: once identified, recurring visits would obviate the need for repeated matching.

The suggested next steps are for the Member States to follow-up the developments from eIDAS 2 on identity matching.

3.5.   LEGAL PERSON AUTHENTICATION

Facilitated by Alice Vasilescu and Pim Van Der Eijk from the OOTS team in DG DIGIT.

Figure 19: Exploration room "Legal person authentication"

During the exploration room" Legal person authentication", the participants and experts discussed the latest state of play, on-going challenges, and potential solutions related to the authentication of cross-border legal persons.

Herbert Leitold, representative from Austria opened this session; Austria is one of the few countries that have had a notified legal eID for several years. Their presentation was a reminder of the fact that there are still a limited number of notifications of eID schemes that cover legal person authentication, and that other Member States though they may be technically ready (or are very close to being ready) but have not yet notified it (as per the eIDAS Regulation).

Countries like Austria and the Netherlands use legal person eID schemes successfully for cross-border authentication, however there could be even greater use of legal person authentication. One reason for this could be that the Member States without a legal person eID are not always able to process legal person eIDs from other countries usually because they are expecting natural persons.

The participants agreed that more cross-border testing is needed, both for access to procedures and in combination with Once-Only evidence exchange and preview space (re-)authentication. This could start without the use of the OOTS sector specific attribute, meaning the case of full powers.

The next OOTS Projectathon will be a great opportunity to test with countries that have notified such eID schemes as it will include work on business procedures; it should be an occasion to consider both technical challenges and user experience.

The participant discussed the necessity to find testing partners for the OOTS sector specific attribute, which may need improvements. The objective of the follow up work is to accelerate the notification process of eID schemes for legal persons, following the examples of those already notified.

3.6.   POPULATION – ENABLING THE EXCHANGE OF STRUCTURED DATA

Facilitated by Pavlina Fragkou, William Verbeek and Claudio Valle from the OOTS team in DG DIGIT.

Figure 20: Exploration room "Population – enabling the exchange of structured data"

During the exploration room "Population – enabling the exchange of structured data", the participants discussed the current landscape for structured data exchanges in the Population domain. This session covered the procedural requirements and current state of structured data, including the need for proof of birth, citizenship, death, disability, family, marriage, residence, and other information. Additionally, it examined national approaches to structured data exchange in the Population domain.

One key aspect highlighted by the participants was the evidence mapping activity. It was noted that Competent Authorities typically do not standardise requirements or procedures. However, at the national level, data exchanges are already taking place.

The European Commission emphasised that structured data exchange is required within the OOTS. Creating a new data model in the OOTS for the Population domain could serve as a reference point for future European standardisation efforts. In this context, the Commission highlighted the Public Documents Regulation's role in harmonising the structure of public certificates and proofs in the Population domain. The possibility of reusing the existing XML schemas provided by the Commission's DG JUST was introduced by Athanasios Karalopoulos from GROW and Pavlina Fragkou from the OOTS team in DG DIGIT highlighting both benefits and challenges of this option.

In addition, Italy and Finland showcased their initiatives for structured data exchange in the Population domain.

Italy presented their national system, which acts as an Evidence Provider (ANPR). ANPR is a dedicated API connected to the national interoperability platform for public administration, which provides authorisation tokens and handles proof of residence, citizenship, birth, and household components.

Finland shared their 'FI-Platform', which represents a data modelling tool characterised by a handy interface. The FI-Platform allows to create data models linked to ESCO and Dublin Core ontologies ([10]), and Finland's intention is to make this tool aligned with the SEMIC core vocabularies. While Finland is the main user of this tool, most of the Nordic countries are already involved the "FI-platform", which the owners plan to further develop and improve in the future.

The participants exchanged views on the current landscape for Population data standardisation and on the opportunity to adopt data models in the context of the OOTS. Some participants expressed the need for standardising evidence in the OOTS and raised concerns about the possibility of creating a separate data model specific for the OOTS.

The Commission has always made efforts to consider other initiatives and existing systems and the primary goal is to reuse existing semantic artifact to the maximum extent. The overall approach to enable the cross-border exchange of structured data in the OOTS in all domains (including the Population domain) is like the one used by SEMIC. It aims to find common ground between different Competent Authorities and different national perspectives to adopt shared and widely applicable interoperability solutions.

([10]) **ESCO (European Skills, Competences, Occupations)** is a multilingual classification scheme for skills, competences, qualifications, and occupations. It provides a standardised way to describe the knowledge, skills, and experiences required for a particular job. ESCO website
Dublin Core is a widely used set of metadata elements that describe information resources. It allows users to find and manage information resources more easily by providing a consistent way to encode information about them. Dublin Core Metadata Initiative

3.7.   PREVIEW SPACE

Facilitated by Saskia Choffel, Matteo Guerino Setti, Victoire Van Houdt and Nils McGrath from the OOTS team in DG DIGIT.

Figure 21: Exploration room "Preview space"

During the exploration room "Preview space", the participants discussed challenges related to language provision, suggesting alignment with the official language of the Member State plus English due to varying legal requirements. They emphasised the importance of retaining attributes in their original form to prevent translation errors. In addition, the participants highlighted issues with document naming conventions, evidence terms, and competence authority confusion.

Moreover, the participants raised concerns regarding the consequences of uploading incorrect documents on the Procedure Portal and the authenticity of downloaded outdated documents. They also noted legal complexities regarding the download of documents, particularly in countries where the evidence is considered Competent Authorities' data rather than the users' data.

Amongst others, the participants exchanged the following ideas related to "language":
- Establish a consensus between the different Member States for a naming convention of documents and evidence mapping to ensure consistency and an effective exchange of evidences between the Member States;
- Explore support coming for the EC for translation;
- Provide the option for the user to change the navigation language in the preview space;
- Address the need for authenticity verification of downloaded documents.

The participants also discussed challenges related to evidence ownership and translation, including translation challenges and validation processes, questions about recognised translation authorities and validation methods.

There was a consensus that the Evidence Providers are responsible for submitting the correct evidence. The participants proposed a translation tool, though with concerns about potential errors and the incorporation into the Once-Only Technical System.

The participants also suggested for the Member States to accept evidence in their original language alongside English translations and exploring a common EU-level translation system to facilitate multilingual communication.

The participants exchanged, amongst others, potential next steps related to evidence ownership and translation:

- Explore the feasibility of implementing a translation tool in the preview space, ensuring accuracy, and addressing concerns about wrong translations;
- Explore the use of a common translation system at the EU level, incorporating automatic translation during transmission or utilising translated messages or communication protocols to support multilingualism;
- Identify procedure(s) that do not require the translation of content and just require the proof of existence without needing to access the attributes.

3.8. EDUCATION – ENABLING THE EXCHANGE OF STRUCTURED DATA

Facilitated by Pavlina Fragkou, William Verbeek and Claudio Valle from the OOTS team in DG DIGIT.

During the exploration room "Education – enabling the exchange of structured data", the participants discussed the OOTS procedural requirements related to learning and studying, such as applying for study financing and requesting academic recognition.

The OOTS team from the Commission presented the work done so far on enabling structured data in the Education domain. This work has benefited from collaboration with the Commission's DG EMPL and EMREX. Moreover, the participants shared their views on data standardisation in the Education domain.

During this session, the OOTS team first presented the outcome of the evidence mapping activity, briefly presenting the main requirements identified by the SDG national coordinators. The participants noted that, as it happens also in other domains, the Competent Authorities in the Education domain typically do not standardise requirements or procedures, even if data exchanges at the national level are already taking place. The OOTS team from the Commission presented their work related to education data models (European Learning Model - ELM or ELMo) and shared preliminary findings from the mapping exercises, which aim at assessing the reuse of existing data models in the context of the OOTS.

A representative of DG EMPL (Céline Jambon) provided an update on latest developments related to the ELM. This included the main features and benefits of ELM along with the current uptake of ELM in the European Digital Credential for Learning ecosystem, both in terms of databases related to learning

opportunities and in terms of databases related to qualifications. The speakers also stressed the close collaboration with EMREX and the alignment between their data model, ELMO, and ELM. In this context, they pointed to the importance of the current DC4EU project, which will allow for automatic conversion of data from one model to another.

During the discussion, some participants raised the question about the possibility of having a European standard for Education data and whether ELM could be already a semantic standard. They also discussed the creation of a single data model for education. Notably they highlighted the importance of the activity conducted within the OOTS sub-group on Standardisation of Data Models. This includes the potential of bringing together different stakeholders and multiple relevant initiatives that are currently not in close collaboration. Some participants mentioned that the ELM implementation has already been completed in their country but expressed concerns about aligning *Europass* with these digital credentials.

3.9. THE FUTURE OF THE COMMON SERVICES

Facilitated by Nils Mc Grath, Giuliano Sciurti and Victoria Howlett from the OOTS team in DG DIGIT.

Figure 22: Exploration room "The future of the Common Services"

During the exploration room "The future of Common Services", the participants explored how the Common Services could be enhanced to manage the procedural requirements definition process, better display information requirements, and allow Evidence Providers to publish all the attributes they are able to supply. This ideation session intended to develop a vision for the future of how the Common Services will work in the future.

Amongst others, the participants addressed the following points:
- The need for an overview page in the Common Services that displays procedural requirements and their minimum information requirements;
- The evidence mapping subgroup considers the implementation of a change management process when updating procedural requirements;
- The difficulty of engaging the Competent Authorities in the review process of the procedural requirements;
- The potential need for granting permissions to the Competent Authorities to edit specific information in the Common Services;

- Reintroducing/making more visible the AirTable's containing the information requirements and procedural requirements – many Member States did not understand what information requirements or attributes are or were not familiar with the process of introducing a new requirement.

Suggested next steps: analyse, evaluate, and prioritise implementations proposed during the session.

3.10. OOTS RELATED SYSTEMS (EMREX)

Facilitated by Pim Van Der Eijk from the OOTS team in DG DIGIT.

Figure 23: Exploration room "OOTS-related systems (EMREX)", showing the EMREX team during the May 2024 Projectathon

The exploration room "OOTS-related systems (EMREX)" provided a deep dive on the architecture, user experience and data input requirements for the Common Services to enable evidence exchange with the EMREX bridge. It clearly demonstrated the Member State' key achievements since the previous October 2023 Projectathon.

The agenda included a proof-of-concept implementation of a "bridge" between the OOTS and the EMREX systems. This proof-of-concept showed that it was possible to request evidence from an unmodified OOTS evidence requester and evidence from an unmodified EMREX provider, including redirection of the user.

Since early 2024, work continued to improve the bridge towards production-readiness and five EMREX providers in five Member States committed to go into production. During the May 2024 Projectathon, the OOTS team and EMRX presented the results of this work. In addition to technical improvements, the Commission made several functional improvements relating to provided formats (PDF in addition to ELMO XML) and User Experience. The participants investigated the proper registration of Evidence Providers in the Common Services and lookups by evidence requesters.

EMREX providers from Croatia, Netherlands, Norway, Poland, and Sweden participated and requesters from Greece and several other participating Member States managed to successfully retrieve evidence in PDF or ELMO formats. The Netherlands hosted and operated the bridge software. All EMREX providers used a single bridge instance.

The collaboration of the OOTS project with EMREX is the first OOTS area in which one of the EEA countries, Norway participates. Norway presented ongoing work on an ELMO-to-ELM converter, which could be added to the bridge as a third distribution option.

The conclusion of the session is that the OOTS-EMREX bridge successfully connects systems in the two networks with relatively low efforts and in a short time. The suggested next steps are to finalise the component, formalise the hosting and operation and take the bridge in Production.

3.11. ELECTRONIC EXCHANGE OF SOCIAL SECURITY INFORMATION (EESSI)

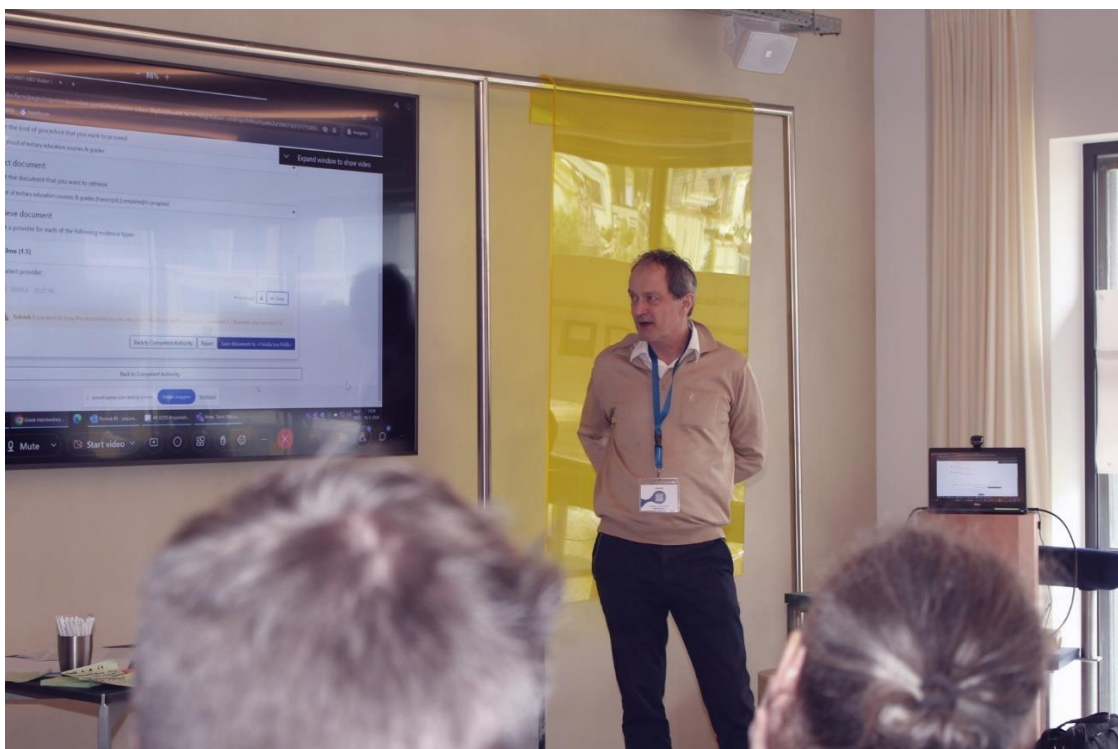Facilitated by Pim Van Der Eijk from the OOTS team in DG DIGIT.

Figure 24: Exploration room "Electronic Exchange of Social Security Information" (EESSI)

After EUCARIS (EUropean CAR and driving licence Information System, see the web site) and EMREX, the "Electronic Exchange of Social Security Information" system (EESSI) is the third related system for which the OOTS team in the Commission is investigating the potential of interconnectivity using a "bridge", with help from the EESSI team at DG Employment, Social Affairs and Inclusion (DG EMPL). This work is in progress and in an initial stage.

The EESSI system differs from the OOTS (as well as from EUCARIS and EMREX). It is not designed for interactive procedures by the users. The EESSI system supports collaboration by clerks at social security Competent Authorities. Moreover, it supports complex business processes and workflows rather than simple data exchanges.

The Evidence Mapping sub-group of SDG national coordinators investigated the OOTS procedures and requesters in the social security domain as well as the OOTS procedures and requesters in other domains. There are some situations where social security authorities use evidences from the education domain and vice versa. If the social security institution (as provider) is connected to the EESSI, then a bridge to the EESSI for the OOTS requesters could facilitate the exchange.

One approach to interconnectivity would be via an OOTS to EESSI bridge. This bridge would connect as an Intermediary platform using eDelivery to requesters via the Internet and to EESSI providers using the EESSI AS4 exchange via S-TESTA. A preview space functionality would be needed for preview, re-authentication and for providing missing attributes for routing. A single intermediary platform could in theory connect all requesters to all providers. However, there are questions regarding the legal base for the reuse of EESSI, authorisation of requests, discoverability, 'non-happy flows' and the viability of an EU service.

The participants discussed an alternative approach to integration at the national level. This would use established channels, which are better suited for discovery and "unhappy" flows. In this scenario, no EU service would be needed. As a drawback, it would lack cost benefits and economies of scale of the bridge approach as integration at national level would be purely decentral.

As main conclusions, the participants agreed that EESSI is a much more complex system than EUCARIS and EMREX so interconnecting to it would be much more challenging. Following this session, it is not sufficiently clear if there is a strong enough business case for a systems interconnection (compared to introducing the OOTS as parallel system). A legal analysis would need to confirm reuse possibilities on EESSI's side. The reuse of data models, XML schemas, backend integration could be pursued as lower-hanging fruit.

As next steps, the participants suggested sharing the initial results with the Administrative Commission for the Coordination of Social Security Systems, the Once-Only internal sub-groups, and coordinators for guidance, before jumping into further technical solutions.

3.12. STRATEGIES AND RESOURCES FOR ONBOARDING CAS

Facilitated by Rena Gurbanova and Pieter Vanhouteghem from the OOTS team in DG DIGIT and FPS Policy and Support in the Belgian government.
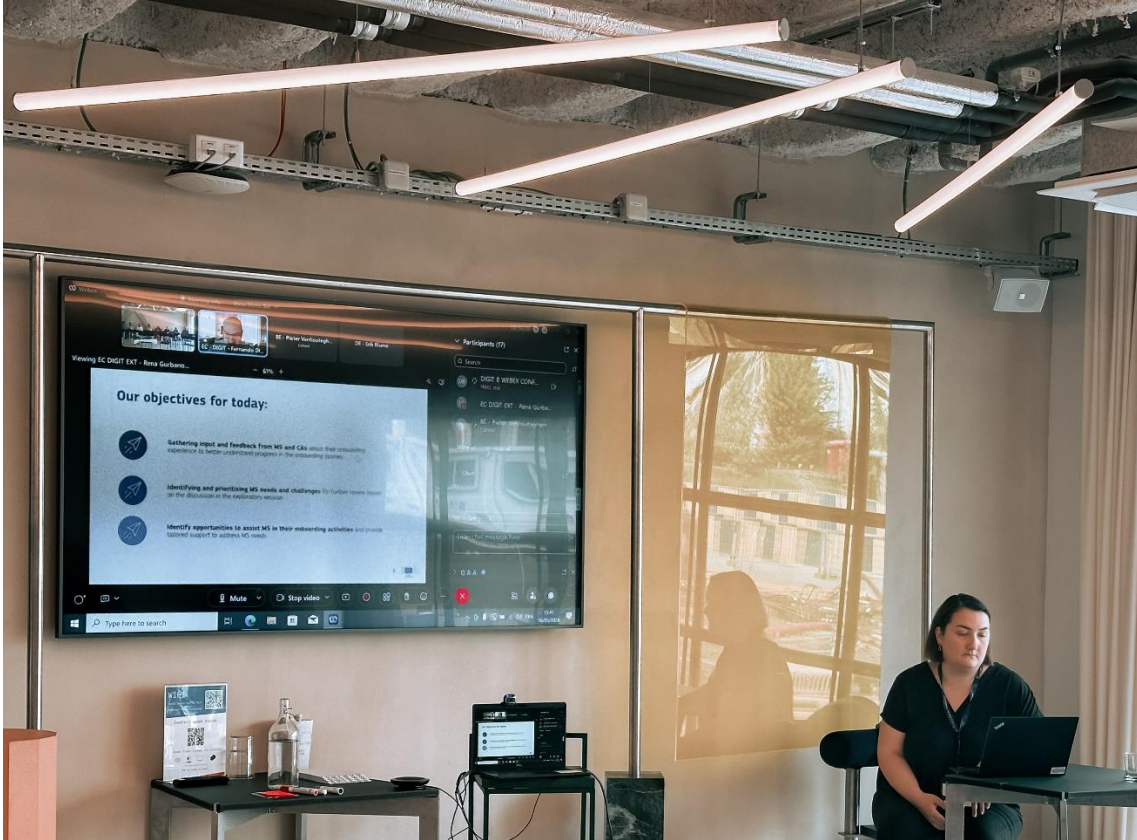
Figure 25: Exploration room "Strategies and resources for onboarding Competent Authorities"

The exploration room "Strategies and resources for onboarding Competent Authorities" explored the strategies employed by the Member States for onboarding their Competent Authorities. Aimed at representatives of the Member States and respective Competent Authorities participating in the May 2024 Projectathon, this session served as a useful and interactive platform for sharing and discussing various onboarding approaches, best practices, and issues faced in each country.

The session featured a presentation by the Belgian national team lead (Pieter Vanhouteghem), who detailed their comprehensive activities and solutions for onboarding Competent Authorities to the OOTS in Belgium. This presentation was followed by a productive discussion that yielded positive outcomes, highlighting the existing strategies within other Member States, and identifying areas where the Commission can further support these efforts. More concretely, this included targeted bilateral meetings, organising the "train the trainer" learning sessions in the Member States and providing required communications or learning material for the users of the Once Only hub.

In summary, the overall collaborative exchange showcased successful practices. It paved the way for refining onboarding strategies in Member States participating in the session and crystallising the European Commission team's onboarding management strategies.

3.13. DELAYED RESPONSES

Facilitated by Saskia Choffel, Matteo Guerino Setti, Victoire Van Houdt and Nils Mc Grath from the OOTS team in DG DIGIT.

Figure 26: Exploration room "Delayed responses"

The exploration room" Delayed responses" discussed delayed responses occurring during the use of the OOTS. The session facilitators and presenters explained how the participants should proceed in such cases. They also addressed concerns about meeting the deadlines of the application process if there is a delayed response and data retention.

The participants highlighted the importance of communication with the OOTS users during delays, for example by using pop-ups and message or email notifications. Moreover, they emphasised the need for clarity on user guidance for proceeding through procedures, including returning to previews or restarting the process. Moreover, the need for Evidence Requesters to be informed by Evidence Providers about the potential delayed response to ensure a smooth user experience.

Going forward, discussions with interested Member States will turn to the following suggested next steps:

- implementing systems for delay notifications
- and a clear user communication on how to proceed in case of a delayed response or any other interruption during the process.

3.14. OPERATIONAL GOVERNANCE – INCIDENT MANAGEMENT PROCESS

Facilitated by Rena Gurbanova and Flora Kardos from the OOTS team in DG DIGIT.

Figure 27: Exploration room "Operational Governance - incident management process"

The exploration room "Operational Governance – Incident Management Process" introduced the document entitled "D6: Incident management and reporting" ([11]), co-produced by the OOTS Support team, and the Security and Operational Governance sub-groups during 2023-2024. The OOTS team organised this session for Member State representatives and experts from the SDG operational governance sub-group.

The OOTS Support team from DG DIGIT explained the objectives of this document and walked the audience through a detailed flowchart outlining each step of the incident management process (security and technical).

The session yielded significant outcomes: a decision was made by the participants and experts to revisit and refine the flowchart; a call was issued for contributions to an Excel file that would collect the contact details of the Member States' technical support contact points; and a consensus was reached to bring this topic back to the next Operational Governance sub-group meeting in June, if deemed necessary.

([11]) Available at: D6: Incident management and reporting - SDG Once-Only Collaborative Space - (europa.eu)

3.15. UX WRAP-UP

Facilitated by Saskia Choffel, Matteo Guerino Setti, Victoire Van Houdt and Nils Mc Grath from the OOTS team in DG DIGIT.

Figure 28: Exploration room "UX wrap-up"

Organised on the third day of the May 2024 OOTS Projectathon", the exploration room "UX wrap-up" summarised all the +-30 outputs of the sessions of Days 1 and 2. The facilitators then led a prioritisation exercise to understand the Member States' priorities.

The participants highlighted the following priorities to investigate further and prioritise as suggested next steps for the UX lab:

- Supporting translation in the preview space;
- Establishing naming conventions for evidence;
- Saving progress the user has already done when leaving a procedure that is not finished for later;
- Clarifying Competent Authority ownership of evidence;
- Promptly informing users of delayed responses.

3.16. THE FUTURE OF SEMANTIC REPOSITORY

Facilitated by Javier Gutiérrez Martínez from the OOTS team in DG DIGIT.
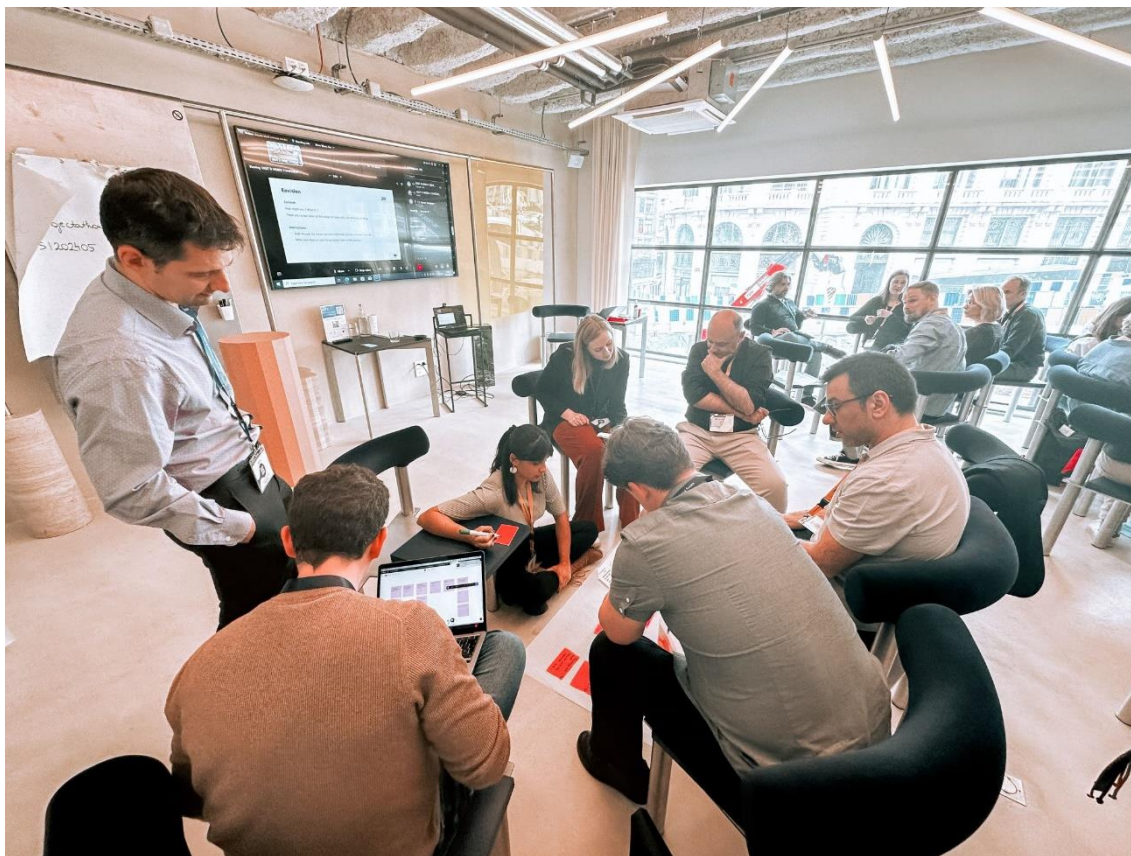
Figure 29: Exploration room "The future of semantic repository"

The exploration room "The future of semantic repository" introduced the new version of the OOTS Semantic Repository (SR) and explained its benefits and possible use cases. The presentation covered several topics including SR new features and expected benefits, current development status, future evolution plans and why it plays an important role in enabling interoperability in the OOTS along with the rest of Common Services.

The SR will continue to play a key role in the future with external systems like EMREX, EUDI Wallet, etc. The presentation also covered the relationship between the SR development and the future proof-of-concept to use the OOTS services in the context of EUDI Wallet.

After the general presentation, the facilitators made a live demonstration of the tool's current capabilities. This included a walk through the user interface and some samples of XML asset metadata with the structure of data model v1.2 to be deployed in mid-June 2024.

Finally, the session closed with a Q&A session. Some participants expressed their satisfaction with the possibility to use the SR user interface which is more practical than the API in some use cases. In addition, they expressed their interest in having soon structured evidence type schemas, even at attribute level if possible so they can be traced back to the requirements. This is one of the objectives for 2024 and the data model of the SR is already prepared to include this level of detail. Apart from this, Italy expressed their interest in having their semantic assets available in the SR. This can be done in the future by either sending them via LCM or alternatively to produce a compatible XML with all SR metadata and uploading it to code.europa.eu so it can be "crawled" by the SR.

4. NETWORKING

The May 2024 Projectathon built further on the work undertaken in 2023 Projectathon series to develop and foster a real community that works together to build the Once-Only Technical System. Event participants were able to discuss their implementations in a relaxed setting during a social event following the closing of Day 1.

> *"We managed to establish new contacts, deepen existing contacts; we felt like European IT family."*
> (Projectathon satisfaction survey, May 2024)

Figure 30: Team Italy – May 2024 Projectathon

5. COMMUNICATION

The European Commission promoted this event on social media.

Additionally, the Member State teams were very active on social media and proactively added a new and special dimension to this Projectathon. The participants took the time sharing their experiences and findings of the Projectathon with others and bringing home the message.

Moreover, the Once-Only Hub provided reliable information, services, and support for the Projectathon. Articles, for example, highlighted specific aspects of the Projectathon series.

6. LESSONS LEARNT

Based on the participants' feedback ([12]), the Projectathon demonstrated the great value of coming together and working in union to progress on the implementation of the Once-Only Technical System. Group tests enabled participants to test with each other in "real" exchanges and not only in isolation via Commission test services.

The participants were very satisfied with this first edition of 2024, with an overall satisfaction of 94%. The figure below presents participants' overall satisfaction with the May 2024 Projectathon.
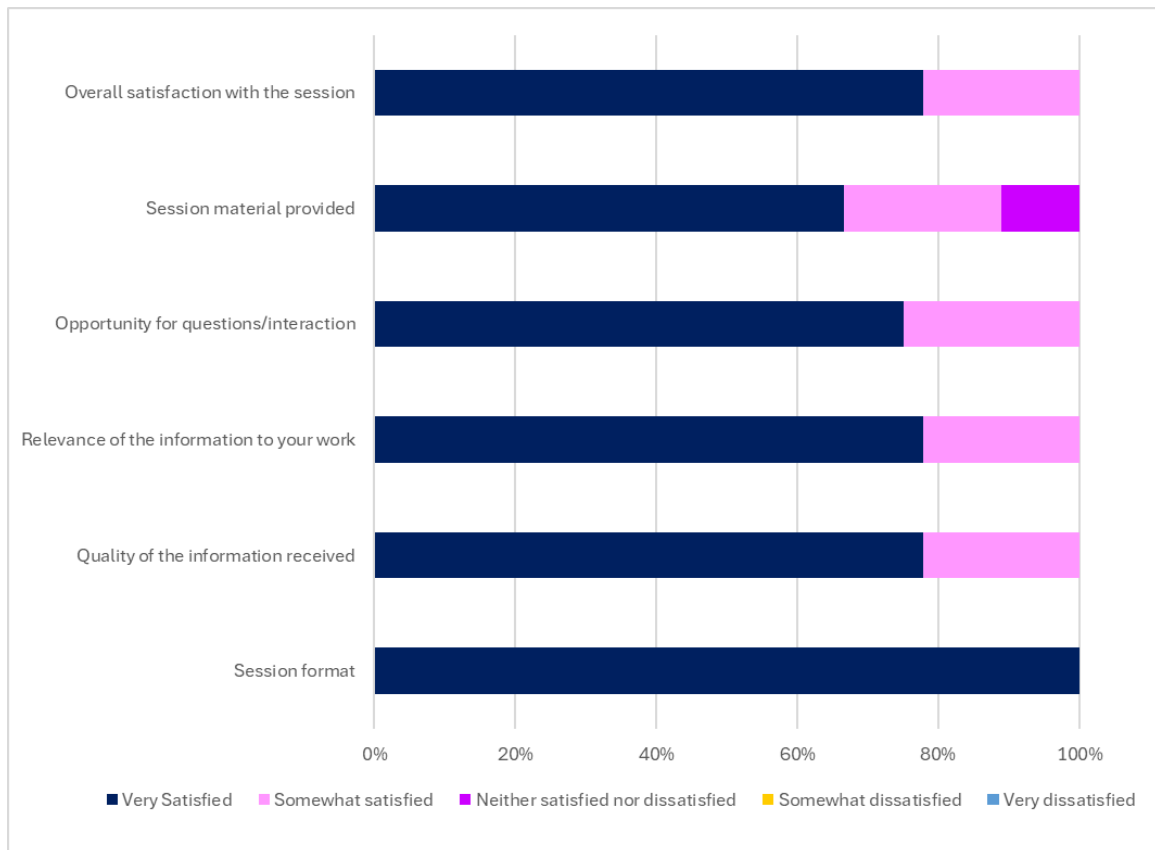

Figure 31: Satisfaction survey - overall satisfaction (Projectathon satisfaction survey, May 2024)

([12])   Based on the May 2024 Projectathon satisfaction survey, carried out by the European Commission in May 2024.

The table below summarises the lessons learnt related to preparatory and connectivity testing.

Table 2: Preparatory and Connectivity testing related - lessons learnt

Preparatory and Connectivity testing related lessons learnt
Compared to the 2023 Projectathons, both the preparatory and connectivity testing coverage increased for the May 2024 Projectathon.
For the preparatory Test Cases: • Many teams covered a good amount of test cases; • Generally, the teams that performed the preparatory tests did the mandatory tests and performed some of the optional ones. Two teams performed all preparatory tests, including the optional ones. The optional test cases are recommended for a comprehensive preparation; • Four teams did not perform them at all (or at least did not report them in the Gazelle testbed).
As there is a positive correlation in Projectathon rest results and preparatory test results, we strongly encourage all teams to perform as many preparatory test cases in advance of the event (both marked as mandatory and as optional).
For the connectivity test cases: • Many teams provided their configuration input in time and kept their connection stable; • Providing this information too late and changing the configuration after the start of connectivity testing is not a good practice as it leads to retests across all other testing teams.
As part of the connectivity testing phase and as part of the actual Projectathon, there was no connectivity issues this time for most teams, except for one Member State that did not test in the end. It shows the usefulness and importance of performing connectivity testing before the event.
Like previous Projectathons, the testing and support team shared some useful sample data with the Member State teams to facilitate their system configuration and preparation. This includes: • PMode configurations for the eDelivery sample software; • Truststores containing all public keys of Access Points as provided by Member State teams; • Common Service lookups (postman projects for Evidence Broker and Data Service Directory queries).
The participants highly appreciate this activity. The teams are encouraged to provide their feedback and suggestions for future improvements.
Finland suggested adding a comment to the support PMode files and indicate to which country a party belongs to.
Some Party Identifiers are not referring to country or teams names and some endpoint URLs are not indicating a country (e.g. are a ".com" address).
Several countries preferred to not indicate their Access Point details in Gazelle, but link to S-CIRCABC instead.
Others did not want to duplicate different C4 configurations as different SUT components in Gazelle. They preferred that they did not need to copy what is in the ACC Common Service environment into Gazelle.

The table below presents lessons learned related to the actual Projectathon testing.

Table 3: Projectathon testing related - lessons learnt

Projectathon testing related lessons learnt
In preparation of the May 2024 Projectathon, based on the Member State teams' feedback of the 2023 Projectathon series, the testing and deployment sub-group and other sub-groups, together with the Evidence Mapping sub-group, created a wikipage to find testing partners before and during the May 2024 event. The sub-groups consist of experts nominated by the SDG national coordinators.
This information can be used to prepare for bilateral testing in between events or during Projectathons/Accelerators.
The Member States can express their own capabilities or evidences/procedures they support so others can find then and indicate what capabilities or evidences/procedures they are looking for in another test partner.
The Member States that already added many contributions in preparation to and during the OOTS March Accelerator event used this wiki page extensively, and even more during the May OOTS Projectathon.
The Test Cases executed were relatively stable across all three Projectathons in 2023 and for the May 2024 Projectathon (with some adaptations in the details of the test steps and verifications).
TC01 remains the stable Test Case to verify an Evidence Exchange without Preview Space and TC06 remains the stable Test Case to verify an Evidence Exchange including Preview Space interaction.
During the May 2024 Projectathon, the Member States executed TC06 more often than TC01, as most of the Member State teams now have a Preview Space available for testing.
Some teams tested TC07 (Evidence request with preview and reauthentication at two different Evidence Providers) and TC10 (Evidence request with preview including human readable transformation and reauthentication); there are, however, several teams not yet covering these Test Cases.
It is suggested that for future testing events the Member State teams go further than the currently defined and tested (generic) Test Cases and propose some variations to existing Test Cases or more domain specific Test Cases.
Several Member State teams followed up on the request of the Testing and Deployment editor to propose more custom data sets and/or use dynamic data sets, instead of relying on the pre-shared and pre-agreed data sets that have been taken over (with some adaptations) from previous OOTS Projectathons. The Commission encourages other Member State teams propose more diverse data sets.

Projectathon testing related lessons learnt

The participants suggested that it might be even more effective to have the Commission teams themselves actively participating in testing and performing tests against Member State components.

It is important to note that the Commission teams have no active role in developing EC evidence requester (such as Procedure Portals) or evidence provider components (such as Preview Spaces) as there is also no such role for the Commission in production scenarios. However, the Commission teams have engaged in various ways during the OOTS Projectathon series by:

- Performing test cases with a Commission/Member State hybrid team(s) to demonstrate the related systems technical bridge concept (with EMREX as related system in the education domain);
- Operating Projectathon and Acceptance instances of the Common Services (EB and DSD) that are called by Member State systems in all the test runs;
- Having various support teams on site for monitoring transactions and answering questions (OOTS, eDelivery, eID);
- Drill down on Common Service connectivity and usage in exploratory room sessions (See chapter 3 "Exploration rooms" for more info).

Introduced during the October 2023 OOTS Projectathon and used during the May 2024 OOTS Projectathon, the Gazelle live dashboard was a useful feature by reducing manual work in providing using statistics. Overall, the Member States teams found the appreciated the value of this tool.

The monitors identified the following lessons learnt:

- Manual checks have been correct for a high percentage of the test cases, although some errors in the AS4 headers are still common;
- Cross-Validation could be applied over almost all the test cases, which is a great indicator of progress;
- Cross-Validation passed completely successfully for several test cases;
- This Projectathon has also been useful for the monitors to test Cross-Validation with biggest accuracy and improve it.

The Projectathon results, together with dashboards and more detailed testing results, allow for a grouping of the Member State OOTS readiness that can be related to the OOTS *Acceleratormeter* ([13]) levels.

- Teams that are most advanced;
- Teams that are showing significant progress, but still need to cover some ground or move from mocks or manual steps to fully automated systems;
- Teams that are just starting up and are getting up to speed to catch up with the others' readiness.

Some issues or configuration difficulties found during testing were at least partially caused by users not using the latest version of software solutions. Accordingly, users are advised to track the software updates to benefit from the latest security patches, bug-fixes and improvements to their components and environments.

The issues and bugs found by national teams help the Commission teams understand where the system needs some more improvement. It is helpful to have the advanced countries in these events, testing more complex scenarios, and finding more advanced issues.

TDD or validation artefact related findings have been identified and the TDD subgroup already reviewed these findings in the meeting of 24 May 2024. All the necessary improvements will be implemented in the upcoming 1.0.5 patch release, which is planned to be released in June 2024.

([13]) Information is not publicly available

The table below summarises TDD, validation artefact or Access Point related finding from this event.

Table 4: TDD, validation artefact or Access Point related findings

TDD, validation artefact or Access Point related findings
Cross Message Validation Issues
Cross-Message Validation only works for bare ebMS Headers. If there is a SOAP envelope, the validation fails. Cross-Message Validation should be adjusted so that validation can be executed with SOAP envelopes. Rules should skip the initial message and just look for the be:Messaging part. This can be realised with // to select the appropriate node even when the eb:Messaging element is not the root element.
If there are two similar values but one having an empty space (e.g., upfront) Cross-Message Validation will return an error message. Consensus in the TDD subgroup is that the error is appropriate, but the TDD team should improve the error message to be more easily understood by users (e.g., add length of the two strings in the details would show that one string is longer than the other).
Some rules contain a condition to only check the presence and match if the value is present. If no value is present, no check needs to be done and no correspondence needs to be validated. The current rules, however, result in false negative validation errors. Cross-check all conditional rules and adjust schematron accordingly.
Validation fails due to different Namespaces in Headers. The cross-validation fails because one sample has the namespaces present but the other one does not. The validator does not complain if the headers are validated standalone. The Commission and national teams should investigate how and if this can be resolved in schematron validation.
Cross-message validation sometimes fails even though values are similar. This issue is also under investigation.
TDD Issues
Some participating developers reported that they only have access to OOTS HUB. As the TDD specification team has not currently published TDD patches on the OOTS HUB, these developers were surprised to find update in Git but not in OOTS hub. A solution would be to find a way to better distribute TDD patch releases to all people involved.
Some tools have problems to process the DEL Operator for the separation of codelist value in schematrons. The Tooling should be updated.
Currently, schematron validation allows the use of language attributes of the same element more than once (e.g. sdg:description). A solution would be that rules could be defined to prevent the use of language attributes twice for the same element.
In all Slots with xsi:Type CollectionsValueType, the particular collectionType is an optional RegRep element. If not used, neither the XSD-Validation, nor the Schematron creates an error. The teams from the Commission should check if "Set" is the best for all cases in OOTS documents and include rules to test if attribute is there (if needed).
It was recognised that in most cases no entries for Intermediate Platforms are made in the Evidence Exchange, even though they are present in the communication. The TDD team cannot create corresponding rules as this is specific to the setup of the participants. However, this might be considered in a testing tool where actors first must specify who is involved in the communication. Then a specific check could test for presence of such Agent elements.
There were issues related to the use of two Distributions or Note Elements in the EvidenceRequest that are provided by the DSD query result. In fact, the DSD Query Result could be understood as a menu from which to select the appropriate parameters. The specification might be improved regarding such understanding, particularly denoting this in the EvidenceRequest.

TDD, validation artefact or Access Point related findings
In certain situations, there might be legal persons that are given the role of authorised representatives for natural person and legal person (e.g., a lawyer company that has a mandate to act on behalf of somebody). It is not fully clear if the OOTS is affected by such cases, but the current model only allows to define Natural Persons as Authorised Representative. This is being discussed with eIDAS experts.
There are some unclarity of the concept "PossibilityForPreview" if the evidence requester (Member State) makes a request without a preview (possibilityForPreview==false), may the evidence provider respond with an error response (EDM:ERR:0002 -> to request a preview)? This is covered in the Single Digital Gateway Regulation (SDGR) and corresponding Implementing Regulation (IR): The ER should set the attribute based on EU or national law as per SDGR Article 14(3) point (f). The EP should trust the ER on this. The EP can always request preview for re-authentication according to IR Article 11(3) and Article 16. There could be some more discussion in the TDD for example in the "Sample Flows" section.
If the evidence requester (Member State) makes a request with a preview (possibilityForPreview==true), may the evidence provider respond directly without offering preview? Maybe because the EP does not have a Preview Space. This is covered in the Single Digital Gateway Regulation (SDGR) and corresponding Implementing Regulation (IR): The SDGR did not specify the details of preview such as where it takes place. In the IR, article 15(1) point (b)(iii) this was specified more precisely as being on the EP side, not the ER side. So the EP has to provide preview, even if the ER also provides viewing.
Currently, the Code Element in Evidence Error Response is optional. This resulted in a conflict where a Member State was expected to use the code to identify if there is a preview required. The code should become mandatory.
Access Point related issues
In older Domibus versions, attribute 'mustUnderstand' is in wrong namespace on element 'Messaging' in backend interface. MS should be better informed about limitations and new and critical fixes of Domibus.
In Domibus, Type is missing on MessageProperties/originalSender and finalRecipient on JMS interface. Check if issues is already fixed or requires to be fixed in Domibus; better document and communicate known issues.
In Domibus, "eb:PartInfo/@href MUST use the prefix 'cid:' and be expressed according to RFC2822. Check if issues is already fixed or requires to be fixed in Domibus.
Another AS4 product sets FileName and mimeContentId properties. This is not consistent without business rules.

The table below summarises organisation-related lessons learnt.

Table 5: Organisation-related lessons learnt

Organisation-related lessons learnt
The Commission strongly encourages on-site participation to the OOTS Projectathons, especially for countries that are at the beginning of their OOTS journey. The Member States can switch from observer to participant during one event, thanks to the support they can get on site.
Day 2 is typically the most productive testing day of the OOTS Projectathon. This could be partially explained by the fact that most teams used parts of Day 1 to do and check their setup and that interactions were boosted after everyone had the ability to meet and discuss during the social event of Day 1.

Organisation-related lessons learnt

The concept of exploratory sessions is well-established. These workshops offer a great opportunity for the participants to benefit from the presence of the various teams on site to explore some topics into more detail, brainstorm about certain aspects and collect relevant feedback from the participants. These sessions were planned on the three days. The Commission invites the participants to provide their suggestions, in case more/less or different sessions would be preferred.

Even if some participants would have liked to be able to fully participate to the main testing track and at the same time attend all exploratory sessions, it makes sense to keep some parallel sessions as they are mainly intended for a complementary audience and/or are providing timeslots to a limited audience by appointment (e.g., the UX lab workshops and Common Service UX testing).

Feedback about all exploratory sessions was very positive with clear results related to involvement of Competent Authorities, information sharing or advancing the OOTS developments.

The participants could join the exploratory sessions remotely. However, it is always more effective to participate on site because a sufficient remote connection cannot always be guaranteed.

The organising team offered a pre-registration option for the exploratory sessions to manage registration numbers and attendance.

The Commission used different communication channels to announce the May 2024 Projectathon and to prepare for it: sub-group meetings, gateway coordination group meetings, the Once-Only Hub, a Member State Microsoft Teams channels and mailings. These communication channels seem to be complementary to reach all stakeholders. The Commission invites the participants to provide their suggestions in case alternative channels are needed.

Communication between the organisers and the participants, including between the participants themselves, is done via Member State teams (in addition to the general announcements/presentations in the Projectathon room). This option might not suit everyone perfectly, but if there is a preferred and workable alternative that everyone would endorse, the subject can be reassessed.

The organisers have noticed a significant increase in website traffic on the Once Only hub and internal wikis in preparation to the May 2024 Projectathon. This demonstrates that the Projectathon is a good booster for making progress across the relevant participating teams.

The Projectathon Playbook and supporting guidance, videos, and tutorials have been useful in informing the participants about practical details of preparing for and joining the May 2024 Projectathon.

The social part of meeting each other during the Projectathon, not only while testing but also while talking informally, is good for building a strong and long-term (cross-)team spirit and lays the foundation for more collaboration on an on-going basis after the testing events.

Member State teams were very active on social media and took it on themselves to add a new and special dimension to the Projectathon. These teams took the time sharing their experiences and findings of the Projectathon with others and bringing home the message.

The table below summarises general outcomes: looking back and forward from this event.

Table 6: General outcomes: looking back and forward

General outcomes: looking back and forward
Generally, the May 2024 Projectathon was a success, even more so than the 2023 Projectathon series. The event was a great opportunity for all parties to make mistakes, to learn, to help each other and to assess their current state of play regarding their OOTS developments.
While most teams made significant advancements, the Member States and the Commission should also take the perspective of the reality check that some results point to, meaning that not all systems are bug-free or fully automated. Most teams can use the results from the test executions to identify which bugs to solve, which parts of the system need to be refactored or which components need to be automated instead of relying on mocks or manual steps. Those teams that want to benefit from an individual analysis to assess their readiness and/or a discussion on the optimal next steps, can contact the Commission for follow-up.
Many OOTS Projectathon participants expressed their views and provided their comments, via different channels, during and after the Projectathon. Generally, their feedback was very good, confirming the good work done by all teams in preparation of and during the event and expressing the usefulness or need for more similar events in the future.
During the May 2024 Projectathon, the focus shifted more on assessing production readiness of the various OOTS components. In this context, Test Cases have been assessed by monitors in a stricter way. However, there were no decisions about the automation level of systems and the compromise solution was to allow everyone to join as-is (even if some test cases were performed with mock systems or manual steps). Therefore, the key goal for all participating teams was to make progress, find potential issues and advance the implementation status of the OOTS components as much as possible. To cover a variety of participant readiness statuses: • A Member State "Find your test partner" wiki page allowed less and more-advanced teams to find each other; • The Test Cases supported allowed a variety of complexity levels to be tested or re-tested; • Various support teams were available for answering questions or guiding teams throughout the test cases (OOTS, eDelivery, eID and sub-group representatives).
The 2024 Projectathon series is starting very well with participants even more satisfied than in 2023, a lot of progress from the Member States. Tests are focussing more on quality and on onboarding Competent Authorities, focussing on specific themes related to the procedures to be put in place in the OOTS context.
As a next step, the Commission is organising the #3 OOTS Accelerator Event 2024 event on 13-14 June 2024.
Even after the production date, it is relevant to continue testing events and/or roll-out campaigns to: • Perform regression testing and ensure interoperability; • Test new features; • Add new partners (Competent Authorities) as the OOTS ecosystem grows within the Member States and/or across new procedures.

7. BEST PRACTICES AND RECOMMENDATIONS

Based on the participants' feedback, observation and lessons-learnt from the April, June, and October 2023 and the May 2024 Projectathons, there are several best practices and recommendations for potential future upcoming OOTS Projectathons or related testing events. The table below summarises key best practices and recommendations for OOTS Implementers and Competent Authorities.

Table 7: Best practices and recommendations

Best practices and recommendations for OOTS Implementers and Competent Authorities
Participate to as many OOTS Projectathons as possible as each one is an opportunity to gain experience and boost your progress.
Provide feedback or recommendations to improve future OOTS Projectathons on all aspects such as test cases, test data, test components to cover or any relevant improvement to the preparation or execution of the Projectathon.
Even if you think you are not completely ready, join as an active participant and be prepared to increase your capabilities during the event.
Keep on improving and retesting your systems and if you have a temporary setback, remember that not all evolutions go up in a straight line.
On-site participation is key for ensuring a good testing and networking experience.
If the whole team cannot be on site, having one or two coordinators on site clearly increases your level of effective involvement.
Read the OOTS Projectathon participant Playbook and its Annexes to get the necessary background information and guidelines.
Before the Projectathon, prepare a planning across your team and a target division of work, related to both test case execution and exploration room participation to fully benefit from all the opportunities that a Projectathon event offers.
Register to the Member State Teams collaborative space to receive information (messages and files) from the organising team and to exchange information with other participants.
Respect the timelines: • Register all your team members in time; • Register your SUT in time, including the test and connection details.
Perform as many preparatory tests as possible.
Perform the connectivity test to not lose valuable testing time during the event (and keep you own connection details stable).
Reach out to the OOTS Support team before, during or after the event as they are highly effective in sorting out questions and problems.
Reach out to the monitors during the event for any question related to testing or documenting/logging test cases.
Consult the exploratory sessions details in advance so you can plan to participate to them while still having other team members covering the test case executions.
Come with a mindset to learn and help each other.
Connection links should be shared in advance, as early as possible before the start of the event.

Best practices and recommendations for OOTS Implementers and Competent Authorities
Think about your future needs and express your needs and opinions on future events and testing services.
It is good practice to evolve and adapt the concept or priorities of a Projectathon across occurrences to look at the challenges in different ways and advance the project accordingly. Organising the 2024 Projectathon series according to thematic focus domains allows all participating teams to jointly concentrate on certain items and collaboratively make progress. By simultaneously supporting the generic testing as well allows other teams to catch up with the others or recheck certain tests with new or existing partners.
When working to connect providers and requesters in a domain, such as the work done with education Evidence Providers using EMREX, it is useful to properly prepare the Projectathon in dedicated meetings, and to prepare dedicated documentation, "how to" documents and data entry templates. Even if that documentation just summarises existing documentation for the specific procedures, requirements, evidence types, data formats etc, it adds value in practice as the competent authorities know the OOTS much less well than the teams developing the national OOTS Intermediary Platforms.
The "bridge" approach for connecting providers using a system like EMREX can offer relatively low-risk, low-cost integration of these providers in the OOTS. Once the bridge is implemented and properly tested, the same component can be used in a single service that connects many providers, even providers in different Member States.
The May 2024 OOTS Projectathon was the first to include Competent Authorities. These are the public bodies who provide or receive the authentic data required to complete the cross-border administrative procedures listed in the SDG Regulation. For the Once-Only Technical System to work, these Competent Authorities must be onboarded, meaning they are familiar with the System and the technical realities and legal basis. Moreover, following the event, they can use their experience as a starting point to disseminate their OOTS knowledge across the different levels of administrations in the Member States. The multifaceted nature of an OOTS Projectathon, with its parallel testing track and various exploratory sessions, makes it worthwhile for Competent Authorities to join these events and demonstrates their value. Therefore, future Projectathons can and must sustain this concerted effort to engage Competent Authorities.

8. CONCLUSIONS AND NEXT STEPS

The May 2024 Projectathon was designed to cater for all teams, irrespective of their progress in their Once-Only journey, with a range of tests to match different progress levels. It specifically aims to:

- Have all Member State teams as "participants" preferably, or as "observer" with an on-site team or on-site representation;
- Allow the participants to build and advance on the testing they have thus far undertaken, including updating the contents of the Common Services and completing outstanding testing rounds;
- Shift the focus on assessing production readiness, and on quality testing focussing on specific themes such as Civil status and Education (linking to EMREX) for the May OOTS Projectathon;
- Allow for testing to include actual base registers and eID nodes for more dynamic data testing and to involve other related systems.

Progress in these areas means development can look to integrating Competent Authorities and business registers, as well as achieving bug-free connections.

The May 2024 Projectathon has, on balance, greatly advanced the position of the Member States as regards their respective Once-Only implementations. Following this Projectathon, on 13-14 June 2024, the Commission organises the #3 OOTS Accelerator Event 2024 with two parallel tracks: a track dedicated to demonstrations from Member States, and a track for readiness checks of national components and connectivity to the Common Services.

The Commission invites the Member State teams to express their needs and opinions on future events and testing services.