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DELIVERABLE REPORT

WP2 MGT2 - Pilot scheme for the management of a distributed research infrastructure offering harmonised, interoperable and integrated services

D2.2
Integrated tool for access monitoring

Due date
M06

PROJECT DETAILS

PROJECT ACRONYM	PROJECT TITLE
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NATURE

R – Report

DISSEMINATION LEVEL

☒   P - Public

☐   PP - Restricted to other programme participants & EC: (Specify)

☐   RE - Restricted to a group   (Specify)

☐   CO - Confidential, only for members of the consortium

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2.1	21/02/2023	Riccardo Brancaleon	The "Cookie management" section has been added following the reviewer's comments	Revised version

CONTENTS

INTRODUCTION

The present deliverable describes the overall design and structure of the integrated online system to support the IDRIN operation.

Taking into account the outcome of Task 2.1 (Infrastructure set-up and operation, guidance to access providers and users) described in Deliverable D2.1 (Detailed procedures for integrated TA), the system has been designed to integrate into a Single Entry Point all the tools for the management of the techniques catalogue, the proposals, the users, the projects, in a set of standardized online procedures. The system will collect and organize a large set of data and information that will be the base for a Business Intelligence Analytics tool, that will allow a continuous monitoring of the IDRIN operation.

This deliverable describes the technical aspects of the different components of the platform and offers an overview of its main functionalities.

PROJECT ARCHITECTURE

System Architecture

The NFFA NFFA EUROPE PILOT EUROPE PILOT online platform complexity requires multiple actors to be interfaced to ensure all functionalities work correctly.

Besides the base parts, common to all n-tier architecture web-apps, more services have been added to accommodate all requirements.

The base parts are:

1. **Database (DB)**
   The part where all working data1 is stored.
2. **Backend (BE)**
   The part responsible for all data elaboration and validation, and in charge of orchestrating most services.
3. **Frontend (FE)**
   The part responsible for showing data and allowing authorized users to interact with it. A correct design of this element, is fundamental to assure the best user experience.

Added services:

4. **Content Management System (CMS)**
   This part of the solution is a secondary backend only in charge of handling the public area data that can be edited directly by the NFFA management.
   The CMS has its own separate database to host all the content to be shown.
5. **IDP service (identity provider)**
   Responsible for saving user information, authentication, role mapping and authorizations.
6. **PDF document service**
   Responsible for generating downloadable PDF documents for each proposal
7. **Analytics**
   Responsible for allowing custom reports in graphic form to better track the usage of the NFFA EUROPE PILOT webapp
8. **BI service2**
   In charge of manipulating the data so that it's easier to elaborate by the analytics part

As anticipated on the list, the center of the NFFA EUROPE PILOT online platform is the Backend component, as it's in charge of connecting most of the different parts and services required by the online platform in order to work correctly.

As we can see in Figure 1, it's at the center of the solution and it's used to orchestrate the data flow.

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[1] Except for CMS data and users' information, in compliance with the General Data Protection Regulation (GDPR) law
[2] This layer may not be needed depending on the analytics service chosen for part 7., or may be integrated in the analytics solution

In the simplest scenario the FE sends the BE a request for information. The BE then queries the DB and sends the data to the FE. This is a unidirectional data flow where no data is saved to the BE, as its purpose is to show data to the user.

The second most basic scenario is editing data in the catalog. In this case the frontend first requests the already existing data, which is fetched from the database as in the previous case. Then, after editing, it sends the BE the updated data to be saved. The BE then checks that the data is valid and compliant with database and business logic rules, and then saves it in the different tables involved, adapting the data coming from the FE to the structure chosen for the database.
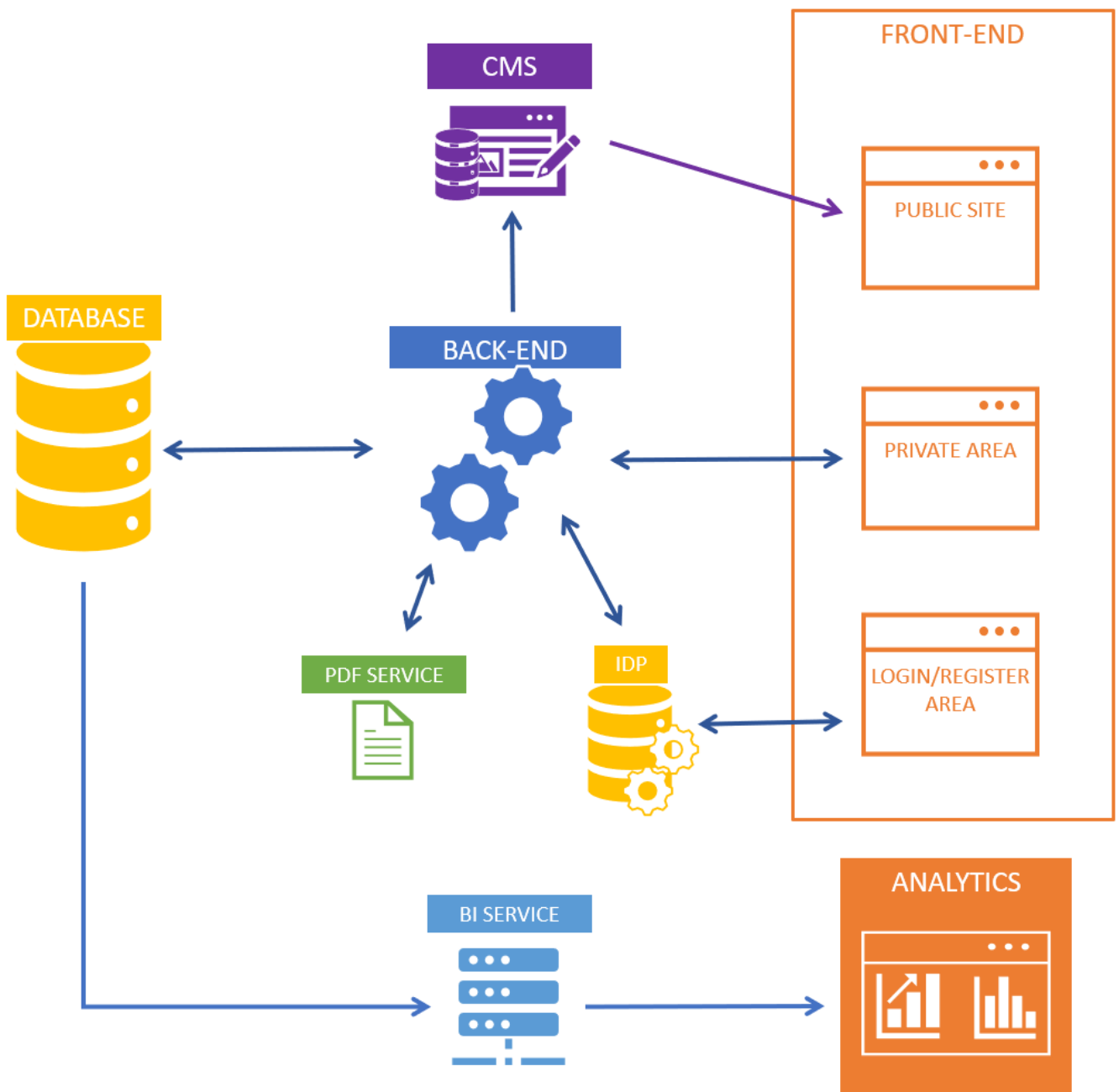

Figure 1. Data flow in the implemented system

In reality, other elements need to intervene in both scenarios.

In the first case the public catalog is inserted in the public site, which is mostly created with a CMS in charge of the creation of most of the static pages.

It's the CMS that queries the BE for the information needed, and then sends it forward to the website along with the rest of the CMS data.
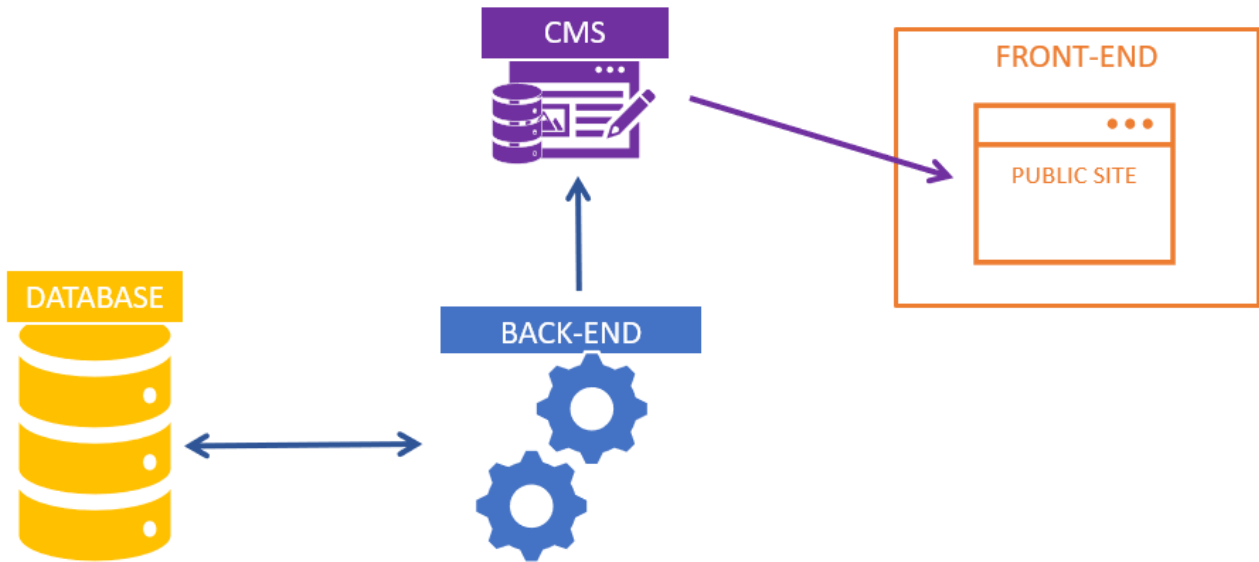

Figure 2. Base unidirectional flow

In the second case, before being able to modify the data, the user needs to be logged in the system, which is achieved by first passing through the FE-LOGIN, that sends back an identification token that, from then on, the FE will use when making a request to the BE. The BE will doublecheck that identification token against the IDP to see if the user is authorized to change the data.
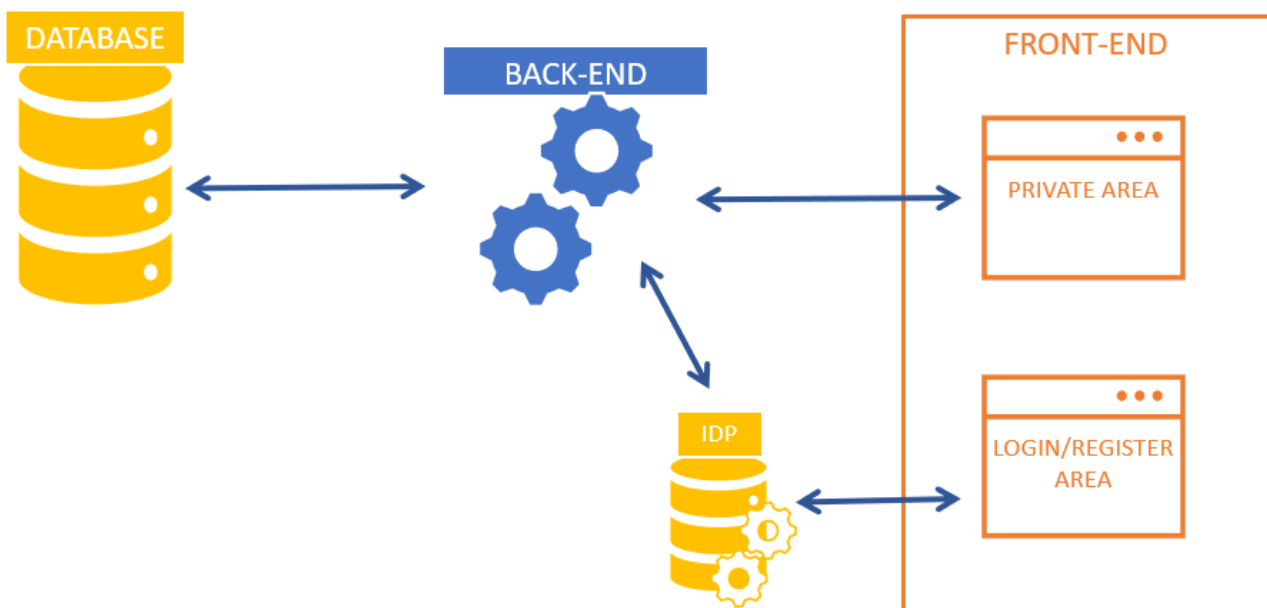

Figure 3. Elements involved in the authentication needed to modify data in the main database

Database

The main database is a relational database. This database stores all the data relative to Techniques, Institutions, Proposals, Calls and the rest of the data necessary for Application submission and lifecycle. We'll go into detail about the database structure later on in the DATA ARCHITECTURE chapter.

Backend

The backend is built in *Python* with a framework called *Flask.* As has been seen, it's the center of the solution and it performs all tasks related to dataflow and business logic.

Frontend

The frontend is the interface that connects the user to the system. Its main task is to offer the user a set of simple and intuitive tools to read and manipulate the data.

The NFFA EUROPE PILOT online platform requires a complex structure where we can identify three main areas of the frontend:

- **The public site**
  This is the part of the site that everyone can see, where all communications between the NFFA management team and the end users take place.
  It requires its own backend and database (CMS) to allow the NFFA management team to autonomously publish communications and other information to the user.
- **The private area**
  This is the area where all data interaction happens. It's the part of the site available only to registered users that are able to either manage the catalog (Admins, WP Leader)[3] or to create, edit and submit a proposal and, at a later stage, to evaluate the feasibility of proposals and track the progress of each project.
- **Login/Register area**
  This area is separate from the main site for security reasons, in adherence with current best practices. It handles all the interactions required to registration and authentication of the users

Content Management System

In order to allow the NFFA Management team to insert content and communications in the site without relying on the software development team, a CMS is integrated in the solution. This entire subsystem has its own database, users and authentication service.

This subsystem allows simple users (with admin privileges) to create parts of the website without needing programming skills.

Identity provider (IDP)

The identity provider is one complete package providing all the necessary parts to manage registration, authentication and roles of all users.

In order to do so it has its own separate database, its own interfaces for registration and login and its own backend in charge of all user data elaboration.

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[3] Authorization and roles will be discussed in a later chapter

PDF Service

One or more microservices are needed to perform self-contained specific tasks. The first to be implemented is a PDF printing service to generate aesthetically pleasing PDF documents for proposals.

Analytics

An important part of the tool is the possibility to generate ad hoc reports to highlight usage of the platform based on various metrics and aggregation.

With the analytics service the management will be able to have a complete and detailed overview of the platform usage, and will be able to generate new dashboards on demand as new needs arise.

Depending on the platform chosen for the analytics there may be the need to add a BI layer to perform a first stage of data cleaning, aggregation and elaboration, but in any case, it will be transparent to the user.

Cookie management

This section has been added following the reviewer's comment related to the First Periodic Report.

We have taken significant steps to ensure that we respect individuals' privacy and protect their personal data, adopting the most restrictive approach to cookie management, removing all non-essential cookies and maintaining only technical cookies.

The decision to provide users with only technical cookies and not to offer the option to exclude or select specific cookies is based on the principle of data minimization, which is a key aspect of GDPR compliance. The principle of data minimization states that only the minimum amount of personal data necessary for the specified purpose should be collected and processed. By providing only technical cookies, we are ensuring that we collect only the minimum amount of data necessary for the operation of our website, and that we are not collecting any unnecessary personal data.

In addition, providing users with the option to choose which cookies they wish to use or to exclude non-essential cookies can be complex and confusing for many users. It requires a high level of technical knowledge and an understanding of how cookies work. In some cases, it may even lead to users inadvertently disabling essential cookies, which could negatively impact their experience on our website.

Therefore, we have opted to provide only technical cookies on our website, as these are essential for the proper functioning of our website and do not require explicit consent from users. We believe that this approach provides the highest level of data protection while maintaining a user-friendly experience on our website.

The following actions have been taken to achieve this goal:

Removal of embedded components from third-party sources: We have removed all embedded components from third-party sources, such as YouTube videos, and replaced them with preview images and links to the videos. Additionally, we have removed reCAPTCHA from the forms and replaced it with Mosparo, a service hosted on our server that provides the highest level of GDPR compliance and does not use cookies. Mosparo is designed to offer an alternative to reCAPTCHA that allows us to verify that the user is human, while protecting their privacy and personal data. By using Mosparo, we ensure that we remain compliant with all applicable data protection regulations and provide our users with a more privacy-focused experience.

Replacement of Google Analytics with Matomo: We have replaced Google Analytics with a self-hosted analytics service named Matomo, which has been configured to work without cookies. This provides a better level of control over data privacy and protection of individuals' personal data. The IP addresses of visitors to our website are truncated, ensuring that only anonymous data is collected and processed.

Replacement of external resources and assets with local resources: We have replaced all references to external resources and assets, such as JS, fonts, and images, with local resources. This ensures that no connection with other servers is established and provides better control over data privacy and security.

By implementing these actions, we have significantly reduced the collection of personal data, minimized the risk to individuals' privacy, and ensured compliance with GDPR requirements. We are committed to maintaining these practices and regularly monitoring our cookie management to ensure that we remain in compliance with all applicable regulations and policies.

This initiative has received funding from the EU's H2020 framework program for research and innovation under grant agreement n. 101007417, NFFA-Europe Pilot Project

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Data architecture

The catalog architecture defined initially as shown in Figure 4 has undergone and will undergo more changes, but the main logic and functionalities will be preserved through the project.
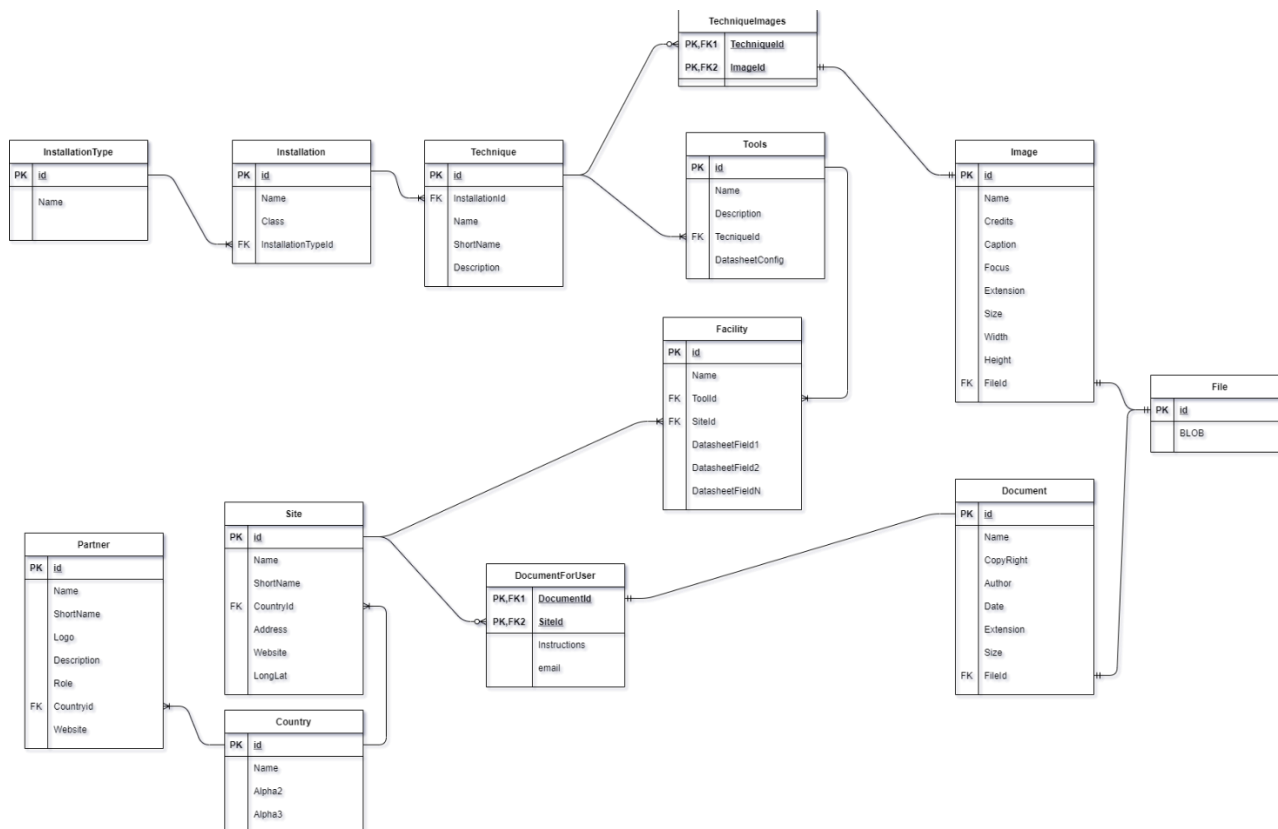
Figure 4. First draft of database architecture

To better understand the data structure, we can separate the database in smaller parts and explain those hierarchies before defining how those are interconnected.

Techniques Hierarchy

TECHNIQUES are the smallest, most granular elements of our three-step hierarchy

Top level: INSTALLATION

Divided in 6 main categories (Lithography & Patterning, Growth & Synthesis, Structural & Morphology Characterization, Electronic & Chemical & Magnetic Characterization, Nano to Micro/Macro, Theory & Simulation).
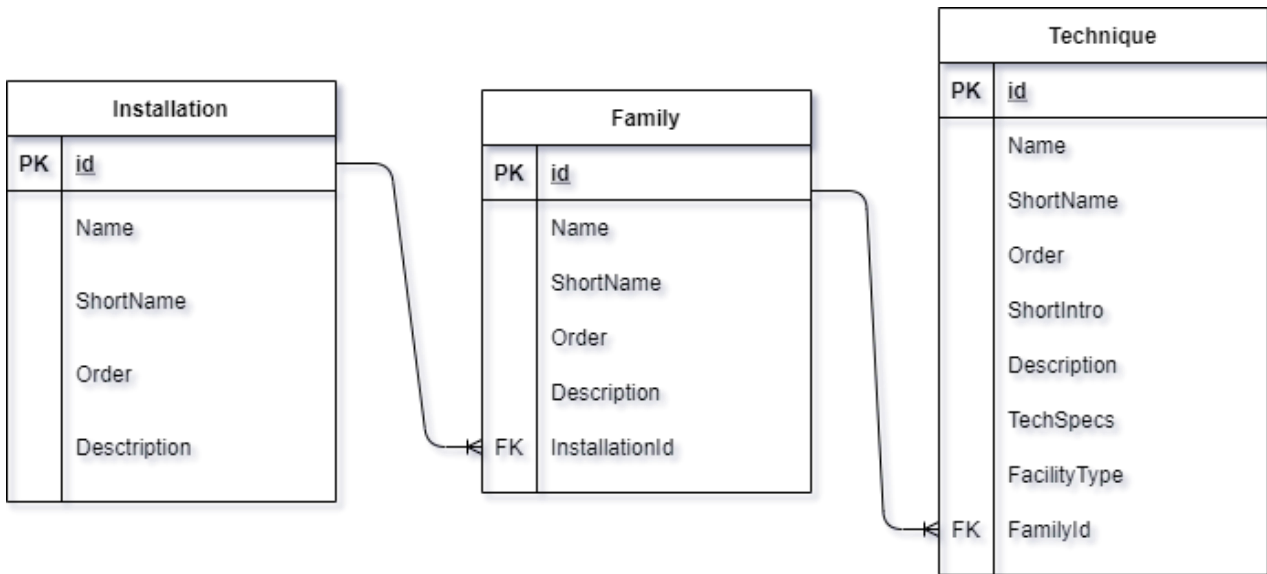
Second level: FAMILIES

Used simply to group Techniques together more broadly.

Third (and last) level: TECHNIQUES

The main element of the catalog, the list of possible experiments and other actions that can be performed in the project. Has more properties than the other elements of the hierarchy, as *technical specifications* and associated *facility types*.

Institutions Hierarchy

Institutions represent the partner location where the technique will be executed. As such it's a very simple hierarchy where a Partner may have more than one site. A small deviation from this simple setup is given by the fact that there is a special kind of partner, flagged as THIRD PARTY, One or more users are associated with each INSTITUTION, called TLNET-NODE, responsible for said
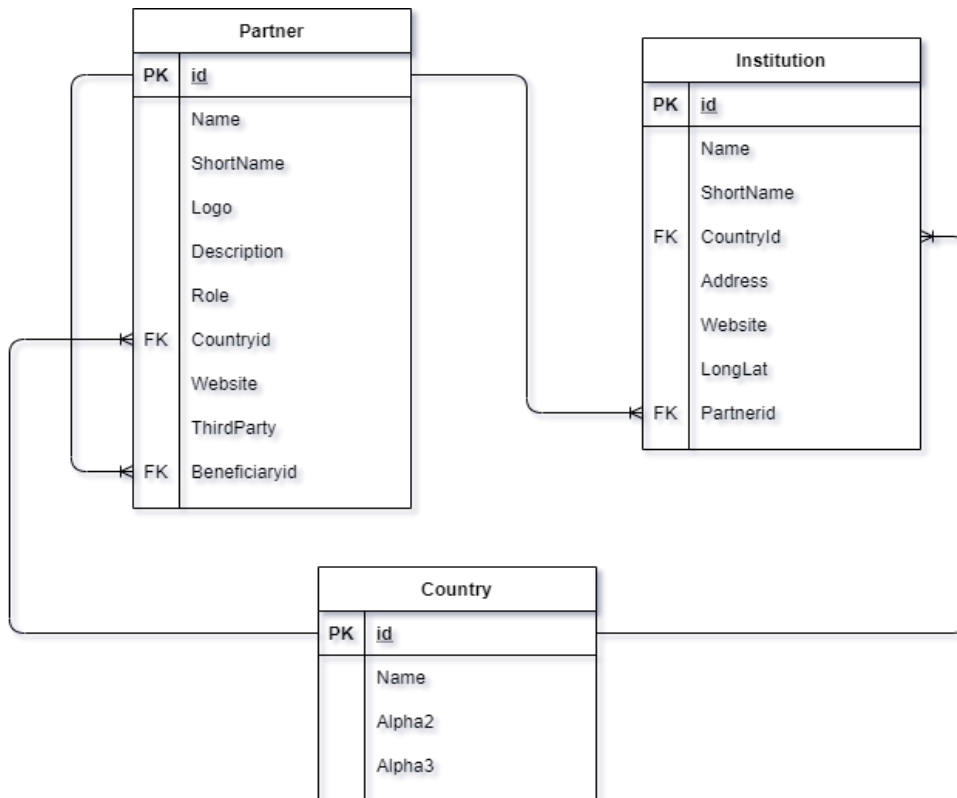

Figure 5. Institution hierarchy

INSTITUTION.

Techniques-Institutions relation

We have identified an association between INSTITUTIONS and TECHNIQUES. For each of these associations additional information is present to specify how the technique can be performed in that location.

Please note that an INSTITUTION represents the local branch of a partner and that if multiple partners have local branches in the same site, those are different INSTITUTIONS
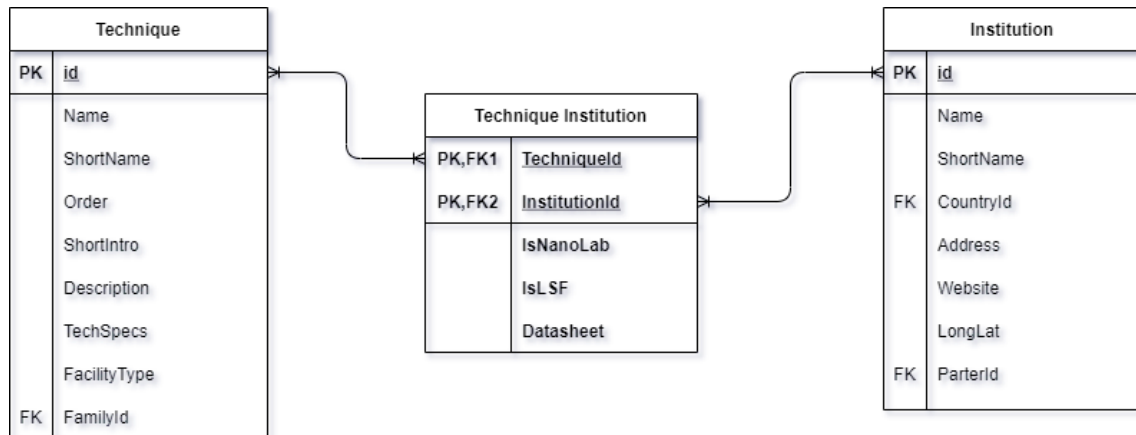

Figure 6. Technique-Institution association

Proposal

Being able create a proposal is the core functionality of the platform. Hence, the proposal is the core item of the database.

All other data inserted in the platform is necessary for the correct compilation of the proposal and to assist in the subsequent steps of evaluating said proposal.

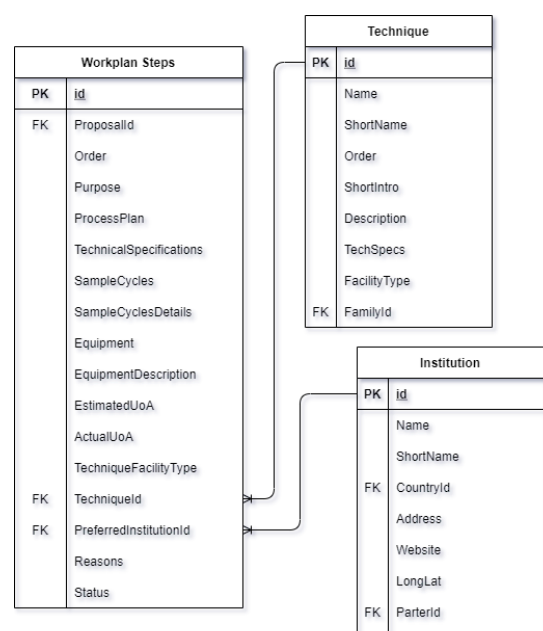A proposal contains various lists to define various parts of the process.

Figures
A list of pictures can be associated to each proposal to support the description of workplan or project objectives.

Workplan Step
A list of steps required to complete the project. Each step has various properties and descriptions to be filled and to each step is associated a technique (mandatory) and optionally a preferred institution. This allows to identify the associated TLNET-NODES in charge of evaluating the *feasibility* of the proposal.

A very important information for each step are the Units of Access (UoA) requested, evaluated by the TLNET-NODE and finally the actual UoA used in said step of the project.

Sample

A proposal may require performing some experiments on one or more samples. These samples need to be accurately described in the designated section according to the provided template.

Team Member

Each proposal has one PRIMARY INVESTIGATOR (PI) and may have one or more members. For each member we keep track of their *role*, their *approval status*, and some more information related to the proposal.

Personal user information, as mentioned previously, is stored in a different database included in the IDP service.

Support Lists

Many different lists are present for the sake of identifying possible properties of the Proposal.

Call

Each proposal belongs to a single call only, identifying the temporal period of submission of the proposal itself. Usually, the period is 3 months long and the association is performed automatically by the platform, but it can be overridden by an administrator.

Status

Each proposal goes through different phases and may have different statuses during its lifetime.

It starts in draft status and can be submitted and then approved or rejected by management, or withdrawn by the user.

The next phases of the proposal lifecycle result in more statuses being assigned to the proposal.

The lifecycle of the proposal will be explained more thoroughly in the next chapter.

	Proposal
PK	id
FK	StatusId
FK	CallId
	IsHidden
	Title
FK	ScientificDomainId
	MaterialSystem
	Application
	Abstract
	StateOfTheArt
	Objectives
	References
	Notes
	GenderDimension
	PreviousWorks
	HasRelatedProgram
	RelatedProgram
	HasIndustryInvolvement
FK	IndustryInvolvementId
FK	IndustryTypeId
FK	IndustryInvolvementTypeId
	IsResumbission
	ResubmissionId
	ResubmissionDescription
	HasPrevious
	PreviousId
	PreviousDescription
	FeasibilityStatusId

FUNCTIONALITIES

Public site

Catalog Navigation

A user can access the catalog of offered tools by clicking on the corresponding "OFFER tools catalogue" in the tall navbar at the top of the screen. Inside this page is a general overview of said tools, alongside a list that contains all the available installations.
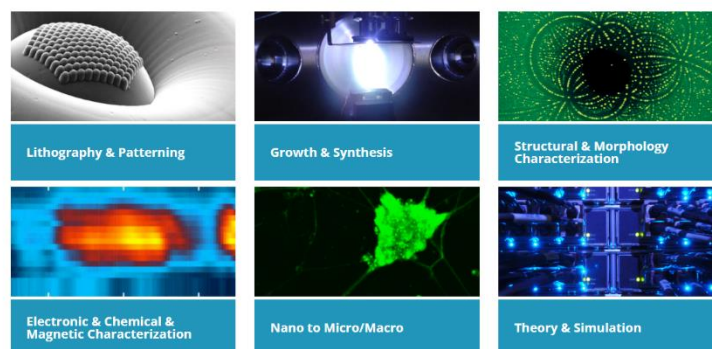

Figure 7. Public catalog

Clicking on an installation opens up a page presenting all of the technique families they encompass, each of which displays each individual technique as a clickable card within a carousel view.

At the top right of each technique is a starred bookmark which, if clicked, will add the related technique to the user's wishlist. This function is available regardless of their login status (though it's recommended to log in so those choices can be recorded most reliably).

Clicking the "view all" link next to each family's name leads to a page that displays all of that family's techniques at once, eschewing the carousel view.

Clicking on a technique's card leads to a page detailing the technique itself, complete with:

- The technique's name, followed by a reminder of its family and the installation they're in
- The technique's description
- All figures related to the technique (at least one)
- A list of all NFFA-Europe laboratories the technique is available at, each a link leading to the laboratory's page
- An interactable Google map of Europe displaying the aforementioned laboratories

This page also includes an "add to your wishlist" button at the top right, functioning exactly like the starred bookmark detailed previously.

Wishlist

Any user will be able to add items to the wishlist from the public site.
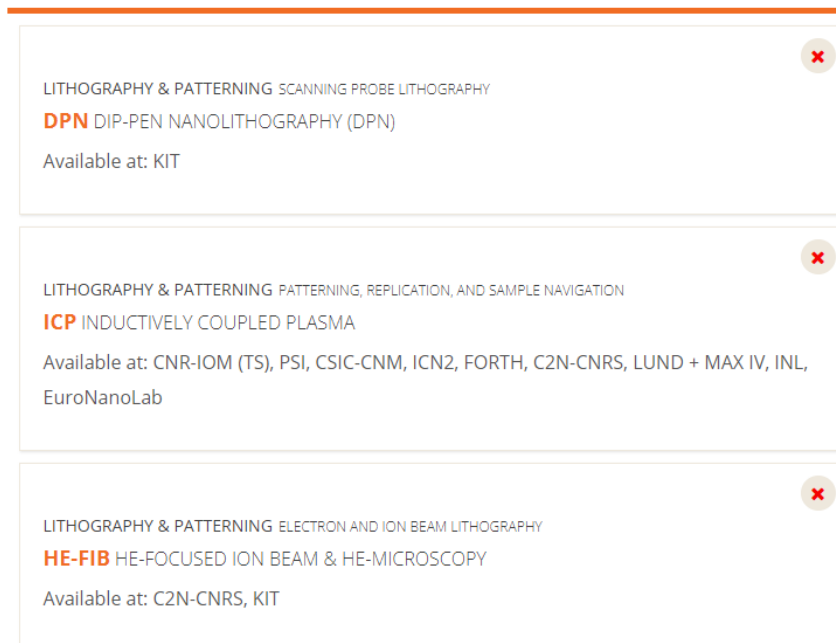

Figure 8. Wishlist main interface

An unregistered (or not logged in) user's wishlist will be saved in his browser, while a logged in user's wishlist will be saved to the platform's database.

Upon registration or login, the local wishlist will be synchronized with the database.

Figure 9. Header view with populated wishlist

Catalog

The catalog

Partner and Institution management

The Content Manager can create, edit and delete Partners and Institutions in the private area.

The main page of the private area displays Partners in a card view, and a plus button to the right allows the user to create a new one. The pencil button at the bottom of each card allows them to edit them, whereas the adjacent expand button simply gives them all the details pertaining to the Partner.

The edit function requires the user to save the changes in the end, or otherwise undo them via a separate button (or just by closing the page).

Figure 10. Partner catalog view in the private area

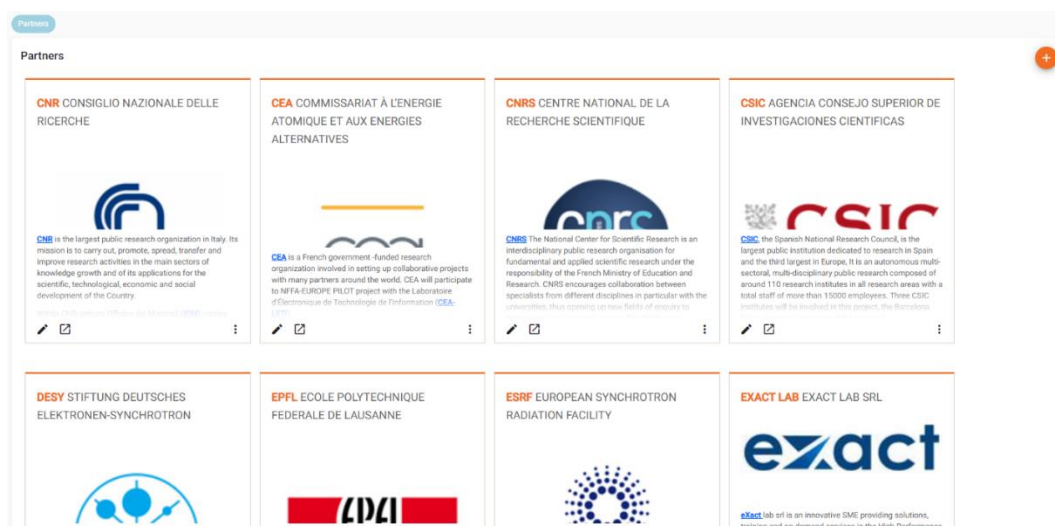Additionally, any Partner can be deleted by clicking the red trash button, accessible via the edit and detail views.

Clicking on any of the Partner cards will display all of that Partner's Institutions as another card list beneath it, with the same interaction features as the Partners themselves, that is:

- Create new (plus button)
- Edit (pencil button)
- View details (expand button)
- Delete (trash button)

Clicking on an Institution's card will instead lead the user to its details.

Finally, the top of the page displays a breadcrumb trail in pill form for ease of backwards navigation.

Installation, Family and Technique management

Contant Manager can create, edit and delete Installations, Families and Techniques in the private
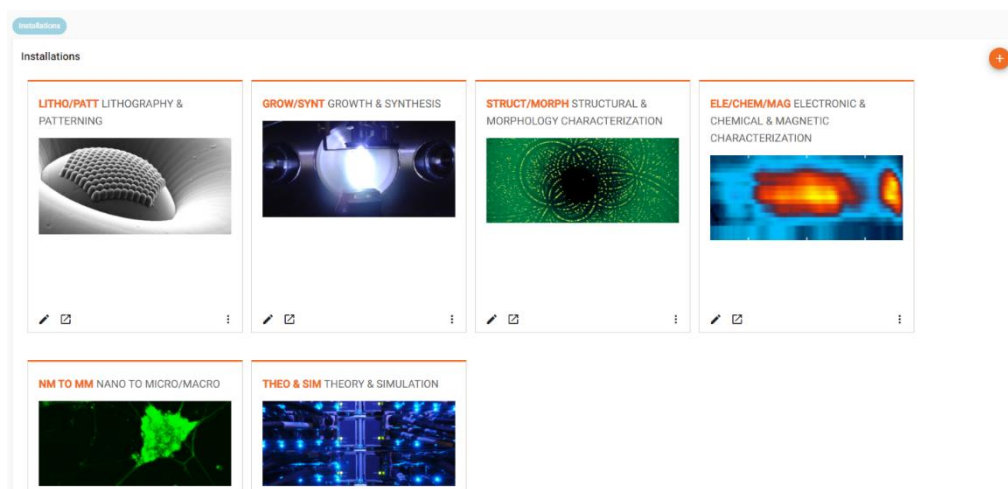

Figure 11. Installations catalog view in the private area

area.

The main page displays installations in a card view, and a plus button to the right allows the user to create a new one. The pencil button at the bottom of each card allows them to edit them, whereas the adjacent expand button simply gives them all the details pertaining to the Installation.

The edit function requires the user to save the changes in the end, or else undo them via a separate button (or just by closing the page).

Additionally, any Installation can be deleted by clicking on the red trash button, accessible via the edit and detail views.

Clicking on any of the Installation cards will display all of that Installation's Families as another card list beneath it, with the same interaction features as the Installations themselves, that is:

- Create new (plus button)
- Edit (pencil button)
- View details (expand button)
- Delete (trash button)

Furthermore, each Family also contains a list of Techniques; the process for handling them is precisely the same as the relation between Installations and Families: the user can click on a Family's card to access its Techniques list, and Techniques also have the same available interactions as Installations and Families (save the possibility of clicking their card to open up a fourth list – clicking a Technique's card will instead lead the user to its details).

Finally, the top of the page displays a breadcrumb trail in pill form for ease of backwards navigation.

Technique-Institution availability

The Technique creation and edit views also contain a set of important checklists, representing the Institutions said Technique is available at. Each Partner has its own, visually separate checklist, each entry on the list corresponding to a single Institution. If the Technique in question can be done via both, Large Scale Facility or Nano Lab, the user will be prompted to select which one of those (or both) is/are available at the Institution site.

Figure 12. Example of facility type selection in case of multiple choice

User Management

As previously said, there are conspicuous differences between the public and private area. Hence, it's important to handle user management.

Here we cover the main functionalities: user registration, profile management and role management.

Registration

Registration is offered through the IDP service. When registering, all required fields are already presented to the user.

Profile Management

The user is able to review and edit all their information directly in the private area of the platform, without involving the IDP service directly and with a better user interface.

Role Management

We identified different types of users of the platform and their relative permissions.
We must distinguish two different types of roles: user role across the platform and user role relative to a proposal.

On the platform we can identify the following roles:

- **Admin - TLNet central** – de facto equivalent to the NFFA management
- **Installation Admin** – users in charge of the maintenance of their own TECHNIQUES, FAMILIES and INSTALLATIONS data
- **TLNet nodes** – users in charge of the maintenance of their own PARTNERS and SITE data, and also of the feasibility evaluation of the proposal's WORKPLAN STEPS relative to their site
- **Catalog** – users with read access to all the catalog

Relative to the proposal we can identify the following roles:

- **Primary Investigator (PI)** - Team Leader – The creator and main person responsible forthe proposal
- **Team member** – member included in the project by the team leader, can visualize and approve their inclusion
- **Admin** – can view all proposals and support PIs in the process by changing status or associated call
- **TLNet node** – evaluate feasibility of single steps of his responsibility
- **TLNet central** – has the final word in overall proposal feasibility
- **ARP member** – has the final word over the technical scientific evaluation and ranking of the proposals of a call

Full details of roles and permissions are summed up in the *permission matrix* (Appendix A)
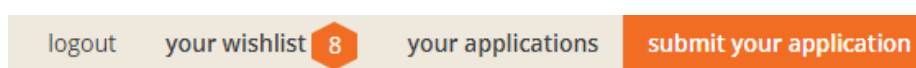
PROPOSAL WORKFLOW

As we already mentioned, the main scope of the NFFA EUROPE PILOT platform is to handle ALL steps of a proposal lifecycle. The Proposal Workflow can be divided in multiple parts, each with its actors:

1. Creation and submission – creation of the proposal to be submitted for evaluation, filling each field as correctly as possible – involved: simple registered user as *primary investigator* (PI) and team members
    i. Draft
    ii. Compilation
    iii. Member association
    iv. Eligibility evaluation
2. Feasibility Evaluation – Evaluation of the feasibility of all the workplan's steps included in the proposal – involved: *TLNet nodes* and *TLNet central* to overview the process
    i. Local   feasibility
    ii. Step feasibility
    iii. Overall feasibility
3. Technical Evaluation – Evaluation from a technical standpoint of the scientific interest of the submitted proposal – involved: panel of experts
4. Scheduling
    i. Step by step
    ii. Site by site
5. Execution
6. Retrospective
    i. Provider info
    ii. User and provider reports and questionnaires
    iii. Reimbursement requests

Creation and editing

Figure 13. Different possibilities to create a new proposal (application)

The application section of the private area allows for the creation of a new application or editing of an existing one. Creation can also be accessed quickly by clicking on "submit your application", at the right extreme of the navigation bar on top.

Submission workflow

When a user creates a new application, they can either choose to Save it as a Draft or to immediately complete it, validate it and submit it.

One's applications can be accessed later through the "your application" page, from which they can preview the application or edit it, the latter option bringing them to a screen that looks and functions identically to that of a new application.

Once the application has been submitted it can still be previewed, but no longer edited. The NFFA Management team can then approve, reject or reset it to a Draft state.

Member association workflow

When a user adds a team member to an application, they must send them an invitation by clicking on the appropriate button (if they haven't saved their application as a Draft yet they'll be prompted to).

The application cannot be submitted until all pending team members have accepted or rejected the invitation by following the instructions in an e-mail the system will automatically send them.

Preview and print

Clicking on the "Preview" button in the "your application" page directs the user to a preview of the application, showing the following data points:

1. Proposal ID
2. Submission date
3. Title
4. Material System/Device
5. Application
6. Team leader, followed by a list of all team members who approved their invitation
7. Abstract
8. State of the Art
9. Objectives
10. Workplan
11. Samples
12. Additional Information
    a. Resubmission or Continuation
    b. Industry Involvement
    c. Open access program and location
    d. Gender Dimension
    e. Previous Work in The Field
    f. Additional notes
13. References
14. A sidebar containing:
    a. Scientific Domain
    b. ERC Sectors
    c. Keywords
    d. Techniques
    e. Figures
    f. Contents (with quick-access links)

Clicking on the "Download" button at the top right of the page will open a dialog from which a user can either print the file immediately or just download it as a PDF.

Admin functionalities

Each application in the "your applications" page will display a gear icon if the active user is an Admin. Clicking on this icon will give one the following options:

Change status

This will open a modal dialog from which the user can select a new status between the following options:

- Draft
- Submitted
- Withdrawn

Once they've made their selection, they can confirm it with the red "Change Status" button, or they can cancel with the "Cancel" button.

Change call

This will open a modal dialog from which the user can select a new call (detailed above) to associate to the application.

Feasibility

As seen before, the feasibility process can be split in three steps, each broader than the previous one.

The feasibility of a proposal is processed in the two weeks succeeding the end of the call and the system allows for notifications in case of delays in the process by some TLNet nodes.

Figure 14. Feasibility status colors

Local feasibility

Each TLNet node evaluates the feasibility of the proposal in their facilities. For each workplan step in their institution 4 statuses can be assigned with their relative color (Fig. 14)

- Feasible as Standard Service (blue)
- Feasible (green)
- Feasible with reserve (yellow)
- Not feasible (red)

During this process the TLNet node will also be able to define his own estimation of the Units of Access needed for the process (estimated UoA)

Step feasibility

The sum of all local feasibilities of a step by all involved institutions defines the overall step feasibility. The statuses a step can have are the same as the local feasibility, with a small addendum. If not all TLNet nodes have evaluated said step, then the status will be a partial status and a paler shade of the color will be shown (Fig. 14, second row)

The logic defining the overall step status is automatically applied as follows:

- If all TLNet nodes evaluated the step as not feasible, then it's not feasible.

- If even just one TLNet node evaluated it as feasible with reservations, then it's feasible with reservations.
- If even just one TLNet node evaluated it as feasible, then it's feasible.
- If even just one TLNet node evaluated it as feasible as standard service, then it's feasible as standard service.

Overall (proposal) feasibility

Similarly, to how the local feasibilities contribute to the step status, the combination of step feasibilities concur to the overall proposal feasibility, but in a stricter way.

In this case we have an "AND" condition instead of an "OR". I.e.

- If all steps are feasible as standard service, then the proposal is feasible as standard service.
- If even just one step isn't feasible as standard service, but is simply feasible, the whole proposal is simply feasible.
- If even just one step is feasible with reservations, the whole proposal is feasible with reservations.
- If even just one step is not feasible, then the whole proposal is not feasible.

In any case an admin (TLNet central) is always able to override the automatic overall feasibility status.

Approval

Once a proposal is judged feasible, it is examined by a team of ARP Members that evaluates its scientific interest and assigns it a ranking among other pending proposals.

Once all feasible proposals have been ranked, TLNet central assigns them institutions to satisfy their technique requisites.

It is likely that a proposal will be assigned to the preferred institutions as stated within the proposal itself, but generally TLNet central will give priority to proposals with higher rankings, and if preferred institutions cannot be assigned, they will assign institutions based on vicinity and convenience for the proposal's team.

Scheduling

Once a proposal has been approved, Institution Providers and users can schedule work sessions via an appropriate interface. TLNet central can interact with the scheduling process to ensure the two parties come to an agreement.

The system allows for a simple centralized overview of the schedule of all the steps of a proposal.

In this way all actors involved in the scheduling of a proposal may easily agree on the best dates to process the various steps of the considered proposal.

Execution

During the execution of the project TLNet central is able to track and update the status of each step of the proposal workplan. In this way it to have an overview of the completion of the project.

Another important information tracked in this phase is the actual value of UoA required to complete the project workplan, reporting the differences with the requested and estimated UoA.

All this information will be particularly useful in the analytics part of the tool, where said information will be available in simple and meaningful interactive dashboards.

ANALYTICS

During all the phases of the project the NFFA management has a complete overview of the state of all proposals tracked on the platform. All visualizations can be filtered or grouped by call and by any other property that can be relevant.

Interactive dashboards are created to allow the management to track all the important information, and support is provided so that the NFFA team can create theirown additional dashboards to track important metrics as needs arise.

Each of these dashboards will be setup to allow for easy reporting and data manipulation, enabling hence the easy investigation of the usage of the tool to understand patterns and users, their needs and how to improve the process, in addition to simplifying the reporting of all NFFA related activities.

APPENDIX A – PERMISSION MATRIX

Permission \ NEP Role	Admin (TLNet central)	WP Leader	Catalog	TLNet node	Proposal member[4]	ARP member
Techniques Catalog	Write	Write (own)	Read	Read	n.a.	Read
Institutions Catalog	Write	Read	Read	Write	n.a.	Read
Proposal	Read (all)	n.a.	n.a.	Read (owner of included Technique)	Write (PI) Read, Approve/Reject Inclusion (member)	n.a.
Proposal (management)	Change Status Change Call Approve/Reject	n.a.	n.a.	n.a.	Submit	n.a.
Feasibility	Read (all) Approve (overall)	n.a.	n.a.	Read (all steps) Approve (own steps)	n.a.	n.a.
Scientific Evaluation	n.a.	n.a.	n.a.	n.a.	n.a.	Approve Rank
Scheduling	Read (all)	n.a.	n.a.	Write	Write	n.a.
Execution Tracking	Write	n.a.	n.a.	Write	Write	n.a.
Reporting	Read (all)	n.a.	n.a.	Write	Write	n.a.
Reimbursement request	Read (all)	n.a.	n.a.	Write	Write	n.a.
Analytics	Read Create	n.a.	n.a.	n.a.	n.a.	n.a.

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[4] There is no explicit Proposal Member role in the platform, but it's important for the sake of understanding permissions in the proposal's lifecycle