D6.6 Results of pilot workflow integrations with ELViS

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Summary

The European programme SYNTHESYS+ (2019-2023), and specifically its JRA1 working group focussing on "Optimisation of Access", initiated research and development for a novel platform to provide unified access to the European collections a coreservice planned for the new pan-European Research Infrastructure DiSSCo. The platform is called the European Loans and Visits System (ELViS) and provided as an online service. The initial development during the SYNTHESYS+ project focussed on supporting the international calls for Transnational Access (TA) and Virtual Access (VA) implemented as Digitisation on Demand (DoD). Access to the collections was provided through the calls, where all access requests between requesters and collection providers were handled through the system with support for the complete TA and VA application procedure including communications, scoring and different access roles. The system also provided information about the Taxonomic Access Facilities (TAFs), collections providing institutions and their facilities and available instruments. Functionality to support access through loans was also discussed in JRA1.

Development was done through Agile development by a commercial partner with fixed budget and time, and since research and implementation of the new process for VA took more time than foreseen, loan functionality was not built into the system. It occurred while MNHN independently started to redesign and modernise its colhelper system, a natural history collections access system for France. To ensure continuity and alignment, MNHN offered the possibility to extend its work to the European level. Pilot integrations with ELViS could therefore not be carried out as originally planned and instead this deliverable focused on a description of the continuation of the ELViS development plan and perspectives on the DiSSCo full access service, including a plan for piloting and implementation of the integration between ELViS and MUSE, a forthcoming collections access system that will replace Colhelper.

With the future ELViS and ongoing development of MUSE in perspective, MNHN carried out a comparative analysis for the requirements of the tool, based on views expressed through the SYNTHESYS+ JRA1 working group and more broadly by the DiSSCo community, and compared this with MNHN's plan for MUSE. This analysis identified the developments necessary to move from MUSE to ELViS, as well as determining the MNHN's capacity - both HR and financial - to undertake the development of a fully functional European collections access e-service, and the means needed to achieve this. The results of this study made it possible for MNHN to draw up an investment plan from development to complete service provision, that is divided into four realistic phases spread over the next four years. The plan involves (1) Development of the basis for a multi-institutional MUSE; (2) Co-development of the tool with a pool of partners in a sandbox environment; (3) Opening the system to the community and accompanying partners in their familiarisation with the system; and (4) Providing the service on a routine basis for the DiSSCo community and facilitating connections with future DiSSCo e-services.

1) Introduction

1.1 Context

The main objective of the SYNTHESYS+ Joint Research Activities (JRA) first work package (JRA1) was the development of ELViS: a fully integrated European Loans and Visits System supporting access requests for Natural Science Collections and Digitisation on Demand (DoD) services which are provided by partner institutions of the DiSSCo Research Infrastructure (RI).

Within the framework of the JRA, the task 6.1 (Structure and design of system: design system architecture to align with future DiSSCo needs) included the design of a User Interface (UI) for the online ELViS service (https://elvis.dissco.eu/).

The design process for this UI has been influenced by current work with similar systems providing centralised access to collections, specifically Colhelper: an online collection access service created and employed in 2006 by the Museum national d'Histoire naturelle (MNHN).

Building on the development work already achieved through SYNTHESYS+, MNHN wanted to mobilise its internal expertise in the interest of continuing the development of ELViS, ensuring that a fully operational service will be made available for DiSSCo.

MNHN developed its own natural history collections access system, Colhelper, in 2006. The tool has been in use for around 17 years and makes it possible for the museum to manage visit, loan and digitisation requests. In 2022, MNHN committed to a complete update of its IT system, and in the process kickstarted the project of redesigning and modernising Colhelper. The ongoing development project involves collections and IT personnel who have worked together to draw up the specifications and create the foundation of the updated, forthcoming collections access system, MUSE.

The work carried out as part of the SYNTHESYS+ programme focussed overwhelmingly on the management of the novel Virtual Access (VA) workflowss and programming visits for Transnational Access (TA). It was therefore succesfully used to support 4 calls and over 1500 access requests from 1300 users throughout the project but was unable to completely fulfill one of its original objectives: the construction of a comprehensive access interface for European collections. This meant that the second phase of the development of ELViS focused on improving the results of the first phase dealing with the TA and VA workflows, rather than the implementation of individual visit request and loan functions The development of these features is required in order to pilot integrations for example the integration of Muse in ELViS.

In 2022, in parallel to the work carried out in SYNTHESYS+, the MNHN committed to a total update of its in-house Colhelper tool. In a natural progression of this work, MNHN proposed that they also work on the internationalisation of the tool to support use throughout Europe and development of a multi-institutional version of the version of Colhelper currently under development (the most recent version of

Colhelper is now called MUSE). MNHN's proposal carries with it the intention to continue the work on ELViS that was committed to as part of SYNTHESYS+, thus ensuring full completion of a fully functioning collections access interface.

In preparation for this proposal, MNHN carried out a feasibility analysis which aimed to (i) ensure coherence between existing and upcoming Colhelper features and the expectations the DiSSCo community has of ELViS; (ii) measure the potential risks associated with developments and change management; and (iii) identify the necessary technical, human and financial resources to ensure that Colhelper aligns with all the features required of ELViS.

This analysis made it possible to draw up a solid investment plan which can be used as a guide in the development and implementation of ELViS, ensuring that the tool responds as best as possible to the needs of the DiSSCo community. Strengthened by this solid foundation, the French national research infrastructure for naturalistic collections (Récolnat), supported by the MNHN, responded to a call for expression of interest launched by the Coordination and Support Office (CSO) of DiSSCo, in which Récolnat demonstrated the readiness and willingness of MNHN to shoulder the technical developments of the future ELViS.

1.2 Scope

This scope of this deliverable has been changed from "Results of pilot workflow integrations with ELViS" to a description of the continuation of the ELViS development plan and perspectives on the DiSSCo full access service for the reasons explained in 1.1.

The newly formulated D6.6 serves as an in-depth explanation of the work done in MNHN to develop a proposal for the continuation of ELViS development and service provision, paying particular reference to the redesign of Colhelper, the feasibility analysis for the internationalisation of the new User Interface, and the proposal outlining the phased development process to continue within MNHN once the SYNTHESYS+ programme comes to an end.

2) Plans for the redesign of Colhelper: MNHN's collection access tool

As part of the MNHN's commitment to the redesign of its IT systems, it dedicated resources to a complete update of its collection access request system, Colhelper. The project, which is led using an Agile Scrum methodology, aims to create a new, improved tool, moving from Colhelper to MUSE (My mUSeum rEquest): a new name for a new system. The below sections present the aims of the project and its working methodologies and the following workflows and role descriptions should provide insight into the tool's structure.

2.1 What is Colhelper ?

The Colhelper collections access application (http://colhelper.mnhn.fr/) was developed in 2006 by the Muséum national d'Histoire naturelle (MNHN). Its purpose is to facilitate the submission of requests to access the Museum's collections and it serves as a collaborative tool through which these requests can be processed and made accessible to collection managers. It is a single-entry point for scientists from all over the world and is composed of two parts: a "front office" for requesters and a "back office" allowing requests to be managed by collection managers.

Between 2006 and 2022, 12,907 visits have been recorded in Colhelper. There have also been 8,919 loans and 2,690 sampling requests. It should be noted that the uptake in the use of Colhelper has been gradual over the years. Significant efforts in communication have been required in order to expand the user base of the tool to reach as many MNHN users as possible. As it stands, the type of request seems to influence user uptake of the tool.

Dispatcher	Manager	Requester
23	341	15087

Table 1: Number of roles registered in Colhelper to date

Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
Loans	189	453	723	633	732	758	773	746	689	750	786	642	593	333	410	609	9819
Sampling	5	54	59	77	92	106	163	187	182	218	186	261	337	178	269	306	2680
Visit	162	634	891	814	819	864	945	910	1014	953	1119	1036	916	383	539	908	12907
exchange	2	3	3	4	7	13	2	4	3	1	3	1	8	5	3	8	70
Images	72	185	259	260	277	264	303	282	282	395	421	451	519	482	551	615	5618
Extensions	3	24	19	6	13	26	10	36	83	47	15	20	31	32	19	55	439
Donation, Bequest, Sales	6	7	19	29	18	36	35	17	13	20	15	7	24	15	10	5	276
Exhibition	12	29	63	74	51	53	65	70	48	50	55	35	29	28	38	64	764
Collection questions	34	153	194	196	167	189	210	186	161	223	217	227	213	193	223	240	3026
Mouldings, Preparation, Restoration							26	4	3	2	4	1	6	4	7	7	64
Total requests	485	1542	2230	2093	2176	2309	2532	2442	2478	2659	2821	2681	2676	1653	2069	2817	35663

Table 2: Number of requests processed in Colhelper

To learn more:

Within the framework of WP6 - JRA1, the MNHN produced a study on the features of Colhelper in order to supply the JRA1 working group with information on the future features to be incorporated into the user interface of ELViS and provided the group with lessons learned from the design and usage of Colhelper. See SYNTHESYS+_JRA1-6.1_MNHN-Colhelper_functionalities-ELViS – October 5th, 2020" for more information – https://doi.org/10.5281/zenodo.7684663.

2.2 Colhelper redesign programme: MUSE development project

In 2022, MNHN launched a total redesign of its IT system. The redesign of the Colhelper web application - and its transformation and rebranding into MUSE - is one of the most emblematic projects of this redesign process. MUSE, the name chosen for the new collections access interface, will be operational in 2023 and will replace Colhelper, improving on the current features, ergonomics and capacity.

The name MUSE has several meanings and connotations:
- it clearly encompasses the wide variety of requests related to collections;
- it references the Greek etymology of the word "museum" (*mouseîon* : meaning "shrine of the Muses");
- it pays tribute to the interface ELViS and is a subtle reference to the musical theme portrayed through the ELViS name.

The Muse development project is detailed in Appendix 1 "Muse development project".

3) MUSE: the foundation for ELViS

3.1 Gap analysis of MUSE/ELViS

Using the work done on redesigning Colhelper, in addition to outputs from SYNTHESYS+ JRA1, the MNHN carried out a gap analysis between the features requested by the Colhelper user story participants and the features required for ELViS.

185 user stories were produced as a result of the user surveys distributed to Colhelper users (MNHN personnel) (see Appendix 2 - List of MUSE User Stories). It was then possible to compare these stories with the 127 user stories that had been integrated into SYNTHESYS+ Milestone MS52 "Workflow integration workshop", in addition to the user stories already in DiSSCo Githubs (132 user stories were gathered concerning the functions administration, search, request, visit, borrowing, handling requests, reviewing, reporting & statistics, API and other integrations and compliance - ref. https://github.com/DiSSCo/user-stories/projects/1). These studies were carried out by teams involved in the development of MUSE, as well as teams at MNHN involved in the SYNTHESYS+ and DiSSCo Prepare programmes.

The results of the user research provided the project team with material which allowed them to identify the technical feasibility of the initial development plans for MUSE and to identify the perimeter of the development project for ELViS. The results set out an initial development trajectory that will need to be reviewed and refined in collaboration with European partners. The choices made here are not final, but aim to provide a tool for the co-construction of a future ELViS.

3.1.1 The method

Categorisation of DISSCo user stories

The DiSSCo user stories were first analysed so as to organise the feedback into categories that made it possible to compare the data collected from DiSSCo and the user stories based on MUSE. The following categorisation was developed with an emphasis on both the technical characteristics (features and IT development) and the ergonomy of the application (see Appendix 5 - List of categories and sub-categories).

> **Required features:**
- Document creation
- Account management
- Request management
- Request type: digitisation request
- Request type: sample request
- Request type: loan request

- Request type: information request
- Unplanned request
- User feedback
- Statistics and reports
- Publication tracking
- Terms of Use and policies

> **IT development**
- API (Application Programming Interface) connected to local CMS (Collection Management System) and databases
- Unified BI (Business Intelligence - User story calling for a wider IT environment)
- Unified catalogue
- Outside the remit of ELViS-MUSE
- Multi-institutional MUSE setup

> **Ergonomics**

In order to improve readability and categorisation, each of the above categories has been divided into subcategories. For example, the *Account management* category is now made up of 7 subcategories:
- unified AAI
- Access/annotation of user profile
- Account setup
- Consent regarding personal data
- User account creation
- Change personal data
- Validate user accounts

Development indicators

Once the user stories had been organised into categories, the MNHN implemented a development scale. With values from 0 to 7, the scale identified different developments in the move from MUSE to ELViS. Each DiSSCo user story was compared to the user stories collected for MUSE and was assigned a number on the development indicator scale.

Development indicator
1	Existing on Colhelper/Muse
2	Minimum developments for multi-institutional MUSE
3	Possible developments for multi-institutional MUSE
4	Developments needed for a complete multi-institutional MUSE
5	Services not envisaged
6	Development dependent on other e-Services
7	Outside the ELViS perimeter
0	Not possible

Figure 1: Legend and list of development indicators

The development indicators are as follows:

- **Level 0 (Not possible)** the development requests in these user stories were identified as not possible to attain or as not possible at this stage, and not of fundamental importance for a fully

operational ELViS. For example, some stories requested features that were not compatible with GDPR.

- **Level 1 (Existing on Colhelper/MUSE)** represents DiSSCo user stories that match the user stories collected for MUSE. They mention existing features in Colhelper, or features that have been planned for MUSE.
- **Level 2 (Minimum developments for multi-institutional MUSE)** represents user stories which require a minimum level of development in order to create a multi-institutional tool. For example, this concerns the Single-Sign On authentication system, ELViS-MUSE (SSO Keycloak).
- **Level 3 (Possible developments for multi-institutional MUSE)** represents the user stories which require additional, feasible developments that are not necessarily essential in order to create a functioning tool. This mainly concerns automated management of policy documentation applying to requests. For example, "as a loan manager, I would like to export a document with key information on the specimens requested (including Terms of Use, catalogue numbers, etc.) which can be sent with the loan".
- **Level 4 (Developments needed for a complete multi-institutional MUSE)** represents more advanced developments than Level 2, which would produce a fully functional, multi-institutional MUSE. For example, the management of project calls - developed in ELViS within the context of SYNTHESYS+ - would require an API connection with MUSE or would require the development of APIs linking the institution's ELViS account with its own CMS.
- **Level 5 (Services not envisaged)** represents user stories which mention services that have not yet been envisaged by the MNHN. It mostly concerns specific scientific requests, such as requests for access to training or museum facilities, loan requests from one institution to another, etc.
- **Level 6 (Development dependent on other e-services)** represents the user stories which requested features that depend on the development of another e-service envisaged for DiSSCo. These include the unified catalogue, access requests via the catalogue, or the use of ELViS as a content management system. These requests are not essential to the creation and implementation of a collection access tool and cannot be developed while the other e-services are not yet implemented.
- **Level 7 (Outside the ELViS perimeter)** represents items that have been defined as outside of the ELViS perimeter. These concern requirements that are most often linked to the consultation of the institution's local CMS, management tools, policy information and taxonomic references, for example.

With these levels in mind, the following conclusions were made:
- User stories with development indicator levels 1, 2, 3 and 4 have been integrated into the project plan for the development of ELViS.
- The user stories that have been assigned to categories 0, 5, 6 and 7 will require further discussion with partners but they are not considered as of paramount importance at this stage.

3.1.2 Preliminary results

By categorising and comparing the 242 DiSSCo user stories (MS52 and Github) with the 185 user stories collected for MUSE (see Appendix 6 - List of DiSSCO User Stories (MS52 - Github) classified and ranked) , it was possible to apply the 8 development indicators to each story (cf. the below table).

Main categories	nb US	0	1	2	3	4	5	6	7
Statistics and reports	36	1	30	1		1	3		
Request management	46	6	34	5		1			
Request type: loan request	8	1	7						
Request type: sample request	7		7						
Document creation	10	1	5		3	1			
Ergonomics	5		5						
Request type: digitisation request	4		4						
User feedback	2		2						
Request type: information request	2		2						
Account management	16	8		8					
Multi-institutional MUSE setup	8			8					
Terms of Use and policies	11				7	4			
API connected to local CMS and databases	20	1				14		5	
Publication tracking	5					5			
Unplanned request	12					2	10		
Unified catalogue	25							25	
Unified BI	3							3	
Outside the remit of ELViS-MUSE	30	1							29
Total Users Story DiSSCo	250	19	96	22	10	28	13	33	29

Table 3: Distribution of the number of DiSSCo User Stories by main categories and by Development Indicators

For an overview of the ranking of development indicators for the sub-categories, please see Appendix 7 - User Story Gap Analysis Data Table.

An initial analysis of the overall results (see figure X below) made it possible to determine 3 main result groups:

1. **Input from the user stories corresponds perfectly with plans for MUSE**
   37% of the needs expressed in the DiSSCo user stories (cf. development indicator 1) are in complete alignment with the developments planned for MUSE and do not require any further innovation.

2. **Input from the user stories calls for some development in order to move from MUSE to ELViS**
   29% of the needs expressed in the user stories (development indicators 2 to 5) concern developments which are necessary in order to produce a fully operational ELViS and which have not been initially planned in the development project for MUSE. The developments that match these indicators will be considered during the phased development project **as proposed by MNHN in section 3.3 of this document.**

3. **User stories falling outside of the perimeter of the project**
   34% of the user stories were categorised as development indicators 0, 6 and 7 and considered as falling outside of the current scope of ELViS as a functional e-service providing collections access. The comments provided with these stories were incompatible with GDPR, or dependent on future DiSSCo e-services (specifically the Unified Catalogue and Policy Assessment Tool), or require the development of another feature which is considered as an internal institution collection management use. As mentioned above, this final category has been identified as non-essential to the creation of a fully functioning ELViS, but it could be discussed during future partner talks.
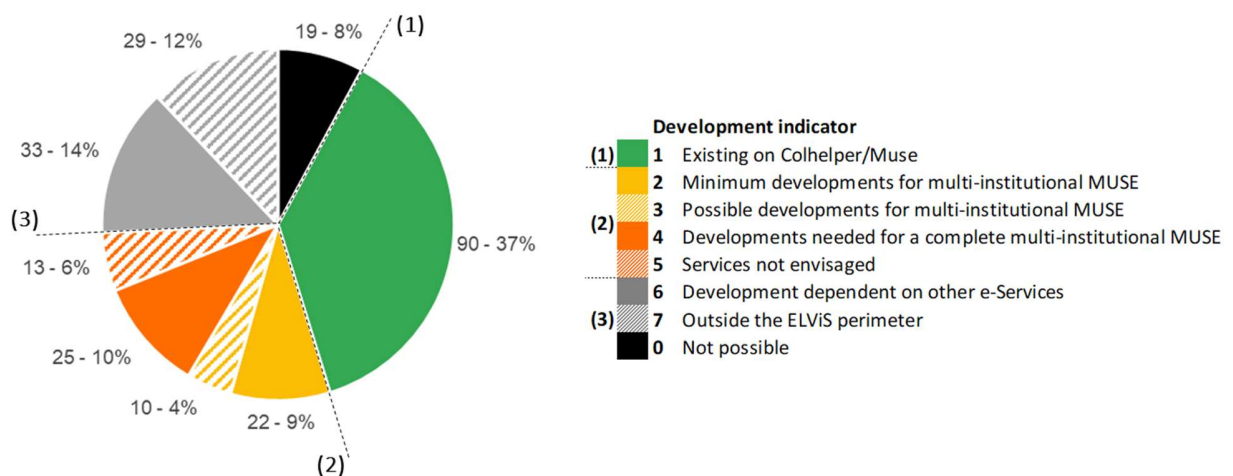
Figure 2: Analysis of the preliminary results from development indicators (1) Input from the user stories corresponds perfectly with plans for MUSE, (2) Input from user stories demonstrates some development needed to move from MUSE to ELViS, (3) User stories falling outside of the perimeter of the project

(1) Input from the user stories corresponds perfectly with plans for MUSE

User stories classified under this group have been identified as requesting features and uses which are already planned and scheduled in the development of MUSE. For the needs expressed in these user requests, the key features of Colhelper/MUSE respond fully to the requirements of ELViS, especially concerning the following user requests:

- Request type: digitisation request
- Request type: sample request
- Request type: loan request
- Request type: information request

The same is true of the requirements:
- Ergonomics and use
- User response
- Statistics and reports
- Request management
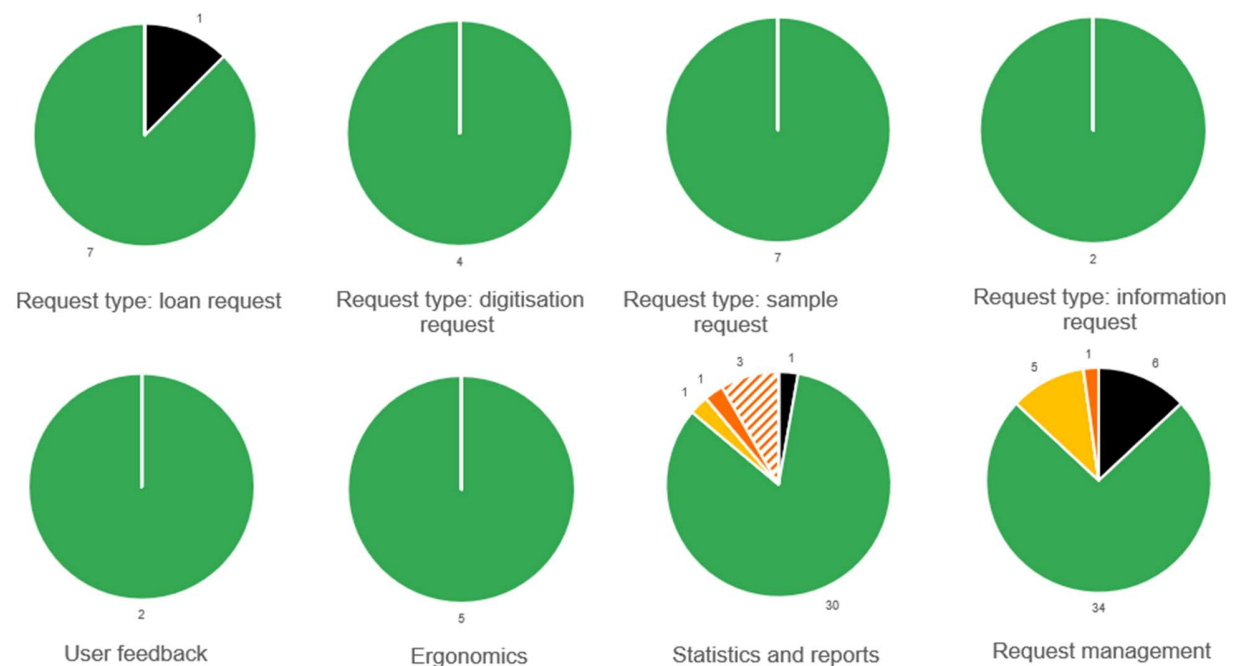
Figure 3: Analysis of results based on development indicators

Nb. None of the DiSSCo user stories have been categorised as a visit request. Nevertheless, this feature is implicit in the development and has been identified in other user stories, classified under other categories.

(2) Input from the user stories calls for some development in order to move from MUSE to ELViS

Some of the needs expressed in the user stories categorised under group 2 only require basic development work to reach fruition. For example, in order to achieve a multi-institutional Colhelper, features such as the creation of institution profiles, access to a multi-institutional dashboard and configuration of collections for different institutions would all need to be implemented.

In terms of account management, it is possible to see that 50% of the requests made by the user stories have been classified as "not possible", this is mainly because the request is not compatible with GDPR.
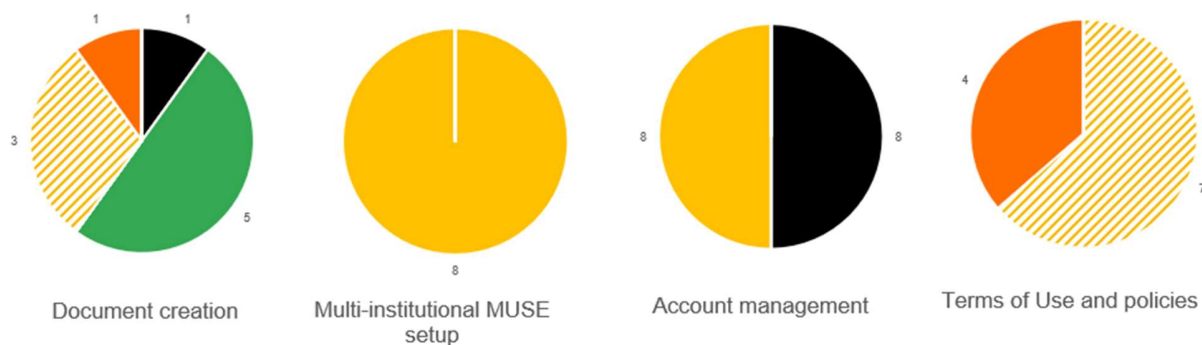
Figure 4: Analysis of results based on development indicators

Other user stories request functionalities that have not at this stage been envisaged for MUSE and which are not essential to the implementation of a basic access request service. Nevertheless, it has been deemed important to integrate them into the development of ELViS in order to produce a fully functional service and respond to the needs expressed by the DiSSCo community.
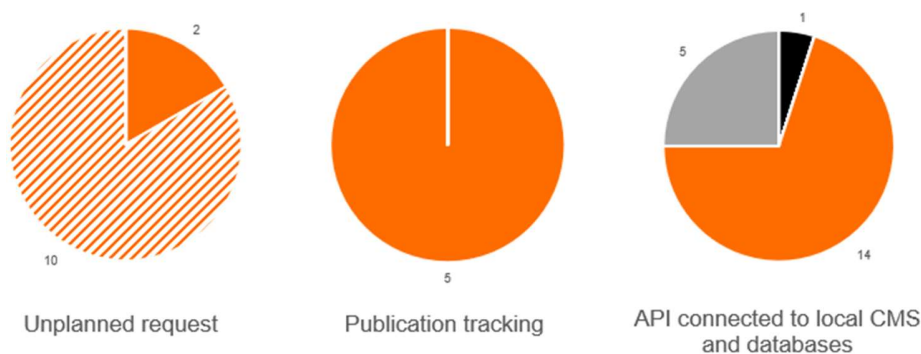
Figure 5: Analysis of results based on development indicators

Two development indicators concern ***unplanned requests***:
- **Developments needed for a complete multi-institutional MUSE - Level 4 development indicator**

Two user stories mentioned the management of project calls (Transnational Access and Virtual Access). Although the development carried out in SYNTHESYS+ responds, in the most part, to these needs, ELViS will require that the TA and VA management tools are connected with the institution's MUSE account in order to ensure the management of requests accepted post-project call.

- **Services not envisaged - Level 5 development indicator**

These user stories concern access requests between institutions, invitations for researchers to work on collections determined by the institution itself, and access requests for training or institution facilities. These include:

- Researchers invited by an institution
- Request type: access request for facilities
- Request type: training request
- Request type: request incoming loans
- Request type: request outgoing visits

At this stage, the above features have not been incorporated in the development of MUSE, nor in the continuation of the MNHN's proposed development of ELViS. Nevertheless, these developments could be envisaged for a later date.

Regarding **Tracking publications,** the ability to track publications - resulting from access requests via ELViS - is not currently planned in the development. However, the current version of Colhelper guides users to instructions for publication once they have agreed to the Terms of Use, and this same feature is planned for MUSE. It remains important to pursue a reflection of the future developments that could improve publication tracking, especially by following the developments taking place in the EU funded project BiCIKL.

The category "**API MUSE to database**" mainly concerns user needs based on the connection between ELViS and local Collection Management Systems, allowing for an integration and supply of metadata on collections that have the object of access requests.

(3) User stories falling outside of the perimeter of the project

Among the user stories collected in the framework of DiSSCo, 55 stories requested features which were considered as falling outside of the perimeter of ELViS as a tool for the management of collection access requests.

The needs expressed in these categories mostly focus on being able to retrieve information from the institution's own database, using its own CMS via ELViS, APIs linking to aggregators, or APIs that link to the European Unified Catalogue. These needs are therefore intrinsically linked to other DiSSCo e-service developments - some of which could be connected to ELViS in the future within the framework of unified Business Intelligence - and which are not crucial to the development of a fully functional ELViS.
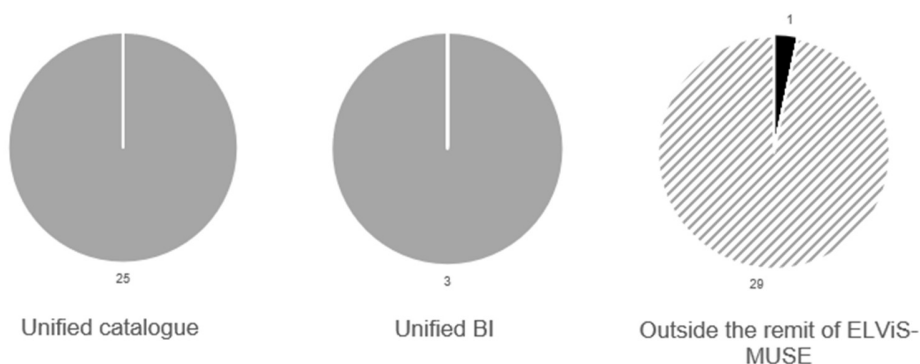
Figure 6: Analysis of results based on development indicators

3.2 Feasibility analysis

Using a gap analysis, the team explored the coherence between planned MUSE features and the DiSSCo community's expectations for a multi-institutional europe-wide collection access request management tool. The analysis also made it possible to identify the developments required in order to move from the MNHN-based version of MUSE to a multi-institutional version of MUSE, right up to a fully operational ELViS.

The development requirements highlighted by development indicators 2, 3, 4 and 5 were analysed within the context of the human and financial resources that have been allocated by the MNHN for the redesign of Colhelper. They also considered the potential risks associated with change management. By doing so, it was possible to identify the necessary technical, human and financial resources for the continuation of the development of ELViS.

This analysis established two categories which can be separated into two phases:
1. Developments for a multi-institutional MUSE (in yellow)
2. Developments for a fully functioning ELViS (in orange)

Development indicator

2	Minimum developments for multi-institutional MUSE
3	Possible developments for multi-institutional MUSE
4	Developments needed for a complete multi-institutional MUSE
5	Services not envisaged

Figure 7: Distribution of development needs to move from Muse to ELViS (1) Developments for a multi-institutional MUSE, (2) Developments for a fully functioning ELViS

3.2.1 Developments for a multi-institutional MUSE

The developments corresponding to the second development indicator (developments for a multi-institutional MUSE) are examples of the work needed in order to use the development of ELViS as a means of developing a multi-institutional version of MUSE, which could then be adopted by any institution. This could mean the creation of a sandbox, which would involve DiSSCo partners in a second development phase.

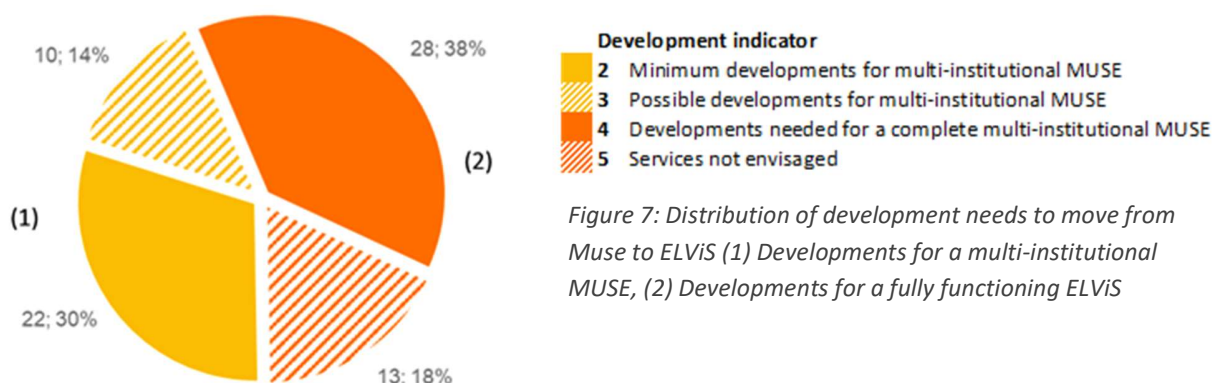| Main categories	subcategories
Account management	Account administration
	Consent for personal data
	Creating a user account
	Modification of personal data
	unified AAI
Multi-institutional MUSE setup	Institutional account creation
	Multi-institutional dashboard
	Multi-institutional MUSE setup
	Setting up the collections and facilities of the institutions
Request management	Applicant's dashboard
	Request dashboard
	Request messaging system
	Request update
Statistics and reports	Report by type of request

Table 4: List of categories and sub-categories corresponding to development indicator 2

In addition to the needs expressed via the MUSE and DiSSCo user stories, the development of a multi-institutional version of MUSE clearly demonstrates that there are additional requirements to achieve international usage of the tool within Europe. MUSE will require a redesign based on the ELViS colour scheme in order to ensure graphic consistency between the different DiSSCo tools, as well as full translation of the institution interface into (at a minimum) English. Other European partners are not required to participate at this stage, as this can be led by the project team within MNHN.

Moreover, user stories categorised under development indicator 3 (possible developments for a multi-institutional MUSE) will require further discussion with partners in order to identify what is feasible. This is especially necessary as they are dependent on individual workflows specific to each institution and will require tailor-made developments to integrate the different methods of documentation production relevant to specimen and data access.

Main categories	subcategories
Document creation	document export
	document import
	form editing
Terms of Use and policies	Conditions for reporting results
	Financial terms
	Integration of T&Cs and charters

Table 5: List of categories and sub-categories corresponding to development indicator 3

3.2.2 Developments required for a fully functional ELViS

The user stories classified under the development indicators 4 and 5 are considered not to be urgent at this stage. However, they are important in the process of creating a fully functional ELViS that meets the needs expressed by the community. More specifically, the category "API connected to local CMS and databases" will require in-depth work with partners in order to define the development plan needed to find best practices for the tools and API that will be required in order to link databases and local CMS to the MUSE/ELViS interface. Rather than linking these directly to ELViS, this should be achieved through further development of the DiSSCo FAIR Digital Objects Infrastructure for Digital Specimens, DS Arch.

Main categories	subcategories
API connected to local CMS and databases	Data integration MUSE/local CMS
	Documentations
Document creation	document export
Publication tracking	Publication tracking
Request management	Request update
Statistics and reports	Report by type of request
Terms of Use and policies	Conditions for reporting results
	Integration of T&Cs and charters
	Signing of the loan conditions
Unplanned request	Request type : Call for projects

Table 6: List of categories and sub-categories corresponding to development indicator 4

The "Project call" request requires the development of connections between the tool developed by SYNTHESYS+, in the framework of JRA1, and MUSE, which would make it possible to transfer the successful applications via the collection access management tool in MUSE. For example, a Transnational Access project involving a subsidised visit could be automatically integrated into an existing workflow managing a request to visit a collection. Considering that there are currently no upcoming project call dates, this section is not considered a priority. However several DiSSCo partners expressed an interest in supporting further national or international calls and the calls in the SYNTHESYS programme provided access for a

large number of scientific users and resulted in over 8,000 recorded research outputs. This development will therefore be important in a second phase.

The development indicator 5 "Services not envisaged" is mostly made up of requests that have not been planned for MUSE. Even though these requirements do not seem fundamental for a visit, loan and DoD request tool, it will be important to create a conversation with partners in order to more precisely identify how to respond to the community's requirements and the development required to do so. This might mean considering future developments that could be implemented after ELViS has been upgraded.

Main categories	subcategories
Statistics and reports	Report by type of request
Unplanned request	Invitation from the institution to the researchers
	Request type : facilities request
	Request type : Incoming loan request
	Request type : outcoming loan request
	Request type : training request

Table 7: List of categories and sub-categories corresponding to development indicator 5

3.3 Proposal for the continued development of ELViS

In view of the results concerning technical feasibility, the MNHN has constructed a plan for the key development phases which would ensure secure change management by controlling potential development and change management risks, whilst also guaranteeing the community's uptake of the tool. This working process made it possible to define a robust investment plan to support the development of ELViS and provide a fully operational service for the DiSSCo community.

The investment plan was published in the form of a response to a Call for Expression of Interest that was issued by DiSSCo in November 2022 (see Appendix 8 - Call for expression of interest to develop as a DiSSCo service provider). The response issued by the MNHN is a proposal to co-construct ELViS with the DiSSCo community and positions the MNHN as a service provider.

3.3.1 Main aims

By capitalising on the technical platform implemented for MUSE, the MNHN is proposing an investment plan split over 4 phases (2 construction phases and 2 service implementation phases) with the aim of developing a single access point for access requests to European collections.
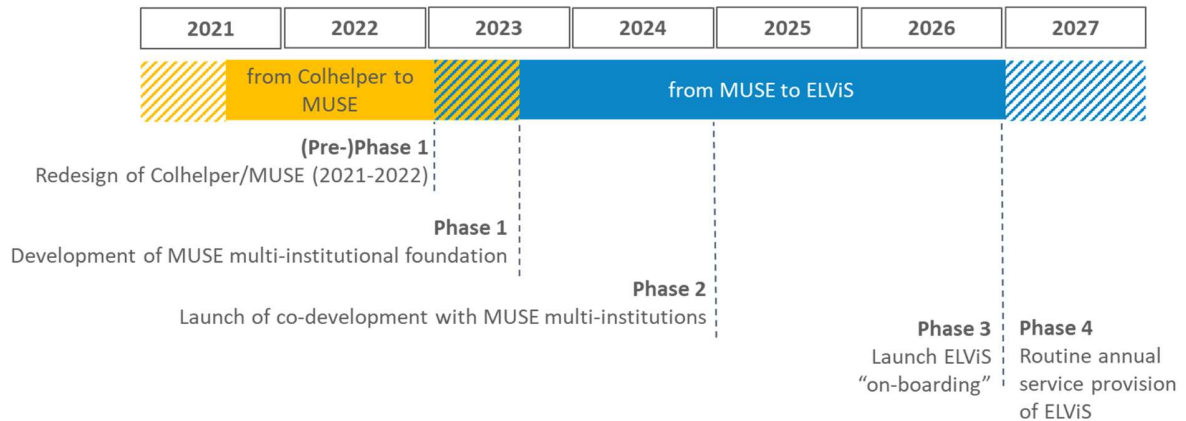
Figure 8: Planning of the development phase from Muse to ELViS

This will be done via:
- development of a multi-institutional version of MUSE with request features for: (i) visits, (ii) loans, (iii) digitisation on demand (DoD), (iv) sampling, (v) information.
- A single sign-on (SSO) authentication system for ELViS-MUSE with additional authorisation capabilities (using the eosc-kc fork of Keycloak as developed in the SYNTHESYS JRA1 Authentication and Authorisation Infrastructure (AAI) pilot, see deliverable D6.2 and https://login-demo.dissco.eu/account);
- A proposed interface contract and mock-up to connect ELViS and MUSE, featuring a call-to-action button which would send a REST request via the Colhelper API;
- A move from Service Readiness Level 6 (SRL6) to SRL 8 Subject to the consultation of the documented code used for the current version of ELViS (tool for managing TA and VA project calls), available at: https://github.com/DiSSCo/elvis-frontend and https://github.com/DiSSCo/elvis-backend.

In order to successfully complete this development project, the MNHN - in its capacity as development leader - is offering to mobilise highly qualified personnel from the department of digital innovation and IT services to work on the management and development of the project. Furthermore, a Product Owner and supporting Project Manager will be mobilised from the Collections Department, thus guaranteeing that practical expectations are met.

The process of co-construction with DiSSCo partners will be led using Agile solutions and will require involvement of the DiSSCo central hub throughout all stages of the project, in addition to a panel of institutions involved in stage 2 of the proposal (sandbox). This will ensure the DiSSCo technical framework is adhered to and that the needs of the DiSSCo partners are consistently taken into account.

In the interest of ensuring risks are intelligently managed and to ensure the development follows an Open Science approach (documented development code frequently practiced by the community, SMART

policies), MNHN guarantees technical synergy with future DiSSCo e-services (e.g. UCAS, the Unified Curation and Annotation System   ), as well as ensuring the code, documentation and development guidelines are open source.

In its capacity as service provider, the MNHN proposes providing support (in the form of website maintenance and helpdesk) and accompanying the integration of future DiSSCo institutions. These developments should see the implementation of impact evaluation tools (dashboard per institution/ per request type, etc.) which will make it possible to provide DiSSCo management and institutions with impact indicators. The French national node RECOLNAT and MNHN have committed to updating their IT services over the course of the next three years: with a view to aligning the technical trajectories of RECOLNAT/MNHN and DiSSCo, the MNHN is offering to provide the IT infrastructure to host the backend of ELViS by ensuring service maintenance and data security.

3.3.2 (Pre-)Phase 1: Redesign of Colhelper/MUSE (2021-2022)

The development of MUSE in parallel with progress made via SYNTHESYS+ on ELViS was originally intended to enable an integration of MUSE into ELViS (cf. JRA1 - WP6.3 Testing and integration of workflows). Due to the changing calendar of the SYNTHESYS+ programme and the limitations identified in the ELViS deliverable, the MNHN project team began work on the redesign of Colhelper in an effort to ensure possible interoperability between MUSE and ELViS in the future. The Agile method used by MNHN teams made it possible to structure its methodology and implement project management tools that can be used in conjunction with other partners involved in the co-construction programme. MNHN ensures the development of a solid base for community testing via the construction of request processing workflows and other features.

3.3.3 Phase 1: Development of MUSE multi-institutional foundation (2022-2023)

The Colhelper redesign process aims to produce a fully functional version of MUSE to be used by MNHN from the beginning of the first trimester of 2023. It seems reasonable in 2023 to begin developing, alongside other developments, the basic requirements for a multi-institutional version of MUSE, involving the following:
- implementation of a feature allowing another institution to connect to MUSE using a single sign-on (SSO Keycloak);
- integration of a "manager" version of the interface in English;
- adaptation to the ELViS graphic scheme;
- development of a multi-institutional dashboard, concatenating data from different institution accounts and offering the opportunity to produce reports and statistics;
- designing standard workflows for request pathways which can be configured according to different roles, access rights and processes.
- alignment with the DiSSCo FDO data infrastructure for FAIR data exchange, for e.g. institution facilities and collection descriptions and specimen information.

The above activities will provide a Beta version of the multi-institutional tool which can be used as a sandbox for the second phase of co-construction, requiring input from partner institutions. This phase will be led by MNHN using its own funding and teams and mobilising subcontractors who have already been brought on board for the MUSE project.

3.3.4 Phase 2: Launch of co-development with MUSE multi-institutions (12 months 2023-2024)

Initially concentrating on visit requests, MNHN intends to assemble a pool of six to twelve partners who will be involved in the co-construction of MUSE multi-institutions. Using the Agile method, MNHN will lead a working group which will focus on the following three objectives:
1. Accompany familiarisation with the tool for visit requests, configuration of roles and workflows in the sandbox environment;
2. Launch cross testing based on visit requests between institutions;
3. Follow-up on the analysis done by MNHN in order to refine user needs.

Alongside the leadership of the working group, MNHN will continue to develop the other features of the multi-institutional framework (such as loans, DoD, sampling, information requests) with a view to a progressive test introduction of these features for the working group. Additionally, MNHN will work on the creation of an API making it possible to connect MUSE and ELViS to the TA and VA management tools.

MNHN has identified a need to create a specific project team for the implementation of this phase. The team would be made up of 5 FTE, comprising 5 roles, as follows:
● Product Owner - responsible for the management, training cycles and user guides (1 FTE)
● Coordinator - responsible for project coordination with partners, workshop organisation (1 FTE)
● Change Manager - for change management and to ensure familiarisation with the tool (1.5 FTE)
● IT Project Manager - responsible for coordination between subject specialists, IT teams and subcontractors (0.5 FTE)
● Support roles - helpdesk and assistance levels 1 and 2 (1 FTE)

The above roles are in addition to the involvement of a subcontractor who would be responsible for the technical and development consultancy, for a contract of around 80 days.

The end goal of this phase is to produce a fully functional version of ELViS for visit, loan and DoD requests, which also offers the possibility to use the project call management feature (already developed in SYNTHESYS+), and which would be connected to the request management modules in MUSE.

3.3.5 Phase 3: Launch ELViS "on-boarding" (24 months from 2024-2026)

This phase is structured across two years (24 months) and represents the beginning of the launch of ELViS as a service for the whole DiSSCo community.

Phase 3 will focus on deploying the service to the entire DiSSCo community and therefore the scale of the work to be undertaken during phase 3 is dependent on the number of institutions requiring access to the service. The current estimation for this phase is that roughly 40 institutions will require integration and accompaniment over the course of 24 months. The MNHN will host the system and provide a permanent service, specifically in the accompaniment of integrating the needs of incoming institutions, as well as configuring their roles and workflows, providing helpdesk support and continuous system updating.

To fulfil the activities of phase 3, the MNHN sees the need for a dedicated project team for service provision and integration of new institutions, representing 3.5 FTE, spread across 3 different roles:
- Product owner - responsible for overall management (0.5 FTE)
- Coordinator - responsible for integration of institution "on-boarding" (2 ETP)
- Support roles - helpdesk and assistance levels 1 and 2 (1 FTE)

To fulfil corrective maintenance, security and system update requirements, 40 days of subcontractor time have also been factored in.

3.3.6 Phase 4: Routine annual service provision of ELViS (from 2026 onwards/annually)

This phase represents the routine annual service provision of the fully functional ELViS. At this stage, the service is fully operational and can be connected with other DiSSCo e-services through the DiSSCo FDO infrastructure   . The MNHN hosts, maintains and provides the service and ensures continuous system development and optimisation, as well as integration of and support to new institutions, website maintenance and assistance. MNHN has estimated the routine annual service provision will require the following positions:
- Product Owner - responsible for management and community engagement, capacity building in usage and service promotion (0.25 FTE)
- Support roles - helpdesk and assistance levels 1 and 2 (1 FTE)
- External service provision - corrective maintenance, security and system update requirements (20 days)

1.1 The aim of the project to redesign Colhelper and create MUSE

The main aim of the MUSE development project (not part of SYNTHESYS+) is to rebuild the existing Colhelper platform in an effort to mitigate against risks associated with information system security concerns. In addition, the redesign aims to create a tool that responds more efficiently to industry requirements, as well as providing updated tools for both sides of the user interface: collection staff and users (access requesters).

The redesign has the following aims:

- Installation of a new technical architecture;
  - New infrastructures, databases and applications;

- New request forms;
  - Improved context and adapted to existing request types;

- New workflows for request processing;
  - Simplified processes guaranteeing improved handling of requests;

- Implementation of a new ergonomic design
  - New visualisation and request creation interfaces;

- Improved autonomy in workflow management;
  - Potential for the user to produce the workflow;

- Improved request tracking - transparency and traceability;
  - Introduction of a dashboard and meaningful statistical tools.

1.2 The project team

The MUSE development project is managed by a team made up of members of three different management divisions of MNHN, in addition to a subcontractor specifically selected for the development. The team comprises members of the following departments:

1. The Collections department will co-manage the project and bring current collections access expertise (product owner)
2. The legal department will contribute legal know-how, specifically concerning GDPR;
3. The IT department will co-manage the project and contribute expertise on IT development;
4. The subcontractor Publik Entr'ouvert (https://publik.entrouvert.com/) has been chosen for the development of Colhelper V2 (MUSE).

Publik Entr'ouvert is a cooperation of IT developers producing totally accessible, open source applications.

Entr'ouvert was selected based on two key selling points:

- a development foundation that has already been coded, allowing for better use of project time and resources;
- a fully adaptable open source format which, providing training is provided, can be used by MNHN administrators, ensuring continuity and longevity of the tool in the long-term.
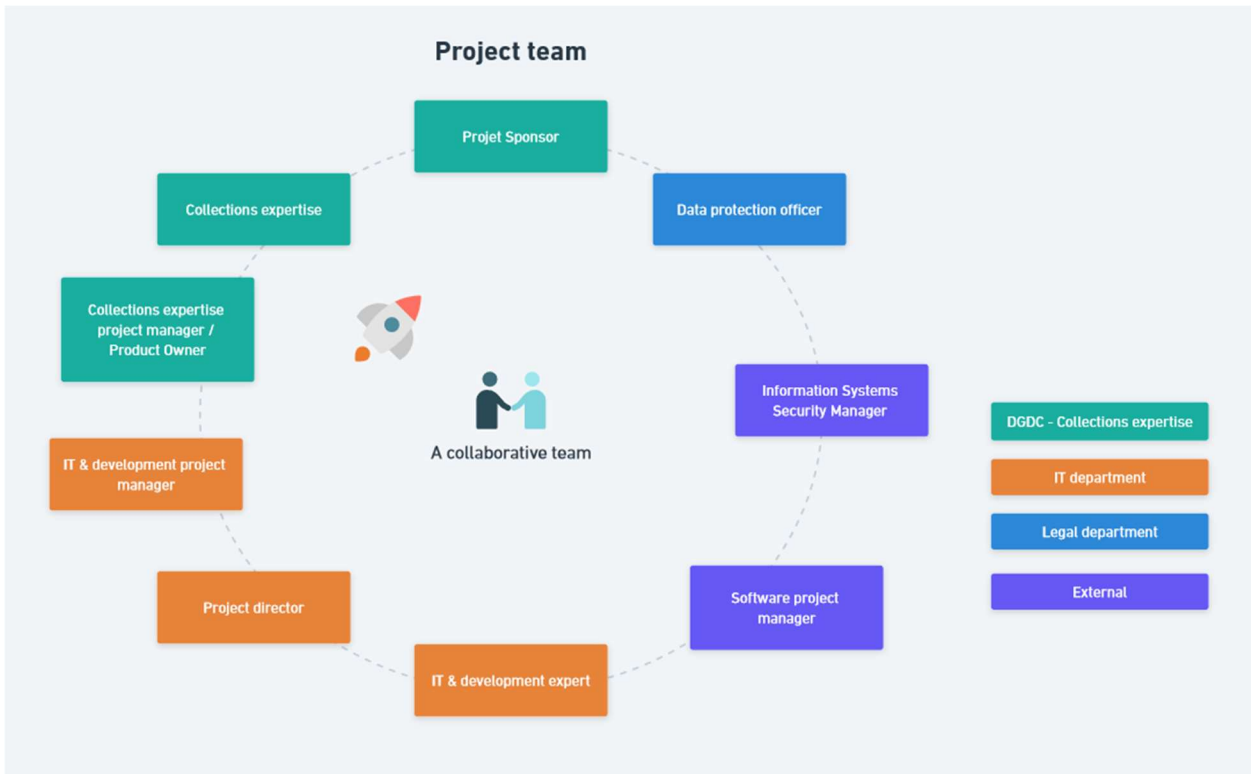
Figure 1: mapping of the MNHN project team

1.3 Methodology

MUSE has been conceived by and for future users on both sides of the web application, including collection agents (access providers) and users (access requesters).

The Product Owner is dedicated to the development of the tool and acts as the link between the in-house users (MNHN collections personnel) and the developers.

The SCRUM Agile method has been chosen in order to ensure that the construction of the tool involves user input.
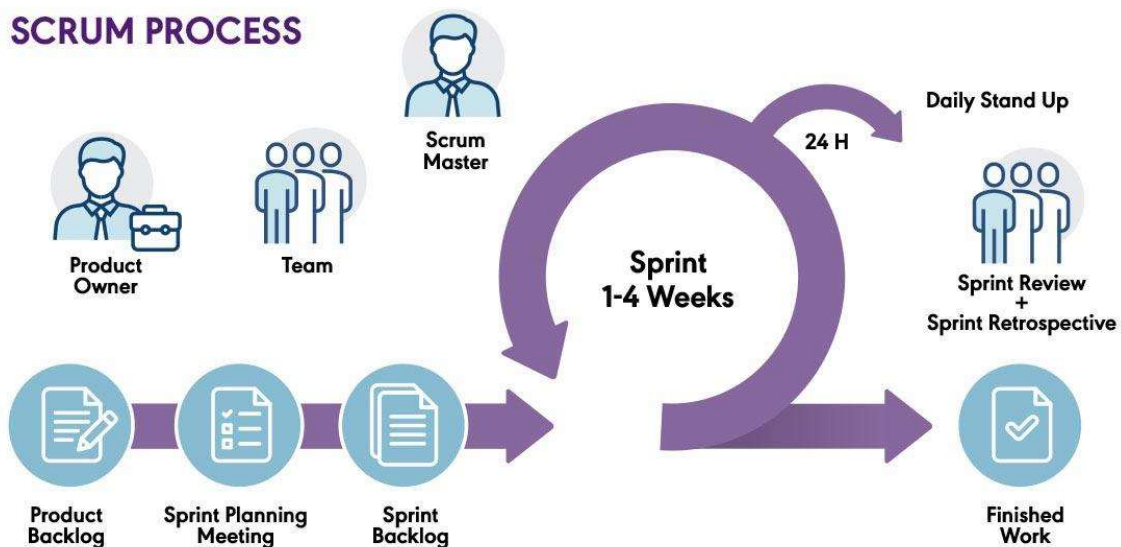
Figure 2: diagram showing the SCRUM Agile method

The project timeline is as follows:

Autumn 2021:
- The Project Director, IT & Development Project Manager and Product Owner defined essential features and constructed method for work;

Winter 2021-2022:
- 7 ideas workshops took place with 30 collection users;
- 185 user stories were produced as a direct result of the ideas workshops (see Appendix 1 - List of MUSE User Stories);

Spring 2022:
- A total of 10 interviews were carried out within MNHN collection departments in order to understand and decipher existing circuits for treating requests at collection-level, and to ensure all specific features are carried forward;
- Request processing circuits were modelled using diagrams;
- Research was carried out into hiring a subcontractor for IT development and several meetings took place;
- The user stories were organised according to priority levels (priority 1 - for version 1; priority 2 - for version 2; etc.)

Summer 2022:
- The development of MUSE was launched, including tests, demonstrations, and standardisation of processes;

Autumn 2022:
- Development continued, including the creation of editable documents, drafting of general terms and conditions of use, tests and demonstrations;

Winter 2022-2023:
- The final sprint aiming to fulfil the requirements of any outstanding user stories concerning version 1;
- Multilingual integration.

During the scoping phase of the MUSE development project, data protection regulations were given serious consideration via the implementation of an internal tool called the "Security and data protection passport" (see Appendix 3 - Factsheet GDPR : Privacy by design).

This tool made it possible to ensure the project conformed with data protection from the very beginning. In an effort to ensure Colhelper conformed with GDPR, the tool made it possible to:
- respond to the obligation to declare processing of personal data to the record of processing activities (a legal obligation in order to respect GDPR);
- define ahead of time the legal, logistical, physical and organisational measures that needed to be implemented;
- determine if there are any risk factors that require a Privacy Impact Assessment (PIA) - this was not the case.

2. MUSE: request processing

Working groups were used as fora for discussion, making it possible to define the way the requests are currently processed in each collection, including the way the access tool is used (frequency and nature of request) and the practices employed for access requests. This feedback was added to the needs that were identified by Colhelper users who responded via user stories.

Figure 3: example of access rights for the Botany collection

Analysis of the data gathered through these two channels made it possible to define a development architecture and structure to be followed for the construction of MUSE.

2.1 Web application – front office : the user (requester) journey

To begin, the user - researcher, staff member of a cultural or scientific institution, university lecturer, professional, or unaffiliated individual - opens the web application Muse.

a) Homepage and account

The homepage presents the user with several options:
- they can find information about the collections at MNHN;
- they can log in to consult their dashboard showing previous requests, check their profile information and update their profile;
- if it is their first request, they can create an account;
- they can create a new collection access request for MNHN.
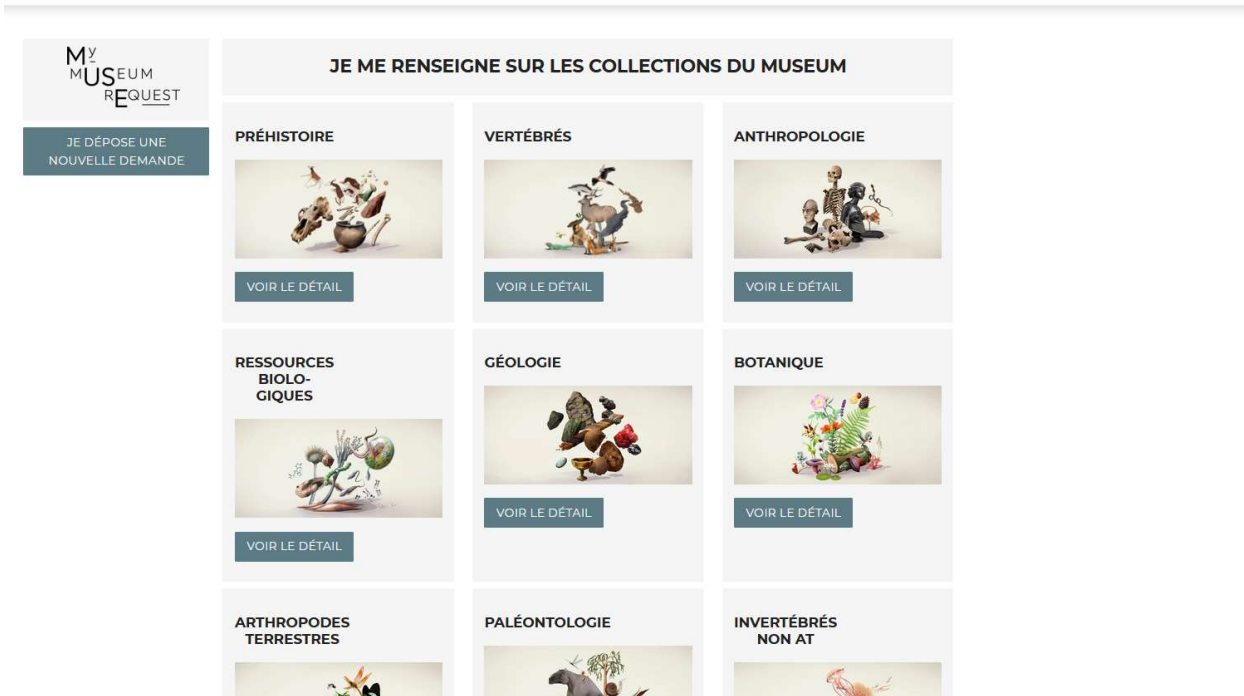
Figure 4: Screenshot of the MUSE homepage

b) Making a request

The user who decides to make a collection access request, must follow the below steps.
Please see Appendix 4 "Drop-down lists of choices on Muse" for an overview of controlled vocabulary.

Page 1 of the request form asks for a description of the profile and the request.
The requester fills out:

- The general context in which the application is made (i.e. scientific, educational, an event, exhibition, artistic, etc.);
- Their profile (i.e. researcher affiliated with an institution, amateur researcher, staff member of an exhibition department, artist, journalist, individual, etc.);
- The type of request (i.e. borrowing specimens, requesting an on-site consultation, requesting a sample, requesting an image or taking a photo on-site, asking a question about the collection). The list of request types is determined according to the project selected at the start of the process. The requester can select several request types.
- The collection(s) and sub-collection(s) connected to the request, so that the request can be forwarded to the correct service(s).

I SUBMIT A REQUEST

1	Ma demande concerne
2	Description du projet
3	Validating

MY REQUEST REGARDING *

An exhibition project ⌄

INTRODUCE YOURSELF : MY PROFILE *

A scientific professional attached to an institution ⌄

I list my needs and choose collections

I NEED (1 CHOICE) *

Emprunter un/des spécimen(s) ⌄   🗑

COLLECTIONS AND UNDER COLLECTIONS (SEVERAL POSSIBLE CHOICES) *

AJOUTER UN BESOIN

DISCARD   NEXT

Figure 5: screenshot of the request submission page

Page 2 of the request form is dedicated to the project description (i.e. scientific, educational, exhibition, etc.). The fields to be completed are determined based on the type of project selected on page 1.

The requester fills in the following fields:
- Title of the project;
- Project level (Master, Thesis, etc.);
- Project description;
- Planned analysis methods;
- Type of scientific analysis;
- The main scientific domaines concerned;
- Project dates;

At this stage, the requester also has the option to upload a maximum of 2 supporting documents to explain their project.

Page 3 and following pages (X) require a description of the request. The number of additional pages after page 3 is determined by the needs inputted into the fields on page 1. There is one request per page (hence X + number of pages).

For each request page, the requester indicates:
- the catalogue numbers of the requested specimens, if known;
- in the absence of catalogue numbers, precisions regarding the taxonomic rank or any other information to help MNHN staff direct the user request;
- the date of the request (when it will be carried out);

The requester also has the option to upload supporting documentation containing a list of the requested specimens, so as to save time.

Each request is governed by general terms and conditions of use (ToU) applicable to the MNHN and other collections. These regulations are displayed at the end of the form and the requester must read and agree to them in order to move on to the next page.

Page X + 1: recaps all information filled in by the requester before they confirm their request.

Page X + 2 (final page)**:** confirmation and submission of the request.

2.2 Request processing portal – back office : the MNHN collections staff member journey

a) The roles

Specific MNHN collection staff members each have a role in processing the request. According to these predefined roles, they will be notified of the request at a certain point in the process and be in a position to intervene with the request, its handling and its onward journey.

DISPATCHER

The Dispatcher is the first person to deal with the request. They are the representative of a collection group and they therefore receive new requests relative to their collection. They receive the request and then transfer it to the Manager in charge of the sub-collection or service. The Dispatcher may transfer the request to one or more colleagues.

MANAGER

The Manager is, in most cases, the manager of the sub-collection. They receive the request transferred by the Dispatcher, and they give their agreement in principle that the request can be fulfilled. They then transfer the request to the Request Preparer.

REQUEST PREPARER

The Request Preparer has two roles:
- They approve the feasibility of the request;
- In collaboration with the Requester, they respond to the technicalities of the request, they organise the loan, the visit, etc.

Note: in some collections, the Dispatcher, Manager and Request Preparer may all be the same person. The workflow nevertheless remains the same.

Whilst processing the access request, the Dispatcher, Manager or Request Manager might wish to consult with another colleague regarding the request. This may be to request their opinion, to collectively approve a sensitive request, or to consult a commission of several members. These additional, supporting roles include:

ADVISOR

The Advisor is a colleague who may be approached by the person in charge of the request (Dispatcher, Manager or Request Preparer) in order to gain their advice or ask them a question concerning the request.

TYPE ADVISOR **TYPE MANAGER**

A type specimen loan request follows a specific procedure because the request must be approved by four separate people. These people fulfil the roles of Type Advisor and Type Manager.

SAMPLE ADVISOR

Requests for samples are also the object of a specific procedure because the request must be studied and approved by a sampling committee, composed of Sample Advisors.

b) Internal workflows

Using information gained via workshops held with personnel from a number of MNHN collection groups, specifically targeting staff members who handle access requests, the project team was able to model a variety of request processing workflows, which differ for each collection group. These workflows are tailored to each different collection and type of request.

The workflows make it possible for Dispatchers, Managers and Request Preparers to act upon the request and ensure it progresses via a number of action points.

Colhelper request circuit for the MNHN Botany department
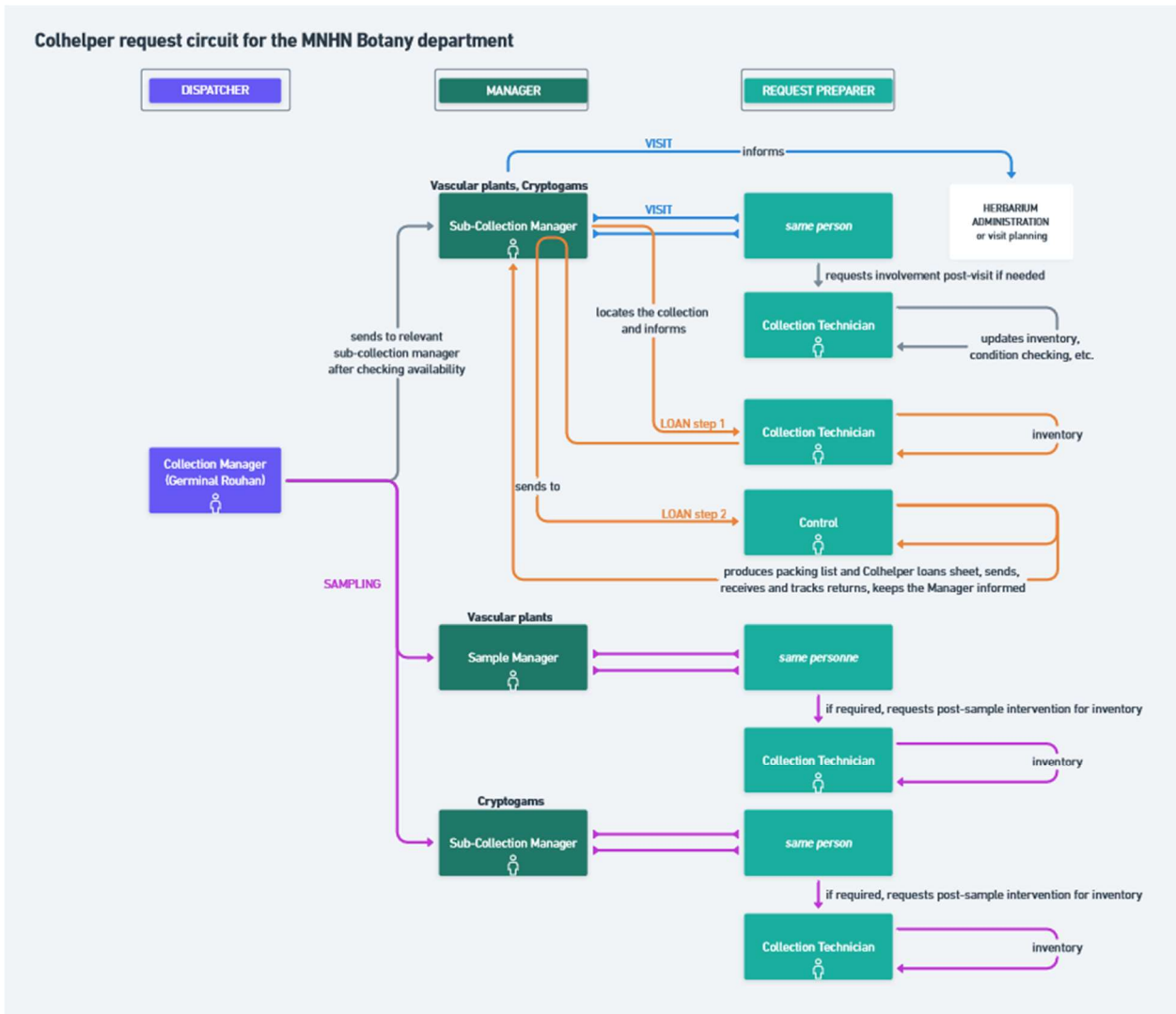
Figure 6 : Overview of the workflow modelling in the back office - Botany

c) The dashboards

📺 Dashboard

✉️ New requests

🧭 Ongoing

🔖 To follow-up

⚠️ Delayed requests

🔲 All collections

🏁 Closed requests

MNHN request processing personnel have access to several dashboards in order to track ongoing requests.

A total of six dashboards list all the requests relevant to the member of staff. The request moves from one dashboard to another based on its evolving status.

For example: a new request will disappear from the 'New Requests' dashboard and be transferred to the 'Ongoing' dashboard once it has been transferred to a colleague in charge of the following stage.

	ID	Request type	Requester	Project type	Request date	Date needed	Status
☐	5	Loan	Francis	Scientific	11 July 2022	11 July 2022	Action required
☐	4	Sample	Fabrice	Educational	7 July 2022	7 July 2022	Action required
☐	3	Visit	Sarah	Exhibition	23 June 2022	23 June 2022	Action required
☐	2	Question	Céline	Scientific	20 June 2022	20 June 2022	Action required
☐	1	Photo	Francis	Artistic	5 May 2022	5 May 2022	Action required

NEW REQUESTS (X)

Figure 7: screenshot of new request dashboard

Figure 8: mock-up of a user request on the MNHN personnel portal

d) Overview of potential actions between roles

Dispatchers, Managers and Request Preparers have the following actions at their disposal when processing a request:

Figure 9 : Representation of actions and connections for each role

Appendix 2 - List of MUSE User Stories

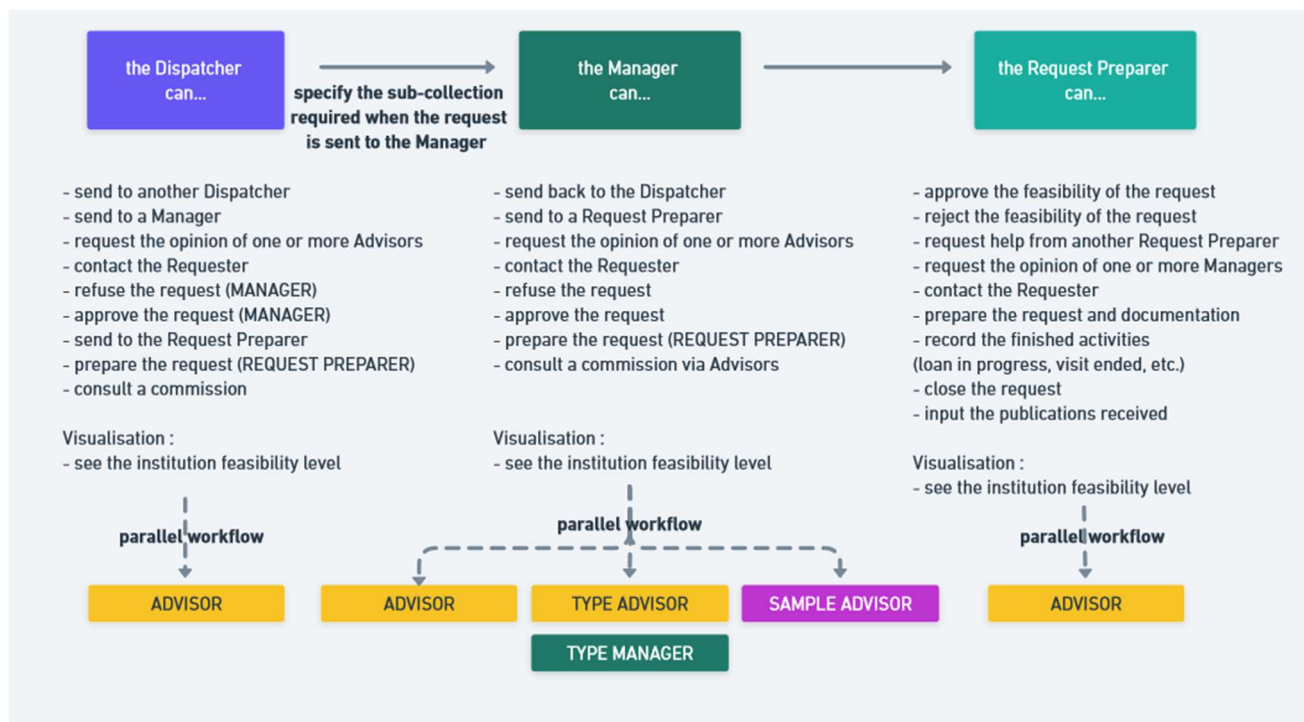| Epic	Story
Connection (External)	CV-12 - As an internal/external user, I want to be able to login to the site to access my dashboard.
Connection (External)	CV-36 - As an internal/external user, I want to be able to login to the site, in order to confirm my request at the end of the request process.
Connection (External)	CV-128 - As an external user, I want Colhelper to ask me to confirm my details (address, etc.) in order to finalise my request, to ensure my request is properly processed.
Connection (External)	CV-49 - As an external user, I want to chose my country as the first step in my registration, so that I can choose and move to the next step.
Connection (External)	CV-54 - As an external user, I want to chose my town from a drop-down list as the second step in my registration, so that I can choose and move to the next step.
Connection (External)	CV-59 - As a professional researcher and regular user of the tool, I want to choose my institution from a drop-down list as the third step in my registration , so that I can choose and move to the next step.
Connection (External)	CV-132 - As a regular user of the tool, I want to login as an external or internal user depending on my current role using one single account, with the aim of simplifying the procedure.
Connection (External)	CV-65 - As a professional researcher and regular user of the tool, I want to choose my institution manager from a pre-filled list as the fifth step in my registration, so that I can choose and move on to the next step.
Connection (External)	CV-130 - As an external requester, I want to have the choice of entering the name of a mandatory garantor according to the type of request and the subcollection concerned, in order to secure my request.
Connection (External)	CV-131 - As a user of the tool, I want to login as an external or internal user depending on my current role using one single account, with the aim of simplifying the procedure.
Connection (External)	CV-28 - As an internal user, I want to quickly see all the sub-requests linked to a main request, with the aim of consulting a request file as easily as possible.
Connection (External)	CV-17 - As an internal/external user, I want to login directly to the site, to access my dashboard.
Connection (Internal)	CV-26 - As an internal/external user, I want to login directly to the site, in order to confirm my request at the end of the request process.
Request (External)	CV-11 - As an external user, I want to link documents with my request, in order to support my request.
Request (External)	CV-20 - As an external user, I want to be able to indicate my profile, so as to access the request types that I am eligible for.
Request (External)	CV-29 - As a professional researcher, I want to have the list of request types (loan, visit, sample, photo, sequencing, donation, etc.) so that I can use it to choose from.
Request (External)	CV-38 - As an external user, I want to be able to intervene during the processing of my request, in order to add additional information via message, or to define my request.
Request (External)	CV-48 - As an amateur researcher, I want to have the list of request types (visit, digitisation, donation, etc.) so that I can use it to choose from.
Request (External)	CV-43 - As en external user, I want to be able to save my request in progress in order to come back and finish it at another time.
Request (External)	CV-53 - As a user of the tool, I want to have the list of request types (loan, visit, digitisation, donation, etc.) so that I can use it to choose from.
Request (External)	CV-66 - As an external user, I want to describe my project and my requirements so that MNHN personnel can approve or reject the request.
Request (External)	CV-62 - As an external user, I want to be informed early on of the policies, mandatory documents and Terms of Use relevant to my request, so that I am aware of my responsibilities.
Request (External)	CV-69 - As an external user, I want to know the response time for my request in order to set the date of my project.
Request (External)	CV-79 - As an external user (exempting MNHN user and researcher), I want my request to be directed to the right Manager based on 1. the type of request and 2. the collection type, so as to improve efficacity.
Request (External)	CV-118 - As an external user, I want to indicate if my proposed dates are flexible or inflexible so as to obtain a more accurate response.
Request (External)	CV-133 - As an external/internal user, I want to be able to send messages of up to 10,000 characters so that I can explain my request as clearly as possible.
Request (External)	CV-161 - As an external user, I want to be able to view the attachments joined to my request even after my request has been submitted, so that I can check the information submitted.
Request (External)	CV-175 - As a regular user of the tool, artist, journalist or unaffiliated individual, I do not want to be forced into choosing a subcollection from the request form if I do not know which collection the specimen can be found in.
Request (External)	CV-72 - As an external/internal user, I want to see the detailed scientific list of loaned specimens so that I can formalise the request.
Request (External)	CV-146 - As an external/internal user, I want to indicate the number of visitors mobilised for the consultation so that the Muséum can have reliable statistics.
Request (External)	CV-177 - As an external user, I want to be able to change my request so that I can update it and adapt it according to reality (visit dates, exhibition dates, request type, additional visit required, etc.)
Request (Internal)	CV-113 - As a request preparer, I want to use the inventory reference and/or free text to input the loaned specimens (ex. lot) or upload a specimen list file in order to fill out the packing list.

Epic	Story
Request (Internal)	CV-64 - As an external/internal user, I want to view the detailed scientific list of loaned specimens in order to formalise the loan.
Request (Internal)	CV-78 - As an external/internal user, I want to view the loan sheet so that I can formalise the loan.
Request (Internal)	CV-102 - As a manager or request preparer, I want to be able to specify if the return is obligatory or not, in order to set off or turn off automatic alerts and inform the requester via the loan slip.
Request (Internal)	CV-61 - As a request preparer, I want to import my current specimen list for the loan so as to complete the loan file.
Request (Internal)	CV-137 - As an internal user, regardless of my role, I want to cancel or refuse in order to close my request at any given moment so as to update my dashboard (clarification: this means that the cancel and refuse actions imply that the request is closed).
Request (Internal)	CV-51 - As an internal user, regardless of my role, I need to obtain the opinion of one or more third-party internal users so that I can obtain additional information in order to handle the file.
Request (Internal)	CV-16 - As a dispatcher and manager, I want to send a request to one or more people in order to move to the next step.
Request (Internal)	CV-123 - As an internal user, I want to keep a trace of the requests that I have transferred so that I can keep a record of the request.
Request (Internal)	CV-22 - As an internal user, I want to be able to contact the external user so that I can find out more information about the request.
Request (Internal)	CV-87 - As an internal user, I want to have the list of colleagues for each collection group (in alphabetical order) and the list of collections and subcollections so that I can transfer the request or ask for advice.
Request (Internal)	CV-37 - As a manager, I want to accept all or part of a request so as to move to the next step.
Request (Internal)	CV-44 - As a manager, I want to refuse a request with the obligation to give a reason, so that I can close the request.
Request (Internal)	CV-97 - As an internal user, I want to add documents (contract, insurance, agreement, report, Mutual Transfer Agreement, images, publications, specimen list, loan document) to the request so that I can ensure a comprehensive follow-up.
Request (Internal)	CV-100 - As an internal user, I want to be able to put myself in the position of the external user so that I can create the request for them.
Request (Internal)	CV-125 - As an internal user, I want to be able to retroactively save past loans so that I can benefit from the tracking options afforded by Colhelper.
Request (Internal)	CV-145 - As an external/internal user, I want to accurately indicate the number of visitors who took part in the visit so that I can have reliable statistics.
Request (Internal)	CV-170 - As a request preparer, I want to produce parcel and envelope labels so that I can finish my parcel/envelope.
Request (Internal)	CV-141 - As an internal user, I want to be able to change the external request so that I can update it and adapt it to reality (all the fields in the request form are modifiable for the internal personnel)
Request (Internal)	CV-157 - As a dispatcher for circuit A, I want to offer the request file to several managers, in the case where several managers are eligible, so that I can find the right person to take it.
Request (Internal)	CV-158 - As a dispatcher for circuit B, I want to offer the request file to several file managers so that I can find the right person to take it.
Information (External)	CV-47 - As an external user, I want to know the rules that concern my request as quickly as possible, so that I can anticipate the preparation of my request.
Information (External)	CV-114 - As an external requester, I want to know that only a small percentage of the MNHN collection can be seen on science.mnhn, so that I don't restrict my request.
Information (External)	CV-105 - As an external requester, I want to have access to information on the closure of a collection before submitting my request so that I don't waste my time.
Information (External)	CV-33 - As a researcher or user of the tool, I want to have a link to the digitised collections catalogue science.mnhn so that I can direct my request.
Information (External)	CV-2 - As a researcher, I want to access information regarding a collection or subcollection so that I can direct my request.
Information (External)	CV-7 - As a user of the tool, I want to access information about several collections and subcollections so that I can direct my request.
Information (External)	CV-42 - As an external user, I want to immediately skip to the request form so that I can quickly submit my request.
Information (External)	CV-176 - As a user interested in meteorites, I want it to be obligatory for the requester to have access to the information on the site https://www.mnhn.fr/fr/faire-expertiser-une-meteorite if my project is an expertise project and if I have selected the subcollection Meteorites
Notification (External)	CV-183 - As a requester, I want to receive a notification confirming reception of my request and thanking me once my complete return has been received by the Muséum, in the interest of following my request.
Notification (External)	CV-14 - As an external user, I want to receive a notification to know if my request has been accepted or rejected.
Notification (External)	CV-21 - As an external user, I want to receive a notification informing me if an internal user has left me a message.
Notification (External)	CV-150 - As an external user, I want to receive a notification to know if my request has been successfully received.
Notification (Internal)	CV-19 - As an internal user, I want to receive a notification when an external user has responded to my message.

Epic	Story
Notification (Internal)	CV-24 - As an internal user, I want to receive a notification when an external user updates their request.
Notification (Internal)	CV-106 - As the last manager to have handled the request, I want a notification to be sent to me and sent to the requester when the loan reaches its end date, so that the loan can be followed up.
Notification (Internal)	CV-172 - As an internal user, I want to receive a notification when the requester cancels their request.
Notification (Internal)	CV-40 - As an internal user, I want to receive notifications of new requests so that I can act upon them.
Follow-up (External)	CV-13 - As an external user, I want to add a request (loan, visit, sample, digitisation, donation) to the main request so that I can continue my project.
Follow-up (External)	CV-139 - As an external/internal user, I want an indicator of the request status that is visible for both external and internal users so that I know how the request is progressing.
Follow-up (Internal)	CV-181 - As a request preparer, I want a tick-box to be available so that I can indicate if I am waiting for a publication that should be sent by the requester at a later date, so that I can follow publications.
Follow-up (Internal)	CV-182 - As a request preparer, I want an interface to follow returns that makes it possible to indicate if the return is complete or incomplete.
Follow-up (Internal)	CV-32 - As an internal user, I want to view all of my requests so that I can filter the requests that are assigned to me.
Follow-up (Internal)	CV-39 - As an internal user, I want to view all of my requests so that I can organise the requests that are assigned to me.
Follow-up (Internal)	CV-122 - As an internal user, I want to search using advanced search criteria (categories, auto-filling, etc.) so that I can refine my search results: same search bar as the dashboard
Follow-up (Internal)	CV-95 - As an internal user, I want to open information on the requester so that I can have access to their details and to all the requests they have made, as well as the status of these requests.
Follow-up (Internal)	CV-103 - As an internal user, I want to be able to delegate to a colleague in my absence to ensure continuity of service.
Follow-up (Internal)	CV-162 - As exhibition manager and internal MNHN user, I want to be able to use my dashboard to search using the exhibition title.
Follow-up (Internal)	CV-94 - As an internal user, I want to be able to search all Colhelper requests, regardless of the collection, so that I can ensure transparency in activities.
Follow-up (Internal)	CV-136 - As an internal user, I want to be able to work with my colleagues on a request in a shared collaborative area in order to ensure transparency and that the request is followed-up.
Follow-up (Internal)	CV-140 - As an external/internal user, I want an indicator showing the status of the request that is visible to both internal and external users, so that I can keep track of the request processing.
Follow-up (Internal)	CV-168 - As an internal user, I want to be able to carry out a search on all the cases which are more than X days, months or years late so that I can send targeted reminders.
Connection (External)	CV-34 - As an external user, I want to be able to immediately input my name and surname so that I can check if I already have a login.
Connection (External)	CV-108 - As a user, I want to be able to update my account and keep a trace of my previous institutions so that I can keep a history of my activities.
Connection (External)	CV-148 - As an external requester, I want a reminder upon connection that my loans have expired so that I don't forget.
Request (External)	CV-77 - As a regular user of the tool or MNHN researcher, I want my internal loan request to be sent directly to a dispatcher in the collections department, so as to improve efficiency.
Request (External)	CV-165 - As an external user, I want to be able to activate a reminder of my request once a certain amount of time has elapsed so that I can receive a response.
Request (Internal)	CV-30 - As a dispatcher and manager, I want to redirect a request towards the relevant dispatcher so that I can delete if from my list.
Request (Internal)	CV-74 - As an internal user, I want to indicate if the request concerns type specimens so that I can generate a special approval process for the request.
Request (Internal)	CV-153 - As an internal user, I want to produce a loan agreement for the loan of type specimens so that I can formally recognise the loan.
Request (Internal)	CV-115 - As an internal user, I want to involve the sampling commission in the sample request so that I can ensure the file is correctly handled.
Request (Internal)	CV-120 - As an internal user, I want to be able to send a reminder concerning a step that has not generated a response so that the request can progress to the next step.
Request (Internal)	CV-147 - As an internal user, I want to access ready-to-use and modifiable automatic responses so that I can save time.
Request (Internal)	CV-154 - As a request preparer, I want to request a CITES label from the department for movement and acquisitions so that I can send my parcel to an approved institution.
Request (Internal)	CV-164 - As an exhibition manager and MNHN user, I want the manager or request preparer to be able to use Colhelper to send me the relevant information so that I can be more efficient.
Request (Internal)	CV-56 - As a request preparer, I want to be able to create a list of the loaned specimens so that I can complete the loans file.
Request (Internal)	CV-68 - As a request preparer, I want to be able to export the list I have created so that I can archive it.

Epic	Story
Request (Internal)	CV-179 - As the file manager, I want to be able to send an automatic form, like a Facility report, to the requester.
Request (Internal)	CV-184 - As a manager or request preparer, I want a tick-box stating "No return expected" that is either ticked or left empty depending on my collection group, so that I can save time.
Request (Internal)	CV-45 - As an internal user, I want to be able to carry out an action on several selections so that I can accept or close several requests that have been assigned to me.
Request (Internal)	CV-173 - As an internal user, I want a messaging system for the request so that I can quickly communicate with my colleagues.
Request (Internal)	CV-171 - As an internal user, I want to view and produce information about the establishment and the country (VAT, SIRET, etc) that are relevant to the request and then include them in the package label if needed.
Request (Internal)	CV-174 - As an internal user, I want to know if one of the requested specimens is already on loan somewhere else.
Request (Internal)	CV-180 - As an internal user, I want to be able to request an AST from the department for movement and acquisitions via the ongoing request so that I can save time.
Information (Internal)	CV-15 - As a dispatcher and manager, I want to update the list of internal users in my service so that I can keep the software updated.
Notification (External)	CV-129 - As an external user, I want to receive a reminder when my loan reaches the end of its validity, so that I can update the next steps.
Notification (Internal)	CV-31 - As a dispatcher, I want to receive an alert if the manager has not responded to the external user so that I can be sure of providing the best possible customer service.
Notification (Internal)	CV-121 - As an internal user +1, I want to receive an alert following the third automatic reminder sent to the -1 if they have still not responded to the external user, so that I can provide the best possible customer service.
Notification (Internal)	CV-156 - As the last manager to have acted upon the request, I want a notification to be sent to the requester and to their point of contact following the third reminder of an unreturned specimen.
Notification (Internal)	CV-126 - As an internal user, I want a reminder to be automatically sent to the requester, in order to remind them to send their results, publications, photos, etc.
Notification (Internal)	CV-149 - As a manager, I want Colhelper to alert me to the requester's outstanding loans when they submit a new request so that I can decide in full knowledge of the facts.
Notification (Internal)	CV-117 - As a case manager, I want Colhelper to alert me if it detects a key word, like "exhibition" in a request that has not be sent to my dispatcher, so that I can be aware of requests that have been wrongly directed.
Notification (Internal)	CV-138 - As an internal user, I want to be able to temporarily deactivate a notification for an ongoing case so that I can minimise the number of notifications I am receiving.
Follow-up (External)	CV-27 - As an external user, I want to be able to give read-only rights for the request to one of my colleagues, so that I can inform them about the file.
Follow-up (External)	CV-60 - As an external user, I want to add a comment to the receipt slip so that I can add information about a specific problem.
Follow-up (External)	CV-163 - As an internal MNHN user, I want to have the following items on my dashboard: request number, exhibition title, date of loan, status of loan, contacts, supporting documents. This is so I can manage the requests.
Follow-up (External)	CV-166 - As an external requester, I want to be able to follow-up on my request if I have not received a response within the timeframe indicated by the MNHN.
Follow-up (External)	CV-98 - As an external user, I want to be able to leave a comment regarding the handling of my request.
Follow-up (External)	CV-50 - As an external user, I want to electronically sign the receipt slip for all specimens, so that I can confirm reception.
Follow-up (External)	CV-55 - As an external user, I want to be able to eletronically sign the receipt slip by ticking only the specimens that have been returned so that I can show that some of the loan has been returned.
Follow-up (Internal)	CV-124 - As an internal user, I want a main dashboard that I can personnalise, so that I can adapt it to my requirements.
Follow-up (Internal)	CV-23 - As an internal user, I want to select several requests from the advanced search so that I can treat them as a batch.
Follow-up (Internal)	CV-52 - As an internal user, I want to keep a record of all the requests pertaining to a file, so that I can extract indicators for each request type.
Follow-up (Internal)	CV-67 - As an internal user, I want to display and export [exporting is not a requirement] all or part of the content of my dashboard in the form of statistics (diagram, pie chart, number of loans per collection, etc.)
Follow-up (Internal)	CV-89 - As an internal user, I want to display and export [exporting is not a requirement] all or part of the content of each dashboard file so that I can forward it on.
Follow-up (Internal)	CV-104 - As an internal user, I want to have access to the list of all the specimens requested by a single requester or institution so that I can be sure of the reliability of the requester.
Follow-up (Internal)	CV-155 - As an internal user, I want Colhelper to inventory the publication sent by the requester following their study so that I can close the file and carry out a statistical analysis: DOI publication.
Follow-up (Internal)	CV-160 - As an internal user, I can allow colleagues from my department to follow the request, so that we all have the same information.
Follow-up (Internal)	CV-167 - As the person responsible for the loan reminder, I want to be able to indicate via the file that I wish to be informed by notification of any change pertaining to the file so that I can immediately follow the returns procedure.
Follow-up (Internal)	CV-134 - As an internal user, I want to open information pertaining to an institution via a specific research interface, so that I can access their details and any requests they have made and the status of these requests.

Epic	Story
Follow-up (Internal)	CV-178 - As the person responsible for the file, I need to be able to add information to the request at a later date in the case of the exhibition (cases 1 to 3) so that I can complete the file.
Follow-up (Internal)	CV-111 - As an internal user, I want to be able to score and leave a comment on the requester's institution, so that I can record the reliability of the requester for any future requests.
Follow-up (Internal)	CV-112 - As an internal user, I want a personalised colour-coded system (ex: request type, status, etc.) so that I can quickly identify the different steps.
Follow-up (Internal)	CV-144 - As an internal user, I want to have a realistic breakdown of the number of visit days so that I can have reliable statistics.
Follow-up (Internal)	CV-63 - As an internal user, I want to electronically sign the receipt slip by ticking only the specimens that have been received so that I can confirm receipt of a partial return.
Follow-up (Internal)	CV-58 - As an internal user, I want to electronically sign the receipt slip for all the returned specimens, so that I can confirm receipt of the return.
Follow-up (Internal)	CV-152 - As an internal user, I would like to add the tracking number provided by the transporter (with a clickable link) so that the tracking number is displayed for the internal and external user.
Request (External)	CV-57 - As an external user, I would like to have a list of the request types (donation, legacy) so that I can choose one.
Request (External)	CV-109 - As an external user, I want to have an English, Spanish and German version of the tool, so that I can submit my request easily.
Request (Internal)	CV-88 - As an internal user, I want the software to use key words to detect the relevant entities so that the request is handled as quickly as possible.
Request (Internal)	CV-76 - As the person in charge of the file, I want the manager/request preparer to be able to suggest a video consultation according to their availabilities so that we can have a meeting for assessment/locating for myself or myself and the requester.
Information (External)	CV-116 - As an external user, I want to know the difference between a donation and a deposit so that I know how to send my request from the beginning.
Information (External)	CV-169 - As an external user, I want a the site science.mnhn to have a link to Colhelper so that I can make my request.
Notification (External)	CV-91 - As an external user, I want to be able to respond directly from my email inbox to a conversation with the requester and for Colhelper to automatically archive the message to help me save time.
Notification (Internal)	CV-46 - As the last internal user to have handled the request, I want to receive notifications of requests that have not been closed, so that I can close them.
Notification (Internal)	CV-90 - As an internal user, I want to be able to respond directly from my email inbox to a conversation with the requester and for Colhelper to automatically link this to the file and archive my message, to help me save time.
Follow-up (External)	CV-35 - As an external user, I want to be able to give editing rights to one of my colleagues so that they can modify the request, in order to ensure the file is followed-up.
Follow-up (Internal)	CV-73 - As an internal user, I want to intervene on a closed file, in order to…
Follow-up (Internal)	CV-135 - As an internal user, I want to display and export [exporting is not essential] all or part of the content on my dashboard in a format for the annual report so that I can save time.
Follow-up (Internal)	CV-142 - As an internal user, I want to have access to an agenda managing all the requests per collection group so that I can ensure transparency and visibility.
Follow-up (Internal)	CV-70 - As a request preparer, I want a link to be created with the database so that I can update specimen traceability based on outgoing and incoming loans.
Follow-up (Internal)	CV-127 - As an internal user, I want the requester's publication to be immediately sent to the central library so that publications are archived.
Request (Internal)	CV-110 - As an internal user, I want to have the possibility of translating a request made in a foreign language so that I can speed up my response.
Request (Internal)	CV-107 - As an internal user, I want to be able to open the Jacim specimen sheet from Colhelper so that I can save time.
Request (Internal)	CV-119 - As an internal user, I want to be able to open the Colhelper request from the Jacim specimen sheet, so that I can save time.
Information (External)	CV-92 - As a researcher and user of the tool, I want to be able to click on the specimen(s) using science.mnhn so that I can then be redirected to the Colhelper request form.
Follow-up (Internal)	CV-101 - As an internal user, I want to open information about the specimen so that I can have access to all the Colhelper requests relating to it.
Follow-up (Internal)	CV-93 - As an internal user, I want Colhelper to inform Jacim of the outgoing and incoming specimens so that I can ensure traceability.
Follow-up (Internal)	CV-159 - As an internal MNHN user of the tool, I want to know who is handling my request so that I can contact them if needed.

THEME 1 :
Ensuring protection of personal data from the beginning of project implementation

Sheet 1.2: I am planning a project involving use of personal data: what should I do first?

Who should read this?
Anyone preparing to implement something new that requires processing personal data

Reference documents:
- *Privacy by Design policy*
- *Mapping of personal data categories*
- *Security and Data Protection Passport*
- *Privacy by Design guidelines on legal measures*
- *Privacy by Design guidelines on technical and organisational measures*

When my project will involve handling personal data, I fill out the Data Protection Passport to ensure that my project conforms with GDPR from the outset.

Data Protection Passport

The data protection passport covers four key areas to help you reach conformity with GDPR.

1. DECLARE YOUR PROJECT
- What are my project aims?
- Who is responsible for it?
- What personal data will be handled as part of my project?
- What processes and workflows will use personal data?

2. DECIDE ON THE LEGAL MEASURES TO IMPLEMENT
- Am I respecting the general data protection principles?
- Have I correctly managed any relationships with my service providers?
- Will the data my project uses be handled outside of the European Union?

3. DECIDE ON WHICH TECHNICAL AND ORGANISATIONAL MEASURES TO IMPLEMENT
- How will I protect personal data gathered as part of the project process as best as possible?
- Who will have access to this data?

4. RISK FACTORS
- What are the potential risks that could arise and endanger the protection of collected, handled and stored personal data?
- Have previous measures been substantial enough to maintain a sufficient level of protection against possible risks? (Data Protection Officer validation)

I fill in the Data Protection and personal data Passport

I submit it to the Data Protection Officer (and the IT department) for analysis and I arrange a meeting to review it

Max. 3 weeks for analysis after receipt of the passport by the DPO

Once the passport has been reviewed by the DPO (accompanied by the IT department), the DPO sends me back the passport with their recommendations.

If the risk factors identified in the passport are considered substantial, I move to a **Private Impact Assessment (PIA)***

I fill out Template 2 of the PIA*

Repetitive process which might involve some back-and-forth at different steps in the project's development, especially in cases where service providers are involved.

(X) Please note: If the project is deemed as unsatisfactory by the DPO and the IT department, reccommendations can be made and new anti-risk measures can be adopted in order to validate the project and respect Privacy by Design principles.

I update my passport with the new measures and according to the reccommendations

Following acknowledgement of the reccommendations, I resubmit my passport for validation by the DPO and the IT department

My passport is validated by the DPO, I can implement my project

Appendix 4 - Drop-down lists of choices on Muse

MY REQUEST CONCERNS (1 CHOICE POSSIBLE)
A film or photography project
An artistic or journalistic project
A non-scientific and non-cultural event
An educational project
An exhibition project
An expertise project
A study or scientific research project

I AM
An unaffiliated individual
An event organiser
Staff member of a cultural, museum, exhibition or collection service
An artist or journalist
A teacher
A researcher or amateur scientist
A professional scientist affiliated with an establishment

I WOULD LIKE TO (1 CHOICE POSSIBLE)
Borrow one or more specimens
Arrange a visit for an on-site consultation
Carry out or request a sample
Take or request an image
Ask a question

COLLECTION AND SUB-COLLECTION (SEVERAL CHOICES POSSIBLE)

Anthropology	Anthropology human remains		
Anthropology	Cultural anthropology	Palaeontology	Reptile-Amphibian-Bird fossils
Anthropology	Biological anthropology	Palaeontology	Fish fossil
Terrestrial arthropods	Polyneoptera	Palaeontology	Palaeobotany
Terrestrial arthropods	Nests	Palaeontology	Micropalaeontology
Terrestrial arthropods	Lepidoptera	Palaeontology	Mammal fossil
Terrestrial arthropods	Hymenoptera	Palaeontology	Invertebrate fossil
Terrestrial arthropods	Hemiptera	Prehistory	Rubbings
Terrestrial arthropods	Diptera, Siphonaptera	Prehistory	Paleolithic
Terrestrial arthropods	Coleoptera	Prehistory	Neolithic
Terrestrial arthropods	Arachnida	Prehistory	Institute of Human Palaeontology
Terrestrial arthropods	Apterygota, Myriapods, Onychophora	Prehistory	Fauna
Botany	Garden - general	Prehistory	Portable art
Botany	Garden - living plants	Biological Resources	Frozen vertebrates tissues & cells
Botany	Garden - seeds	Biological Resources	Fungal strains
Botany	Herbarium - general	Biological Resources	Microalgae
Botany	Herbarium - Vascular plants	Biological Resources	Extract library
Botany	Herbarium - Ethnobotany	Biological Resources	Parasitic Unicellular Eukaryotes
Botany	Herbarium - non vascular Cryptogams	Biological Resources	Free-living Unicellular Eukaryotes
Botany	Herbarium - Fungi	Biological Resources	Cyanobacteria
Botany	Herbarium - Algae	Biological Resources	Chemical library
Geology	Endogenous rocks	Vertebrates	Reptiles and Amphibians
Geology Mineralogy	Oceanic rocks	Vertebrates	Fish
Geology Mineralogy	Mineralogy	Vertebrates	Birds
Geology Mineralogy	Meteorites	Vertebrates	Mammals
Geology Mineralogy	General geology		
Invertebrates not Terrestrial Arthropods	Protists		
Invertebrates not Terrestrial Arthropods	Porifera		
Invertebrates not Terrestrial Arthropods	Nematodes		
Invertebrates not Terrestrial Arthropods	Molluscs		
Invertebrates not Terrestrial Arthropods	Meiofauna		
Invertebrates not Terrestrial Arthropods	Echinoderms		
Invertebrates not Terrestrial Arthropods	Crustaceans		
Invertebrates not Terrestrial Arthropods	Cnidarians		
Invertebrates not Terrestrial Arthropods	Bryozoaires		
Invertebrates not Terrestrial Arthropods	Ascidians (Benthic tunicates)		
Invertebrates not Terrestrial Arthropods	Annelids		

PROJECT LEVEL
Master
Thesis
Post-doc
National Research Agency
Other

MAIN SCIENTIFIC DOMAIN (MAX. 2 CHOICES)

Anthropology and Ethnology
Paleoethnobotany
Archeology
Zooarchaeology
Arts
Biology
Botany
Chemistry
Climatology
Demography
Ecology
Ethnobiology
Genetics
Geography
History of Science

History of Civilisations
Languages and literature
Museology
Oceanography
Philosophy
Psychology
Earth Sciences
Information and Communication Sciences
Life Sciences
Economical Sciences
Hard Sciences
Social Sciences
Medical and Health Sciences
Political Science
OTHER

TYPE OF SCIENTIFIC PROJECT (MAX. 4 CHOICES)
Teaching
Expertise (identifications)
Illustrations
Geographical inventory
Phonistic inventory
Morphoanatomy / development
Systematics / molecular taxonomy
Systematics / morphoanatomical taxonomy
OTHER

METHODS FOR STUDY AND DATA ACQUISITION OF BORROWED SPECIMENS
Chemical analysis
Isotopic analysis
Magnetic cartography
2D imaging (scan, photogrammetry, etc.)
3D imaging
Microscopy
Morphology
Morphometry
Photography
Sample
OTHER

Appendix 5 - List of categories and sub-categories

Main categories	Sub-categories
Account management	Access/annotation to an applicant's profile
	Account administration
	Consent for personal data
	Creating a user account
	Modification of personal data
	unified AAI
	User account validation
API connected to local CMS and databases	Access through catalogues
	Data integration MUSE/local CMS
	Documentations
	unplanned features
Document creation	document export
	document import
	form editing
Ergonomics	Ergonomics
Multi-institutional MUSE setup	Institutional account creation
	Multi-institutional dashboard
	Multi-institutional MUSE setup
	Setting up the collections and facilities of the institutions
Outside the remit of ELViS-MUSE	API aggregator
	CMS perimeter
	Collections enhancement
	out of the ELViS target
	Policies tool
	Policy Insurance
	Taxonomic repository tools
	tracking tool
Publication tracking	Publication tracking
Request management	Access to the Collection Manager's Identity
	Action workflow
	Applicant's dashboard
	Automatic reminder
	Communication between internal and external users
	Request closure
	Request creation
	Request dashboard
	request for uncatalogued specimens
	Request messaging system
	Request Status Notifications
	Request update
Request type: digitisation request	Request type: digitisation request
Request type: information request	Request type: information request
Request type: loan request	Request type: loan request
Request type: sample request	Request type: sample request
Statistics and reports	Institutional dashboard
	Report by type of request
	Scientific production report
Terms of Use and policies	Conditions for reporting results
	Financial terms
	Integration of T&Cs and charters
	Signing of the loan conditions
Uncategorised	Uncategorised
Unified BI	ELViS is a CMS
Unified catalogue	Unified catalogue
Unplanned request	Invitation from the institution to the researchers
	Request type : Call for projects
	Request type : facilities request
	Request type : Incoming loan request
	Request type : outcoming loan request
	Request type : training request
User feedback	Satisfaction survey

Appendix 6 - List of DiSSCO User Stories (MS52 - Github) classified and ranked

Dev indic	Categories	Sub categories	Source	n°Github	Stories
0	Account management	Access/annotation to an applicant's profile	MS52	MS52-39	As a loan administrator I would like know when a researcher who has an existing loan moves to another institute in case I am not aware and need to arrange a loan transfer or loan recall
0	Account management	Access/annotation to an applicant's profile	MS52	MS52-19	As a loan administrator I want to know if a requester has a good track record in returning specimen
0	Account management	Access/annotation to an applicant's profile	MS52	MS52-22	As a loan administrator I want to know if a user should be allowed access to material from a certain collection
0	Account management	User account validation	Github	26	As an administrator of the ELViS system I want to assess and validate the request for registration of a researcher/ELViS requester, so I can allow him/her to proceed with using the ELViS system for applying for loans and/or visits to any of the participating institutions (which validation criteria should be applicable? via ORCID?)
0	Account management	Access/annotation to an applicant's profile	Github	10	As a curator, I want to know if the person requesting for a loan is trustworthy so that I limit the risk of specimen not returning to collections
0	Account management	Modification of personal data	MS52	MS52-4	As a requester, I want to delete my account so that I can exercise my right to erasure
0	Account management	Consent for personal data	MS52	MS52-5	As a requester, I want to consent to the migration of my data to ELViS so I can exercise my right to opposition
0	Account management	Access/annotation to an applicant's profile	MS52	MS52-126	As a collection manager, I want to add comment or remarks about the visit so that I can keep tracks of what happened
0	API connected to local CMS and databases	unplanned features	Github	81	As A Researcher I want to be notified when a specimen I have borrowed is needed by someone else so I can pack it up and return it.
0	Document creation	form editing	MS52	MS52-47	As a collection manager, I want to generate the insurance paper forms accompanying specimens used in exhibitions
0	Outside the remit of ELViS-MUSE	Policy Insurance	MS52	MS52-118	As a collection manager, I want to have an estimate of the value of insured specimens
0	Request management	Communication between internal and external users	Github	102	As an administrator of the ELViS system I want to communicate with researchers/ELViS requesters in case there is additional information needed for good evaluation of their requests, so that I can get all the information needed (the content of this communication needs to be stored in ELViS, the actual communication can be done via email notifications back and forth).
0	Request management	Request dashboard	MS52	MS52-115	As a system administrator I want to see the loan change history (and revert changes when users make mistakes)
0	Request management	Request messaging system	Github	128	As a researcher I want to see who to contact for more information on the possible restrictions (Nagoya or other) related to the use of the specimen so that I can make sure the specimens are suitable for my study.
0	Request management	Access to the Collection Manager's Identity	Github	82	As A Researcher I want to know who is in charge of the collection so that I can ask specific questions.
0	Request management	Request dashboard	MS52	MS52-68	As a curator I want to be able to discuss all requests so that we can ensure that the request is most useful to the researcher
0	Request management	Request messaging system	MS52	MS52-69	As a requester I want communicate with the collection manager

Dev indic	Categories	Sub categories	Source	n°Github	Stories
0	Request type: loan request	Request type: loan request	MS52	MS52-31	As a loans administrator I would like to easily organise a loan recall for all outstanding loans on an annual basis
0	Statistics and reports	Report by type of request	Github	106	As a Collection Manager I want to assess requests in terms of feasibility, time required so that I can allocate resources
1	Document creation	document export	Github	64	As A Curator I want to continue to store my loans and visits documents in the my current content management system (such as RBINS) so that I can manage the scientifc archives of the collection.
1	Document creation	document export	MS52	MS52-108	As A Curator I want to continue to store my loans and visits documents in the my current content management system (such as RBINS) so that I can manage the scientifc archives of the collection.
1	Document creation	document import	MS52	MS52-109	As a requester, I want to attach files to my request so that I can give more information about my request
1	Document creation	document import	MS52	MS52-44	As collection manager I want to add paperwork that is related to the loan in to the system
1	Document creation	document export	MS52	MS52-123	As a collection manager I want to export my local files such as spreadsheets to a standard format so that it can be integrated in ELVIS
1	Ergonomics	Ergonomics	Github	70	As A Curator I want automate information processing about requests for material/loans so that I can do more important things such as curation.
1	Ergonomics	Ergonomics	Github	116	As a manager (deputy director supervising collection management) I want to propose to Curators/unit heads a simple and efficient common system so that I can be sure that Curators/unit heads will be happy to adopt and to use as a unified system for all the units.
1	Ergonomics	Ergonomics	MS52	MS52-105	As a loan or collection manager I want to use a single system
1	Ergonomics	Ergonomics	Github	110	As an institution with limited resources to handle increased numbers of requests [not I want to but I do expect] that ELViS offers structural support not only through means of standardisation of requests but also through active (data)workflows so that we can reduce the required staff handling times to the required minimum.
1	Ergonomics	Ergonomics	MS52	MS52-13	As a user I want to spend minimum time on entering requests for loans
1	Request management	Request dashboard	MS52	MS52-15	As a user I want to be able to record partial return so that I can keep record of what is still to be returned and what is not
1	Request management	Request dashboard	MS52	MS52-27	As a loan administrator I would like to know how many specimens have been returned in the case of a partially returned loan
1	Request management	request for uncatalogued specimens	Github	62	As A Curator I want to add specimens which are not yet in the specimens database so that I can make a complete loan contract even if specimens are not digitized.
1	Request management		MS52	MS52-8	As a requester i want automated reminder about my loans (expiration, status)
		Automatic reminder			
1	Request management	Request dashboard	MS52	MS52-25	As a collection manager, I want to record partial or complete return so that I can check the loan and have a report

Dev indic	Categories	Sub categories	Source	n°Github	Stories
1	Request management		MS52	MS52-36	As a collection manager, I want an automatic notification when loan expires so that I can contact the requester
1	Request management	Automatic reminder	MS52	MS52-32	As a collection manager, I want to send an automatic reminder (by mail) to the contact of outgoing loans expring this week.
1	Request management	Request dashboard	MS52	MS52-7 & 38	As a loan administrator I would like to see when the loan should be returned
1	Request management	Request update	MS52	MS52-35	As a loan administrator I would like to grant an extension to an existing loan
1	Request management	Request update	MS52	MS52-42	As a loan administrator I would like a process whereby a loan request automatically goes to be digitised
1	Request management	Request closure	Github	134	As a Researcher I want to cancel my request (because it is not relevant anymore) so that I do not have to deal with that any longer.
1	Request management	Request messaging system	Github	90	As A Researcher I want to indicate what facilities I would like to make use of during my visit to an institution for examining material which that institution offers (based on the information on the facilities that institution offers according to ELViS).
1	Request management	Request messaging system	Github	132	As a Researcher I want to specify the search scope so that I receive customised and relevant results.
1	Request management	Request update	Github	72	As a Reseacher I want to have access to the collections so that I can examine the specimens, eventually ask for sampling (like toe pads for birds).
1	Request management	Request dashboard	MS52	MS52-29	As a curator I need to know the loaning history so that I can track the condition and damage, the item state before and after the loan
1	Request management	Request messaging system	Github	47	As a Curator I want to access the request messages through a single query so that I can organize the time needed to manage them.
1	Request management	Request update	Github	58	As A Curator I want to have an application that can manage the visits from the beginning to the end, including possible activities related with the visit (loans, donations …) so that I can have all the information related with the visit available.
1	Request management	Automatic reminder	Github	59	As A Curator I want an application that can send a notification to us and to the borrower when the loan period has finished so that I have a better monitoring of the loaned material.
1	Request management	Request messaging system	Github	41	As a Curator I want to provide easier precise information on requested material so that I can devote my time and capacity to other tasks.
1	Request management	Automatic reminder	Github/MS52	55/91	As A Curator I want to track researchers so that I can ask for results.
1	Request management	Request update	MS52	MS52-16	As a curator I want to transform all requests into digitisation requests so that we can reduce the number of physical loans being sent out
1	Request management	Request Status Notifications	Github	11	As an ELViS requester, I want to get some information on the processing of my demand, so that I can be sure I do not need to directly contact the institution

Dev indic	Categories	Sub categories	Source	n°Github	Stories
1	Request management	Request creation	MS52	MS52-110	As a requester, I want to indicate the dates of visit I planned so that collection managers could prepare my visit
1	Request management	Request dashboard	MS52	MS52-14	As a requester I would like to track my request all the time
1	Request management	Request update	MS52	MS52-73	As a collection manager, I want to add comments, remarks or information to a request so that I keep tracks about this information
1	Request management	Request dashboard	MS52	MS52-17	As a collection manager, I want to have information about requester supervisor/sponsor and institution so that I can contact another person in the institution to reclaim non returned specimens
1	Request management	Action workflow	MS52	MS52-70	As a collection manager, I want to delegate the request to another collection manager so that the chosen collection manager can handle the request
1	Request management	Request messaging system	MS52	MS52-66	As a collection manager, I want to send a message to the requester so that I can inform requester
1	Request management	Request closure	MS52	MS52-26	As a collection manager I want to be able to resolve a loan and either return specimens to the collection or remove them from the collection if they are damaged
1	Request management	request for uncatalogued specimens	MS52	MS52-43	As a loan or collection manager I want to be able to loan specimens that are not yet digitized (uncataloged)
1	Request management	Request dashboard	MS52	MS52-28	As a loan administrator I would like to know which specimens have been sampled from when they are returned
1	Request management	Request dashboard	MS52	MS52-30	As a loan administrator I want to keep track of partial returns
1	Request management	Request messaging system	MS52	MS52-127	As a visitor administrator I would like to know if a researcher needs a letter of invitation for visa purposes
1	Request management	Automatic reminder	MS52	MS52-33	As as collection manager I would like an automatic message would be sent to delayed loans requester
1	Request type: digitisation request	Request type: digitisation request	Github	35	As a Reseacher I want to request 3D models of specimens so that work with the specimens without having to visit the institution.
1	Request type: digitisation request	Request type: digitisation request	Github	85	As A Researcher I want to request high quality scan of a specific specimen so that I can study its morphological features.
1	Request type: digitisation request	Request type: digitisation request	Github	87	As A Researcher I want to get stacked photos of the specimens so that I can use them in my publication.
1	Request type: digitisation request	Request type: digitisation request	MS52	MS52-57	As a journalist specialized on news on nature themes I would like digital loans of specimens to illustrate my articles with the correct species
1	Request type: information request	Request type: information request	Github	115	As a Researcher I want to request materials and receive reports in spreadsheet format including "standardized" UUIDs for taxa and objects (persons, geonames) so that I can use the retrieved data for annotation and citation purposes.

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Dev indic	Categories	Sub categories	Source	n°Github	Stories
1	Request type: information request	Request type: information request	MS52	MS52-62	As R&D responsible for a textile manufacture i want information on a plant used in the industry and samples to test its potential
1	Request type: loan request	Request type: loan request	MS52	MS52-59	As an artist I would like to loan artistically appealing specimens for an art project
1	Request type: loan request	Request type: loan request	Github	78	As A Researcher I want to borrow type specimens of relevant species so that I can carry out a taxonomic research project using morphological examination.
1	Request type: loan request	Request type: loan request	Github	40	As a Curator I want to use a simple-to-handle database-tool so that I can organize and report loan events.
1	Request type: loan request	Request type: loan request	Github	39	As a Curator I want to manage the loans so that I can simplify our administration duties.
1	Request type: loan request	Request type: loan request	MS52	MS52-40	As a collection manager, I want to fill in the expiration date of the loan so that I can find if a loan is overdue
1	Request type: loan request	Request type: loan request	Github	19	As a herbarium manager I want to receive official loan requests (i.e., from a officially responsible curator) so that I can process the loan request efficiently and safely.
1	Request type: loan request	Request type: loan request	MS52	MS52-41	As a collection manager, I want to fill in the shipment date of the loan so that I know when the loan has been sent
1	Request type: sample request	Request type: sample request	Github	84	As A Researcher I want to request pollen sample from a specific specimen so that I can study pollen morphology and anomalies.
1	Request type: sample request	Request type: sample request	Github	5 &12	As a researcher I want to request destructive sampling of specific specimens for DNA, microscopic or chemical analysis.
1	Request type: sample request	Request type: sample request	Github	36	As A Researcher I want sampling of specific specimens for DNA so that I can investigate genetic diversity loss.
1	Request type: sample request	Request type: sample request	Github	28	As A Curator I want to know whether the researcher is requesting destructive sampling in addition to the loan so that I can liaise with my colleague who deals with destructive sampling.
1	Request type: sample request	Request type: sample request	MS52	MS52-60	As responsible for food safety and fraud, I would like samples from a list of specific species to implement a molecular testing to check if there is a fraud .
1	Request type: sample request	Request type: sample request	MS52	MS52-63	As R&D responsible for a cosmetic company I would like samples of a list of plants to test new ingredients. You have to sign a confidentiality clause.
1	Request type: sample request	Request type: sample request	MS52	MS52-64	As a R&D for the food industry I would like samples from a list of species and information to test their nutrition potential
1	Statistics and reports	Report by type of request	MS52	MS52-37	As a loan administrator I would like to know how many loans are currently outstanding
1	Statistics and reports	Report by type of request	MS52	MS52-74	As a visitor administrator I would like to be able to report on visitor statistics (country, taxa consulted), days spent in collection) in any given timeframe

Dev indic	Categories	Sub categories	Source	n°Github	Stories
1	Statistics and reports	Report by type of request	MS52	MS52-74	As a visitor administrator I would like to be able to report on visitor statistics (country, taxa consulted), days spent in collection) in any given timeframe
1	Statistics and reports	Report by type of request	Github	117	As a Project Manager I want to access reporting data so that I can integrate into EC reports.
1	Statistics and reports	Request dashboard	Github	33	As a Researcher I want to see the status (in progress, feedback, approved, rejected) and scores of my requests for visits, loans, digitisations and destructive sampling and be able to provide feedback on possible additional questions from the ELViS system administrators and or evaluators, so that I can monitor the progress/effectivity of my requests.
1	Statistics and reports	Report by type of request	Github	50-1	As A Curator I want to create reports on the different aspects of the loans, visits and digitisation requests related to my institution, so I can get detailed information on the participation of my institution in the ELViS system's core business; these reports can have these kind of scopes: a. the amount of loans, visits and digitisation requests related to my institution per month, quarter, year or over a certain period of time
1	Statistics and reports	Report by type of request	Github	50-2	As A Curator I want to create reports on the different aspects of the loans, visits and digitisation requests related to my institution, so I can get detailed information on the participation of my institution in the ELViS system's core business; these reports can have these kind of scopes: b. the status of loans, visits and digitisation requests (in progress, approved, rejected) related to my institution per month, quarter, year or over a certain period of time
1	Statistics and reports	Report by type of request	Github	50-3	As A Curator I want to create reports on the different aspects of the loans, visits and digitisation requests related to my institution, so I can get detailed information on the participation of my institution in the ELViS system's core business; these reports can have these kind of scopes: c. an overview of already planned (but not approved yet) loans, visits and digitisation requests for my institution for the upcoming month, quarter, year or over a certain period of time
1	Statistics and reports	Report by type of request	Github	61	As A Curator I want to record details of visits to my collection so that I can provide tailored / targeted KPIs in the way that the Government requires (for example UK govt).
1	Statistics and reports	Report by type of request	Github	31	As A Curator I want to be able to produce reports about loans and visitors within a date range on my choice for visitors so that I can input into insitutional reporting.
1	Statistics and reports	Report by type of request	Github	44	As a Curator I want to quantify the number of specimen requests every year so that I can better adjust resources in my institution.
1	Statistics and reports	Report by type of request	Github	9	As a curator, I want to quantify the number of visit every quarter so that I can better adjust resources in my institution
1	Statistics and reports	Report by type of request	Github	38	As a Curator I want to quantify electronic requests (partially replacing physical loans – visits) so that I can have an overview about usefulness of our collections.
1	Statistics and reports	Report by type of request	MS52	MS52-72	As a curator I want to record collection requests so that I can report the figures to management
1	Statistics and reports	Report by type of request	MS52	MS52-79	As a curator I want to be able to see how our collections are being used so that we can develop future collection strategies using this information
1	Statistics and reports	Report by type of request	Github	37	As a Curator I want to know how many specimens were on loan this year so that I can prepare my annual report.
1	Statistics and reports	Request dashboard	Github	29	As A Curator I want to know at a glance whether a visitor has been before and what they consulted so that I can manage their expectations.
1	Statistics and reports	Request dashboard	Github	27	As a Curator I want to know if a requesting institute has requested loans before and if and when they have been returned so that I can recall any long term outstanding loans before I consider a new request.
1	Statistics and reports	Report by type of request	Github	105	As a Director I want to have an overview of the loan and visitor requests for the whole museum so that I can better justify budget needs.

Dev indic	Categories	Sub categories	Source	n°Github	Stories
1	Statistics and reports	Report by type of request	Github	22	As a Director I want to see a listing of visits to my institution and summary data on them so that I can evaluate and report usage of our collections.
1	Statistics and reports	Report by type of request	MS52	MS52-75	As a collection manager I want statistics for loans and visits in a way that allows for attribution and advocacy of my collection
1	Statistics and reports	Report by type of request	Github	107	As a Collection Manager I want to how many requests were refused, by reason so that I can review priorities and resources.
1	Statistics and reports	Institutional dashboard	Github	34	As a Collection Manager I want to know if the requesting institute has asked for imaging requests before so that I can report on usage.
1	Statistics and reports	Report by type of request	Github	92	As A Stakeholder of Synthesys+ I want to do less copy paste so that I can better work in the tables.
1	Statistics and reports	Report by type of request	MS52	MS52-80	As a rapporteur I want to measure the amount of loans and visits over a certain period of time.
1	Statistics and reports	Report by type of request	MS52	MS52-77	As a collection manager I want to get a yearly statistical summary of all the loans that our team has send
1	Statistics and reports	Report by type of request	Github	123	As A Collection Maintainer I want to know how many specimens were photographed on request in year X so that I can write the annual report of collection use.
1	Statistics and reports	Report by type of request	Github	95	As a Digitization Manager I want to get detailed information on the requests so that I can implement user-driven digitization strategies.
1	Statistics and reports	Report by type of request	Github	20	As a herbarium manager I want to know how many visitors arrive to us and how many days they stay so I can keep statistics over the years.
1	Statistics and reports	Scientific production report	MS52	MS52-89	As an institution I want to show in our website how many publications have used our collections material
1	Statistics and reports	Report by type of request	Github	13	Up to date accurate overview of past loan request
1	User feedback	Satisfaction survey	Github/MS52	127-124	As A Researcher I want to report back on the results of my visits, loans, digitisations, destructive samplings via a standardised evaluation form, so I can help the ELViS system administrators and the institution managers to benefit from this and to improve the system/procedures.
1	User feedback	Satisfaction survey	Github	63	As A Curator I want to add a satisfaction survey to ELViS so that I can evaluate the satisfaction of the scientific visitor directly from ELViS.
2	Account management	unified AAI	MS52	MS52-95	As ... we need a proper AAI infratructure for Single-Sign-on (e.g.) on ELViS to access all facilities in/of DS arch
2	Account management	Creating a user account	Github	88	As A Researcher I want to request to be registered in the ELViS system, so I can start using the system for applying for loans, visits, digitisation requests and other activities such as requests for destructive sampling to any of the participating institutions (which validation criteria should be applicable? via ORCID?)
2	Account management	Modification of personal data	MS52	MS52-3	As a requester, I want to access to information about my data so that I can exercise my right to access and modify my data

Dev indic	Categories	Sub categories	Source	n°Github	Stories
2	Account management	Consent for personal data	MS52	MS52-113	As a requester, I want to be informed about data collected and their use so I can consent to create an account
2	Account management	Modification of personal data	Github	124	As A Collection Manager I want to be able to change my personal information in the ELViS system such as email address and password (and – if applicable – preferences?), so I can secure and personalise my ELViS account.
2	Account management	unified AAI	MS52	MS52-112	As a collection manager, I want to use my institution credential so that I can log in to ELViS
2	Account management	Account administration	MS52	MS52-114	As a institution moderator, I want to associate collection managers with collections so that collection manager can handle requests to that collecion
2	Account management	Account administration	MS52	MS52-116	As an institution moderator, I want to choose a collection coordinator so that he or she will the first person in charge of these requests
2	Multi-institutional MUSE setup	Multi-institutional dashboard	Github	104	Create reports on different aspects of the requests/transactions of all the in the ELViS system participating institutions (what kind of reports are used/needed*?), so I can provide detailed overall information on the status of the core business of the ELViS system at all times.
2	Multi-institutional MUSE setup	Institutional account creation	Github	25	create an institution with all relevant basic information (what? just: identifier, name, address, country?) and assign that to a contact person of that institution (using only name and email address?) via sending login information to him/her, to enable him/her to provide more details for that institution, so this institution can be part of the ELViS system's functionality
2	Multi-institutional MUSE setup	Multi-institutional dashboard	Github	103	As an administrator of the ELViS system I want to see – in a dashboard – the status of all requests over a certain period of time, per institution, per researcher/ELViS requester and be able to sort and filter that information.
2	Multi-institutional MUSE setup	Multi-institutional MUSE setup	Github	3	As a researcher, I want to visit an institution I know, so that I can examine material useful for my current project
2	Multi-institutional MUSE setup	Multi-institutional dashboard	Github	65	As A Curator I want to compare my statistics with the other institutions (at least average values) so that I can compare the situation of my institution and make report to my general director.
2	Multi-institutional MUSE setup	Setting up the collections and facilities of the institutions	Github	126	As A Curator/Institute Manager I want to provide more detailed information (what?) about my institution and its facilities (which ones -> generic?) in the ELViS system, preferably via dropdown lists, so I can enable researchers which apply for a loan, a visit or a digitisation request in the ELViS system to make use of them.
2	Multi-institutional MUSE setup	Multi-institutional dashboard	Github	14	As a Collection Manager I want to know what other institutes are receiving loan requests of my group so that I can better assess the importance/role of our collection in international context.
2	Multi-institutional MUSE setup	Multi-institutional dashboard	MS52	MS52-121	As an institution manager (or collection manager) I want to share virtual access, loan, and visit data with other institutions so that we can better plan the activities (also address privacy, security, and GDPR).
2	Request management	Applicant's dashboard	MS52	MS52-18	As a loan administrator I would like to know if there are any outstanding loans from the requester
2	Request management	Request dashboard	Github	24	As an Administrator I want to know the demand of digitization of specimens so that I can evaluate the resources needed.
2	Request management	Applicant's dashboard	MS52	MS52-20	As a collection manager, I want to see the loans made by a requester so that I could have a level of confidence before agreeing to lend specimens
2	Request management	Request update	MS52	MS52-125	As a collection manager, I want to fill in actual dates of the visit so that I can have a report and visit dashboard

Dev indic	Categories	Sub categories	Source	n°Github	Stories
2	Request management	Request messaging system	MS52	MS52-67	As a collection manager, I want to request an opinion from another collection manager so that I can decide to approve or not the request
2	Statistics and reports	Report by type of request	Github	91	As A Stakeholder of Synthesys+ I want to have a better overview of the visitor list so that I can better find my the information on the visitors.
3	Document creation	document import	Github	60	As A Curator I want an application that can import the data of the specimens requested and print automatically a loan form so that I do not have to use the combine correspondence of Word to generate my loan forms.
3	Document creation	form editing	MS52	MS52-49	As A Curator I want an application that can import the data of the specimens requested and print automatically a loan form so that I do not have to use the combine correspondence of Word to generate my loan forms.
3	Document creation	document export	MS52	MS52-48	As a loan administrator I would like to print a sheet that has basic load information to be send together with the loan
3	Terms of Use and policies	Financial terms	Github	120	As A Researcher I want to find out the cost of a particular procedure / protocol / bench fees so that I can apply for funding to support a visit.
3	Terms of Use and policies	Integration of T&Cs and charters	MS52	MS52-119	As a researcher I want to know the access policy for that I need to contact the local instuttion and need access to the polciy documents
3	Terms of Use and policies	Conditions for reporting results	Github	129	As a researcher I want to see what kind of conditions an institution has for loans (Nagoya related or other), so that I can make sure I am complying with the conditions in my study and publications.
3	Terms of Use and policies	Conditions for reporting results	Github	71	As A Curator I want to gain access to research outcomes so that I can decide on best use of material and advise on sampling.
3	Terms of Use and policies	Conditions for reporting results	MS52	MS52-85	As a collection manager I want to be provided with references to extracted data or other derived outputs from the physical objects during loan so I can link to the references in my CMS.
3	Terms of Use and policies	Conditions for reporting results	Github	111	As staff in charge to maintain and manage the DNA & tissue collections I expect that requests through ELViS will require that the researcher is obliged to fill in the necessary information for his request to meet the due diligence requirements of my institution under the CETAF Code of Conduct as acknowledged best practise in the EU.
3	Terms of Use and policies	Conditions for reporting results	MS52	MS52-24 & 92	Ensure that the item is not modified (restored, repaired, DNA sample...) during the loan without owner permission
4	API connected to local CMS and databases	Data integration MUSE/local CMS	MS52	MS52-104	AS a software project I want APIs that I can utilize for integration
4	API connected to local CMS and databases	Data integration MUSE/local CMS	MS52	MS52-106	As a product owner of a national CMS I want to offer our CMS users a smooth user experience with seamless integration to ELViS (did not really know how to formulate what I mean by this but let's discuss)
4	API connected to local CMS and databases	Data integration MUSE/local CMS	Github	96	As an IT architect I want to fetch data for individual loan requests from an API from ELViS/DiSSCo into our CMS so that I can help my users to easily register loans in the CMS.
4	API connected to local CMS and databases	Data integration MUSE/local CMS	MS52	MS52-99	As an IT architect I want to fetch data for individual loan requests from an API from ELViS/DiSSCo into our CMS so that I can help my users to easily register loans in the CMS.
4	API connected to local CMS and databases	Data integration MUSE/local CMS	MS52	MS52-122	As a Bioinformatics Head of Department I want my staff - using their selected CMS - to be able themelves to contribute to providing curators at fellow departments with efficient means to digitally manage loans and visits.

Dev indic	Categories	Sub categories	Source	n°Github	Stories
4	API connected to local CMS and databases	Data integration MUSE/local CMS	Github	131	As a researcher I want to see real time status of a specimen (whether it is on loan or available and when it will be available again) so that I don't need to make unnecessary requests.
4	API connected to local CMS and databases	Data integration MUSE/local CMS	Github	52	As A Curator I want to connect published data with the specimen provided so that research can build up on previous investigations.
4	API connected to local CMS and databases	Data integration MUSE/local CMS	MS52	MS52-71	As a curator I want to record all digitisation requests so that we can see what has been digitised and why
4	API connected to local CMS and databases	Data integration MUSE/local CMS	MS52	MS52-86	As a curator I want to keep trace of the parts of my specimen that are kept by other institutions (e.g: genetic vouchers)
4	API connected to local CMS and databases	Data integration MUSE/local CMS	Github	54	As A Curator I want to keep record which parts of the collection are used most so that I can keep an eye on the quaility of the samples.
4	API connected to local CMS and databases	Documentations	MS52	MS52-98	As a software developer I want documentations and guidelines about API integration
4	API connected to local CMS and databases	Data integration MUSE/local CMS	MS52	MS52-97	As a developer I want to use information about transactions in ELViS in my application
4	API connected to local CMS and databases	Data integration MUSE/local CMS	MS52	MS52-117	As a Collection Manager I want to integrate the transaction functions with catalog Collection Object and Preparation records for identifying the specific physical objects for participation in transactions, to include preparation types and counts.
4	API connected to local CMS and databases	Data integration MUSE/local CMS	MS52	MS52-82	As a policy manager , I want to produce statistics on the loaned specimens collected in a specific country or region so that I can adapt the legislation/ identify knowledge gaps
4	Document creation	document export	MS52	MS52-46	As a collection manager I want to print loan forms so that they can be used for shipping and can be signed by the receipient
4	Publication tracking	Publication tracking	MS52	MS52-90	As a Collection Manager/Curator, I want to know what the digitized records or digital objects I have sent to someone have been used for, so that I can document the research value of the collection.
4	Publication tracking	Publication tracking	Github	118	As a Project Manager I want to track publications arising from physical and digital visits so that I can track impact.
4	Publication tracking	Publication tracking	MS52	MS52-84	As a curator I want to be able to link our voucher to any outputs from the researcher (eg publications, Genbank etc)
4	Publication tracking	Publication tracking	MS52	MS52-111	As A Curator I want to track the usage of the data provided so that I can connect these with the specimen.
4	Publication tracking	Publication tracking	MS52	MS52-88	As a collection manager, I want to know the loaned specimen of my institution collections that I have been cited in scientific papers
4	Request management	Request update	Github	16	As a Scientist I want to have images of species X so that I want to determine if I want to borrow them for microscopic analysis.
4	Statistics and reports	Report by type of request	Github	23	As an Administrator I want to know the variation on loan and visit influenced by digital collections so that I can plan he work to be done in the future.

Dev indic	Categories	Sub categories	Source	n°Github	Stories
4	Terms of Use and policies	Integration of T&Cs and charters	MS52	MS52-45	As a loan administrator I would like our loan policy to be automatically added to any outgoing loans paperwork
4	Terms of Use and policies	Integration of T&Cs and charters	MS52	MS52-12	As a researcher I want to discover the loan status of collection objects so that I know how long they will be on loan.
4	Terms of Use and policies	Signing of the loan conditions	MS52	MS52-21	As a collection managers I want guarantees of return and safety of the loan from the requester and a signature of commitment to certain conditions and insurance.
4	Terms of Use and policies	Conditions for reporting results	MS52	MS52-87	As a collection manager I want to track when and where my specimens are used in exhibits
4	Unplanned request	Request type : Call for projects	Github	119	As a Project Manager I want to run funding calls for physical and virtual access so that I can deliver SYNTHESYS.
4	Unplanned request	Request type : Call for projects	MS52	MS52-65	As a VA/TA coordinator I want to assess the request with applicable local policy so that I can reach a decision.
5	Statistics and reports	Report by type of request	Github	50-4	As A Curator I want to create reports on the different aspects of the loans, visits and digitisation requests related to my institution, so I can get detailed information on the participation of my institution in the ELViS system's core business; these reports can have these kind of scopes: d. the most requested specimen/facilities of my institution per month, quarter, year or over a certain period of time
5	Statistics and reports	Report by type of request	Github	32 & 49	As A Curator I want to be able to report on which loans are outstanding, both external and interal so that I can manage my loan recalls and those of lending institutes more efficiently.
5	Statistics and reports	Report by type of request	MS52	MS52-76	As a collection manager I want to know how many people have viewed my collection through visits as well as community outreach events
5	Unplanned request	Request type : Incoming loan request	MS52	MS52-9	As a loans administrator I would like to have alerts when incoming loans to my institute need to be returned
5	Unplanned request	Request type : Incoming loan request	MS52	MS52-120	As a loan administrator I want to separate incoming and outgoing loans
5	Unplanned request	Request type : training request	Github	135	As A Researcher I want to request training/help for a new equipment so I can conduct my research during the visit.
5	Unplanned request	Request type : facilities request	Github	121	As A Researcher I want to find out find out the availability of some specialist equipment so that I can plan a visit to use that equipment.
5	Unplanned request	Invitation from the institution to the researchers	Github	45	As a Curator I want to invite taxonomic specialists so that I can identify the oldest specimens or update their classifications.
5	Unplanned request	Request type : Incoming loan request	MS52	MS52-10	As a curator, I want to check the incoming loans expiring this month
5	Unplanned request	Request type : Incoming loan request	MS52	MS52-6	As a collection manager I want to know what loans I have from other collections and track them
5	Unplanned request	Request type : outcoming loan request	MS52	MS52-78	As a Collection Manager, I want to track not only incoming visitors and outgoing loans but also outgoing visits (?) and incoming loans.

Dev indic	Categories	Sub categories	Source	n°Github	Stories
5	Unplanned request	Request type : Incoming loan request	Github	21	As a herbarium manager I want to be notified when our researchers request loans from other collections so that I can take responsibility (on behalf of the insitution) that the incoming loan is treated with care and returned safely.
5	Unplanned request	Request type : Incoming loan request	MS52	MS52-81	As head of a collection I would need to keep track of outgoing and incoming loans as to report on the balance with external institutions
6	API connected to local CMS and databases	Access through catalogues	Github	4	As a researcher, I want to borrow a set of specimens with known GUIDs so that I can complete my taxonomic revision.
6	API connected to local CMS and databases	Access through catalogues	Github	80	As A Researcher I want to submit a (list of) persistent identifier(s) of specimens I'm interested to a loans and visits system so that I can arrange to borrow or visit it/them.
6	API connected to local CMS and databases	Access through catalogues	Github	67	As A Curator I want to have the specimens well identified so that I can properly evaluate the DNA sample requests.
6	API connected to local CMS and databases	Access through catalogues	Github	46	As a Curator I want to to have the specimens well identified so that I can have the specimens well identified.
6	API connected to local CMS and databases	Access through catalogues	Github	112	As a Collection Manager I want to restrict access to sensitive information so that I can comply with legal and contractual requirements (e.g. GDPR, Nagoya-Protocol).
6	Unified BI	ELViS is a CMS	Github/MS52	99/100	As an IT Architect I want to push loan data from our CMS via an API to ELViS/DiSSCo so that I can use ELViS DiSSCo as a unified BI tool.
6	Unified BI	ELViS is a CMS	MS52	MS52-93	As a person responsible for our national CMS I want to be able to integrate the system with ELViS so that we can make use of features we don't yet have and avoid having to develop those features ourselves.
6	Unified BI	ELViS is a CMS	Github/MS52	100/94	As a person responsible for a national collection management system I want to integrate relevant parts of our system with ELViS so that I can avoid keeping duplicate information in two systems.
6	Unified catalogue	Unified catalogue	Github	93	As CITES authority I want to know the number of CITES specimens loaned to track, make sure loans are CITES compliant and report to ministries.
6	Unified catalogue	Unified catalogue	Github	79	As A Researcher I want to choose specific specimens from a list of specimens available in my country so that I can request loans or visits. As A Researcher I want to choose specific specimens from a list of specimens available across Europe so that I can request loans or visits.
6	Unified catalogue	Unified catalogue	Github	8	As a researcher, I want to borrow some specimens of species with no idea of relevant institutions so that I can complete my taxonomic revision
6	Unified catalogue	Unified catalogue	Github	7	As a researcher, I want to borrow a set of specimens seen on GBIF portal so that I can complete my taxonomic revision
6	Unified catalogue	Unified catalogue	Github	113	As a Researcher I want to send requests centrally but select individual institutions so that I can address specific collections / collectors / taxa / geographical regions based on their holdings.
6	Unified catalogue	Unified catalogue	Github	18	As a Researcher I want to locate specific specimens on the basis on protologue's informations (locality, collector, previous names) so that I can check potential type material.
6	Unified catalogue	Unified catalogue	Github	86	As A Researcher I want to request a list of dates and localities of collection of certain species so that I can study its spacial and temporal distribution.

Dev indic	Categories	Sub categories	Source	n°Github	Stories
6	Unified catalogue	Unified catalogue	MS52	MS52-54	As a researcher I want to gather all the digitised collections of a specific taxon for taxonomical purposes
6	Unified catalogue	Unified catalogue	Github	122	As A Researcher I want to know where the type specimens of taxon X are so that I can request photographs of them for basic evaluation and possibly a loan.
6	Unified catalogue	Unified catalogue	Github	76	As A Researcher I want to know which specimens (species & region) not yet sequenced so that I can request material for DNA analysis and subsequent phylogeographic analyses.
6	Unified catalogue	Unified catalogue	Github	6	As a researcher, I want to visit the more adequate institution in early June, so that I can examine different specimens of a taxonomic group
6	Unified catalogue	Unified catalogue	Github	108	As a Researcher I want to be sure that my request is going to relevant collections that may not be aware of so that I can discover less well known specimens.
6	Unified catalogue	Unified catalogue	Github	74	As a Reseacher I want to geolocalize specimens of a taxa to estimate the collecting preasure and the evolution of the distribution of that taxa.
6	Unified catalogue	Unified catalogue	Github	17	As a Researcher I want to locate material by a collector / author without crossing informations from Taxonomic Litterature (Cowan & Stafleu) so that I can identify the most relevant institution that may hold the collection.
6	Unified catalogue	Unified catalogue	Github	73	As a Researcher I want to locate duplicates of a specific collection compare them, to figure out possible mislabeling.
6	Unified catalogue	Unified catalogue	Github	109	As A Researcher I want to be able to see at a glance which depositories hold material of the group I am working on so that I can save time/energy to get this information.
6	Unified catalogue	Unified catalogue	Github	130	As a researcher I want to find which institution has the holotype of a certain species for taxonomic revisions so that I don't need to contact each curator at each museum separately.
6	Unified catalogue	Unified catalogue	Github	15	As a Researcher I want to know which material of a specific group is in a collection so that I can request loans.
6	Unified catalogue	Unified catalogue	Github	75	As A Researcher I want to know which institutes hold undigitised collections from a specific region so that I can request digitisation of the specimens.
6	Unified catalogue	Unified catalogue	Github	83	As A Researcher I want to know which specimen are available for investigation so that I can do my work.
6	Unified catalogue	Unified catalogue	MS52	MS52-50	As a researcher I want to find the appropriate institution in order to deposit my type material
6	Unified catalogue	Unified catalogue	MS52	MS52-51	As a curator I want to know if there is an alternative collection that a requester can visit closer to his/her location
6	Unified catalogue	Unified catalogue	MS52	MS52-11	As a loan requester I would like to know if duplicate specimens are held in other institutions
6	Unified catalogue	Unified catalogue	Github	77	As A Crop Scientist I want to know which specimens within a crop genus are held by an institute so that I can assess niche boundaries of crop wild relatives (CWR) for crop improvement purposes.

Dev indic	Categories	Sub categories	Source	n°Github	Stories
6	Unified catalogue	Unified catalogue	MS52	MS52-55	As a user I want to find easily biological data regarding a taxon, Preferably in an integrated system
7	Outside the remit of ELViS-MUSE	out of the ELViS target	MS52	MS52-34	As a loan administrator I would like to grant a partial transfer of a loan to another institute
7	Outside the remit of ELViS-MUSE	Policies tool	MS52	MS52-23	As a loan administrator I want to know if there are quarantine/customs documents to complete before I send out a loan
7	Outside the remit of ELViS-MUSE	Policies tool	MS52	MS52-1	As an administrator I want a template for the Nagoya protocol as it may be a legal requirement when exchanging loans containing living material, dependent from the gathering country
7	Outside the remit of ELViS-MUSE	CMS perimeter	MS52	MS52-58	As a researcher for a private pharmaceutical company, I would like digital loans with information on a certain plant which has potential healing properties
7	Outside the remit of ELViS-MUSE	out of the ELViS target	Github	133	As a Researcher I want to email my loan request so that I don't have to login to another system.
7	Outside the remit of ELViS-MUSE	CMS perimeter	Github	48	As a Curator I want to have automatic tools for data correction so that I can guarantee the accuracy of the data.
7	Outside the remit of ELViS-MUSE	CMS perimeter	Github	68	As A Curator I want to register specimens in one system so that I have an electronic and searchable overview.
7	Outside the remit of ELViS-MUSE	out of the ELViS target	Github	42	As a Curator I want to get more support on digitisation processes so that I can start some work flow even being short in staff.
7	Outside the remit of ELViS-MUSE	Collections enhancement	Github	56	As A Curator I want to promote newly accessible specimen so that I can do interactive research.
7	Outside the remit of ELViS-MUSE	CMS perimeter	Github	2	As a curator, I want to publish data online so that I can increase the value of my collection. For this I need a user friendly collection management system (CMS).
7	Outside the remit of ELViS-MUSE	Policies tool	Github	66	As A Curator I want to get simplified procedures for ABS clarification of collected material so that I can make a larger proportion of our DNA samples available for loans.
7	Outside the remit of ELViS-MUSE	tracking tool	Github	51	As A Curator I want to track the usage of the data provided so that I can connect these with the specimen.
7	Outside the remit of ELViS-MUSE	CMS perimeter	Github	57	As A Curator I want to coordinate cataloguing and digitzation so that I can answer external requests be it physical loans or digital image requests.
7	Outside the remit of ELViS-MUSE	CMS perimeter	MS52	MS52-83	As a curator I want to be able to record annotations from people who have borrowed our specimens (physically or virtually)
7	Outside the remit of ELViS-MUSE	CMS perimeter	MS52	MS52-107	As a curator, I want to publish data online so that I can increase the value of my collection. For this I need a user friendly collection management system (CMS).
7	Outside the remit of ELViS-MUSE	CMS perimeter	Github	53	As A Curator I want to know which invasive samples were taken so that I can provide the information that this object was already sampled.

Dev indic	Categories	Sub categories	Source	n°Github	Stories
7	Outside the remit of ELViS-MUSE	CMS perimeter	Github	30	As A Curator I want to know whether specimens have been imaged so that I can manage a loan request more effciently.
7	Outside the remit of ELViS-MUSE	CMS perimeter	MS52	MS52-61	As a consultant working for impact studies, I would like digital loans with information on the protection status of the species and if they are located in the area concerned by the impact study
7	Outside the remit of ELViS-MUSE	CMS perimeter	MS52	MS52-56	As decision maker for land planning, I would like digital loans with information on species threatened by farming in a specific geographic region
7	Outside the remit of ELViS-MUSE	API aggregator	Github/MS52	94/96	As a Software Developer I want to use ELViS standard API so that I can integrate it with the national geoscience data platform.
7	Outside the remit of ELViS-MUSE	Collections enhancement	Github	125	As A Collection Manager I want to provide information on the collection of my institution to the ELViS system (what metadata, according to what standard(s), including digitisations?), so I can increase the value and the reuse of my collection (via which mechanisms: http/ftp upload, oai-pmh harvesting, API's? via which CMS systems?).
7	Outside the remit of ELViS-MUSE	Taxonomic repository tools	Github	114	As a Collection Manager I want to include "synonyms" via embedded taxonomic webservices for search requests so that I can physically store and find material for any given name out of the name cloud for one taxon.
7	Outside the remit of ELViS-MUSE	Policies tool	MS52	MS52-2	As a collection manager, I want to identify exchanged specimens that have CITES-sensitive information
7	Outside the remit of ELViS-MUSE	Taxonomic repository tools	MS52	MS52-53	As a collections manager I would need to know "all synonyms" for a taxon when searching in the collections for the physical specimens stored under different names
7	Outside the remit of ELViS-MUSE	CMS perimeter	Github	97	As a data manager I want to have access to as much data as possible so that I can do analysis and modeling.
7	Outside the remit of ELViS-MUSE	out of the ELViS target	MS52	MS52-102	As a software project i would like to know what how the end user wishes to interact with the system
7	Outside the remit of ELViS-MUSE	out of the ELViS target	MS52	MS52-103	As a software project I want to have standards so that I support one workflow.
7	Outside the remit of ELViS-MUSE	CMS perimeter	Github	101	As a Collection Manager I want to know whether a loan request is for a species from the European Red List (http://ec.europa.eu/environment/nature/conservation/species/redlist/) or the IUCN Red List (https://www.iucnredlist.org/) so that better assess loan requests and requests for destructive sampling.
7	Outside the remit of ELViS-MUSE	Collections enhancement	MS52	MS52-52	As an institution I want to be able to make our collections discoverable to users so that they are included in more research
NA	Uncategorised	Uncategorised	Github/MS52	98/101	As an IT Architect I want to integrate loan requests via ELViS/DiSSCo into our instutional homepages/data portal so that I can have requests redirected to ELViS/DiSSCo.
NA	Uncategorised	Uncategorised	Github	43	As a Curator I want to get into more collaborative work with other institutions so that I can be able to give more access to my collection and its associated data.

Main categories	sub-categories	Development indicators							
		0	1	2	3	4	5	6	7
Account management	Access/annotation to an applicant's profile	5							
	Account administration		2						
	Consent for personal data	1	1						
	Creating a user account		1						
	Modification of personal data	1	2						
	unified AAI		2						
	User account validation	1							
API connected to local CMS and databases	Access through catalogues							5	
	Data integration MUSE/local CMS					13			
	Documentations					1			
	unplanned features	1							
Document creation	document export		3		1	1			
	document import		2		1				
	form editing	1			1				
Ergonomics	Ergonomics		5						
Multi-institutional MUSE setup	Institutional account creation		1						
	Multi-institutional dashboard		5						
	Multi-institutional MUSE setup		1						
	Setting up the collections and facilities of the institution		1						
Outside the remit of ELViS-MUSE	API aggregator								1
	CMS perimeter								13
	Collections enhancement								3
	out of the ELViS target								5
	Policies tool								4
	Policy Insurance	1							
	Taxonomic repository tools								2
	tracking tool								1
Publication tracking	Publication tracking					5			
Request management	Access to the Collection Manager's Identity	1							
	Action workflow		1						
	Applicant's dashboard			2					
	Automatic reminder		6						
	Communication between internal and external users	1							
	Request closure		2						
	Request creation		1						
	Request dashboard	2	12	1					
	request for uncatalogued specimens		2						
	Request messaging system	2	6	1					
	Request Status Notifications		1						
	Request update		6	1		1			
Request type: digitisation request	Request type: digitisation request		4						
Request type: information request	Request type: information request		2						
Request type: loan request	Request type: loan request	1	7						
Request type: sample request	Request type: sample request		7						
Statistics and reports	Institutional dashboard		1						
	Report by type of request	1	25	1		1	3		
	Scientific production report		1						
Terms of Use and policies	Conditions for reporting results				5	1			
	Financial terms				1				
	Integration of T&Cs and charters				1	2			
	Signing of the loan conditions					1			
Uncategorised	Uncategorised								
Unified BI	ELViS is a CMS								3
Unified catalogue	Unified catalogue								25
Unplanned request	Invitation from the institution to the researchers						1		
	Request type : Call for projects					2			
	Request type : facilities request						1		
	Request type : Incoming loan request						6		
	Request type : outcoming loan request						1		
	Request type : training request						1		
User feedback	Satisfaction survey		2						

Appendix 8 – Call for expression of interest to develop as a DiSSCo service provider

Call for expression of interest to develop as a DiSSCo service provider

Thank you for filling out the form. Your response has been recorded.

Please read carefully the call announcement document **before you start filling in this form**

DiSSCo RI is reaching the end of its preparatory phase. During this phase, the community invested in improving the overall maturity of the Implementation Readiness Levels of the infrastructure. Through the linked projects (DiSSCo Prepare, SYNTHESYS+ and MOBILISE) and with the support of the work of the DiSSCo Coordination and Support Office (CSO), we have developed substantially all significant aspects required for embarking on our construction phase (2024-2026). During the Preparatory Phase, we have also developed a comprehensive understanding of the future service portfolio of DiSSCo. These services will span all strategic pillars of DiSSCo, including **Digitisation**, **Access**, **Capacity** and **e-Services**.

As we embark on the next phase of our development roadmap, the CSO would like to identify the DiSSCo nodes interested in developing as future DiSSCo Service Providers. In this context, we call all DiSSCo members to express their initial interest in providing one or more services.

Call announcement

https://bit.ly/3aRs9Ig

Submitter details

Country

France

Are you submitting the form as a national node or as a single institution?

National Node

Name of submitter

French National Node Coordinator Recolnat François Dusoulier

Email of submitter

francois.dusoulier@mnhn.fr

Selection of Services

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Service(s)

European Loans and Visits System

Type of commitment

Further development of specifications and capturing of user requirements

(Co-)development, management and/or support of a service

Provision of core infrastructure for service provisioning and hosting

Development of training material or supporting documentation

Community engagement, capacity building in usage and promotion of a service

Description of investment in the service (max. 750 words)

MNHN – coordinator of the research infrastructure and DiSSCo French national node RECOLNAT – is applying to be the service provider for ELViS.

MNHN has significant experience monitoring and coordinating access to its collections, distributed among numerous units and teams (ca. 800 days/visitors each year), and has developed and maintained in-house Colhelper software for over 15 years. Requiring upgrading, Colhelper is being re-designed as part of an IT programme supporting digital development of MNHN collections. This upgrade included a comparative analysis of Colhelper and ELViS requirements based on deliverables from DiSSCo (Github) and Synthesys+ (User story MS52). The analysis aimed to:
- Ensure consistency between Colhelper functionalities and DiSSCo community's expectations for ELViS;
- Measure potential risks of developments and driving change;
- Identify technical, human and financial resources needed for Colhelper to match ELViS full functional scope.
This resulted in a robust investment plan, forming the future baseline for development and implementation of ELViS as a service fulfilling the DiSSCo community's needs.

Development/user requirements
MNHN could offer a single-entry point for access requests to DiSSCo partner collections via:
- Development of multi-institutional Colhelper with functions including visits, loans, digitisation-on-demand (DoD), sampling, information requests;
- Single sign-on authentication system (SSO Keycloak);
- The proposal of a contract for the interface and mock-up to connect ELViS to Colhelper, including call-to-action button sending REST request to Colhelper API.
- Subject to access to the software code documentation for the current version, managing a transition plan from SRL6 to 8 on the current ELViS system (Virtual/Transnational Access call management tool) to the new product.
All code and software will be documented and made open source. MNHN guarantees a technical extension of the system to incorporate future DiSSCo e-services (e.g. UCAS, unified catalogue).

The construction workplan spans two phases:
• Phase 1 (23 months 2021-2023): development of Colhelper for multiple institutions with single sign-on authentication (SSO Keycloak), visit procedures, in English, with ELViS branding and design, including a dashboard and functionalities to configure roles, rights and workflows. This is a sandbox for phase 2.
• Phase 2 (12 months 2023-2024): Implementation phase with 6-12 interested partner institutions whose roles and workflows will be configured in a sandbox; cross-testing and collection of specific user requirements. In parallel, multi-institutional development of other functionalities (loans, DoD, sampling, information requests) and test progressive introduction with institutions. Creation of APIs connecting ELViS-Colhelper.

Next, the launch and service provision shall cover:

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• Phase 3 (24 months 2024-2026): deployment for entire DiSSCo community; accompaniment and integration of institutions, system optimisation, hosting and service provision.
• Phase 4 (2026 onwards): routine management of the tool, integrating and accompanying new institutions, helpdesk maintenance and servicing.

(Co-)development/management

As development leader, MNHN will mobilise qualified staff (Direction of digital innovation and IT services) in project management and development, subject specialists, a Product Owner and project management support within the Collections Department to ensure objectives are met.

Co-construction with DiSSCo partners will be driven via Agile solutions and will ensure continuous involvement of the Central Hub, supplemented by a panel of institutions in Phase 2: this ensures monitoring of the DiSSCo technical framework and awareness of the partners' requirements.

As a service provider, MNHN is offering to ensure the support provision (website maintenance/helpdesk) and accompany integration of future DiSSCo institutions.

These developments should implement impact assessment tools (dashboards/per institution/per request type, etc.) which could allow for the provision of indicators for DiSSCo management and user institutions.

Service provisioning/hosting

For the next three years, RECOLNAT and MNHN are committed to modernising their IT services. By way of aligning the RECOLNAT/MNHN trajectories with DiSSCo, MNHN proposes providing the IT infrastructure to host the backend of ELViS by handling service maintenance and data security.

Training material/support

MNHN would recruit a Product Owner to manage the development plan, following Agile methods to lead a working group comprising partners involved in phases 2 and 3. This will require monitoring using collaborative project management tools, bespoke support/training and user guides.

Community engagement/capacity building

As leader in the development of ELViS, MNHN would organise progress reports for the DiSSCo community and commits to promoting the value of the tool for a vast community.

Additional remarks

Costed phasing for ELViS development and service provision

Here below, the MNHN suggests a costed plan for the complete construction of ELViS (visit requests, loans, DoD, sampling) for DiSSCo institutions, broken down into 2 phases (see below #1, #2) from 2021 to 2024, followed by a phase of service introduction beginning in 2024. Phase #3 comprises a two-year-long implementation of the service for the DiSSCo community (2024-26) and finally phase #4 launches the routine service provision.

The MNHN intends to fund the first phase, using budgets earmarked Synthesys+ and in-kind contributions in order to prepare the existing tools to enable deployment and use as a sandbox to initiate co-development work with a pool of partners in phase #2. The workload required for phase #2 (2023-24) will require far greater investment and external resources amounting to 65-70% of the total estimated budget.

The scope of the work for phase #3, which corresponds to deployment of the service among the whole community, will depend on the number of institutions requesting access to the service. At this stage, the estimation for this phase anticipates the integration and accompaniment of 40 institutions over 24 months. Overhead costs are not included in the phased budgets below. Moreover, IT hosting service costs are also not included. MNHN has costed these expenses at 16 000€/year but intends to capitalise on the IT hosting service already acquired through Colhelper. These costs can therefore be considered as an in-kind contribution from MNHN for the DiSSCo community.

Phase #1-1 (16 months from 01/10/2021 to 31/01/2022): Development of Colhelper V2, preparation of multi-institutional foundation for phase #2
Phase currently underway:
- Development of the infrastructure for the hosting of institution/user profiles (workflows, functionalities, forms

~~Development of the infrastructure for the hosting of institution user profiles (workstation, functionalities, roles~~
and tests);
- Bilingual version EN-FR.
Implementation: (in-kind and Synthesys+)

Phase #1-2 (7 months from 01/02/23 to 30/08/2023): Development of Colhelper V2; Europeanisation of
Colhelper V2 multi-institution
- Multi-institutional features, development of configuration and user institution view;
- With ELViS graphic design;
- Development of dashboard;
- SSO Keycloak
- User guide and training material.

Implementation: 105 000€
- Management, production of training cycles and user guides: Product Owner (PO) – 5 PMs (25 000€)
- Coordination of IT team, service providers and subject specialists: project manager – 3 PMs (20 000€)
- IT design, consulting technicians and development: external service provision – 60 days (60 000€)

Phase #2 (12 months from 01/09/23 to 30/08/2024): Launch of co-development with Colhelper V2
Commitment to co-construction work with 6 to 12 partners and refinement of gap analyses and needs
prioritisation.
Including an initial development component based on the "visit request" functionality:
- Guidance on how to use the tool;
- Roles and workflow settings;
- Cross-testing of visit requests between institutions;
- Opening visit requests to external users (step-by-step).
In parallel, the development of adjacent functionalities to allow for progressive introduction of co-development
and cross-testing:
- Loans, sampling, DoD;
- API for connecting the call management service.

Implementation: 390 000€
- Management, production of training cycles, user guide: 1 PO – 12 PMs (60 000€)
- Change management, ensure uptake of the tool: 2 Change Managers – 18 PM (100 000€)
- Helpdesk, assistance levels 1 and 2: 2 supports – 12 PMs (45 000€)
- Coordination of IT team, service providers and subject specialists: project manager – 6 PMs (40 000€)
- Project coordination with partners (meeting organisation, workshops): 1 coordinator – 12 PMs (65 000€)
- Technical and development consultancy: external service provision – 80 days (80 000€)

Phase #3 (24 months from 01/09/24 to 30/08/2026): Launch ELViS "on-boarding" (24 months)
Official launch of ELViS with capacity to welcome DiSSCo member/partner institutions.
- Guidance on how to use the tool;
- Role and workflow settings.
And service provision:
- System optimisation development;
- Integration and support of new institutions;
- Website maintenance;
- Helpdesk.

Implementation: 245 000€
- Management: 1 PO – 6 PMs (30 000€)
- Integration institutions "on-boarding": 1 AMO – 24PMs (130 000€)
- Helpdesk, assistance levels 1 and 2: 1 support – 12 months (45 000 €)
- Corrective maintenance / security / update system: external service provision – 40 jours (40 000€)

Phase #4 (from 01/09/26): Routine annual service provision
ELViS is fully operational and ready to receive the developments of other e-Services (e.g. the unified
~~catalogue). The MNHN hosts, maintains and provides the service:~~

catalogue). The MNHN hosts, maintains and provides the service.

- System optimisation development;
- Integration and support of new institutions;
- Website maintenance;
- Helpdesk.

Annual service management: 80 000€ / year

- Management and community engagement, capacity building in usage and service promotion – 1 CP – 3 PMs (15 000€)
- Helpdesk: assistance levels 1 and 2: 2 supports – 12 PMs (45 000€)
- Corrective maintenance / security / update system: external service provision – 20 days (20 000€)