iProcureSecurity PCP

Pre-Commercial Procurement
of Innovative Triage Management Systems
Strengthening Resilience and Interoperability
of Emergency Medical Services

D3.3 Tender platform and evaluation system development report

This project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement No 101022061.

Project

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Consortium	**SYNYO GMBH** (SYNYO), Austria **EMPRESA PUBLICA DE EMERGENCIAS SANITARIAS** (EPES), Spain **SERVICIO MADRILENO DE SALUD** (SERMAS), Spain **OSTERREICHISCHES ROTES KREUZ** (ARC), Austria **AZIENDA SANITARIA LOCALE BENEVENTO** (ASLBN), Italy **AGENZIA REGIONALE EMERGENZA URGENZA** (AREU), Italy **ELLINIKOS ERYTHROS STAVROS** (HRC), Greece **ETHNIKO KENTRO AMESIS VOITHEIAS** (EKAB), Greece **IZMIR BUYUKSEHIR BELEDIYESI** (IBB), Turkey **KENTRO MELETON ASFALEIAS** (KEMEA), Greece **ACIL AFET AMBULANS HEKIMLERI DERNEGI** (AAHD), Turkey **EMPIRICA GESELLSCHAFT FUR KOMMUNIKATIONS- UND TECHNOLOGIEFORSCHUNG GMBH** (EMPIRICA), Germany

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0.2	28.03.2022	Updated version (SYNYO)
0.3	12.042022	Updated screenshots and platform descriptions (SYNYO)
0.4	27.04.2022	Feedback (EMPIRICA)
1.0	30.04.2022	Finalisation and submission (SYNYO)

Executive Summary

This deliverable presents the main elements of the Innovation Procurement Platform. It highlights the main aspects of the technical concept including the development approach, frameworks and software tools that are used. Furthermore, the report includes the user interface (UI) design approach, which is building on research and analysis of good UI design practices. In addition, the frontend and backend of the Innovation Procurement platform is shown and main elements and functionalities explained. Finally, the Tender Manager component, that will allow the submission and evaluation of the tenders, is briefly presented.

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1 Introduction

This report provides an overview on the Innovation Procurement Platform[1] and the connected components that will be used to promote and manage the upcoming Call for Tender of the iProcureSecurity PCP project. The platform provides various functionalities which will allow suppliers to learn more about the upcoming call and find potential partners. As soon the Call for Tender is open, the platform will support suppliers in the submission of their offers. When the Call for Tender closes and all offers are received, the platform will allow the consortium to collect the evaluation results in a structured way.

In the following chapter the report highlights main aspects of the technical concept including the development approach, frameworks and the user interface (UI) design concept. Chapter 3 shows main functionalities of the frontend where suppliers can find more information about the tender and also look for other interested suppliers and the products and services that they promote. Furthermore, the backend of the platform is shown where suppliers can register to showcase their organisation. In addition, the tender manager component is presented which gives a brief overview on the submission and evaluation system. Finally, chapter 4 provides a brief conclusion and outlook of ongoing development and maintenance cycles throughout the project.

2 Technical Concept

2.1 Development approach

SYNYO follows an agile software development cycle for the platform development. This means that an early implementation will allow for continuous adaptions and revisions of the functionalities based on user requirements. This approach will ensure high intuitiveness and usability, and therefore sustainability beyond the project lifetime as the platform will be strongly tailored to the end-user needs. Figure 1 shows the applied Agile Software Development approach.

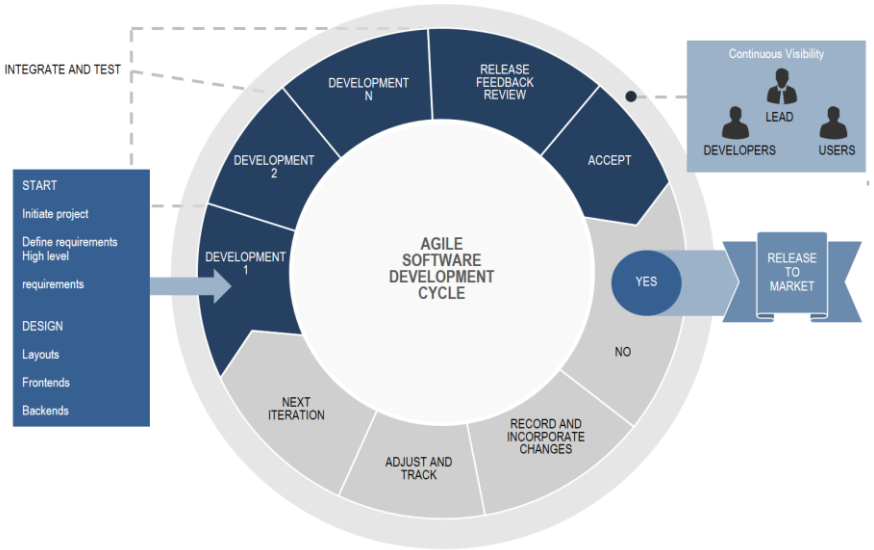

Figure 1: Software development cycle

[1] See https://innovationprocurement.com/

2.2 Development framework

In order to be most efficient, the platform is implemented with a flexible and scalable architecture and is built on the basis of use cases, which ensures high intuitiveness and usability of the provided interfaces and functionalities. For the technical implementation, several programming platforms/frameworks are used – including **Laravel**, **Bootstrap and MySQL**.

The following table provides an overview of the development environment that is showing the software for the back-end and the front-end of the platform.

Table 1: Development framework

Resource Type	Name
HTTP server	Apache
Programming Language	PHP
Database	MYSQL
Theme	Limitless
HTML, CSS & JS Framework	Bootstrap
JavaScript Library	jQuery
JavaScript Library	Google Recaptcha
Operating System	Linux Ubuntu
PHP Framework	Laravel
Laravel Package	Laravel Passport
Laravel Package	Laravel Modules
Laravel Package	Guzzle
PHP framework	Symfony Components

As main PHP framework Laravel was been chosen. Laravel is a web application framework with expressive, elegant syntax. Main reason for picking Laravel was the fact that it provides in-built security features and is meant to be secure by default. However, it also provides additional flexibility for complex use cases. The most important security features are:

- Cookie Security and Session Management
- Authentication
- Protection against multiple vulnerabilities, such as
    - Mass Assignment
    - SQL Injection
    - Cross Site Scripting (XSS)
    - Unrestricted File Uploads
    - Path Traversal
    - Cross Site Request Forgery (CSRF)
- Security Headers

2.3 Platform administration concept

The platform architecture is built on a centralised approach with a central administration unit, the AdminBase Panel, in the back-end which hosts the database and the interfaces. For the frontend, the platform has a public and a restricted user area, the latter for registered users only.

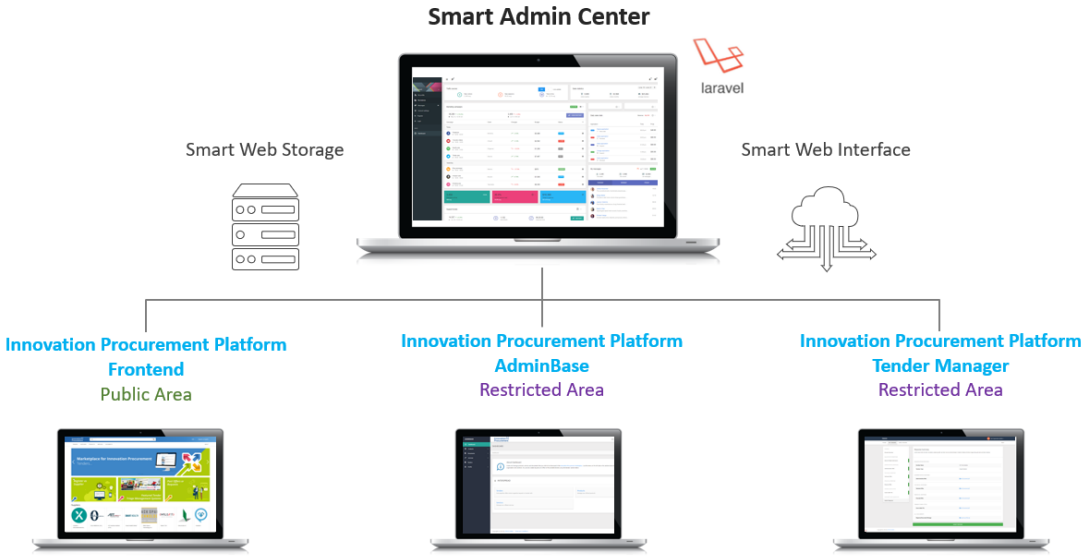

Figure 2: Innovation Procurement Platform concept

The platform is conceptualised as an open platform, where different target groups such as suppliers find information and services. In addition, a restricted part, where access will be provided based on user registration and authorisation, will be used to share specific information with selected target groups and build a dedicated community.

In order to make the administration of the platform as lean and quick as possible, it will be administered through the AdminBase. This allows for the step-by-step integration of modules and functionalities during the project-lifetime but also after the project has ended. As Figure 2 shows, a smart web interface accesses the smart web storage system. The platform is controlled through this interface, which can be continuously extended and adapted.

2.4 Technical architecture

The AdminBase (ADM) is a modern and lightweight administration panel application and core part of the platform. It is designed as a single point of entry for all administration of user registrations. As well, it is used to administrate all core database entities (organisations, products, documents, images etc.) and to manage all roles and rights in between.

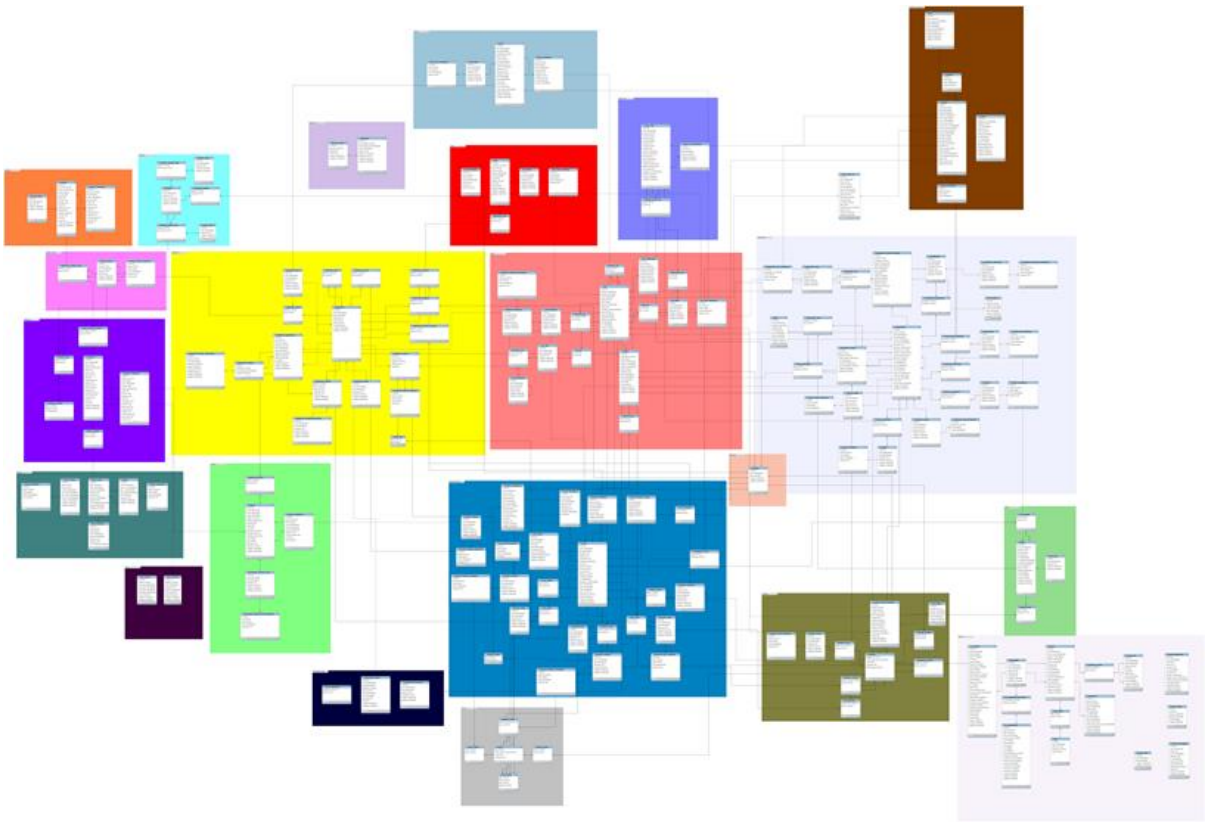

Figure 3: Software architecture

The restricted modules of the platform require a dedicated registration and user management, which is part of the technical architecture. Therefore, a dedicated registration and user management architecture was set up to ensure that all relevant user parameters can be taken into account.

2.5 UI conception

During the initial project months, SYNYO conducted extensive research on UI concepts and designs, focusing on the structure and appearance of the UI. This also included an analysis of typical tender submission and evaluation systems. Building on user experience (UX) research outcomes and state-of-the-art analysis, the development lead created a best practice template for structuring the platform user interfaces of the different modules. This includes not only the overall structure of how the content is provided, but also the size of particular sections. Figure 4 shows one of the templates that is used as an underlying guideline for the UI design of the whole platform.

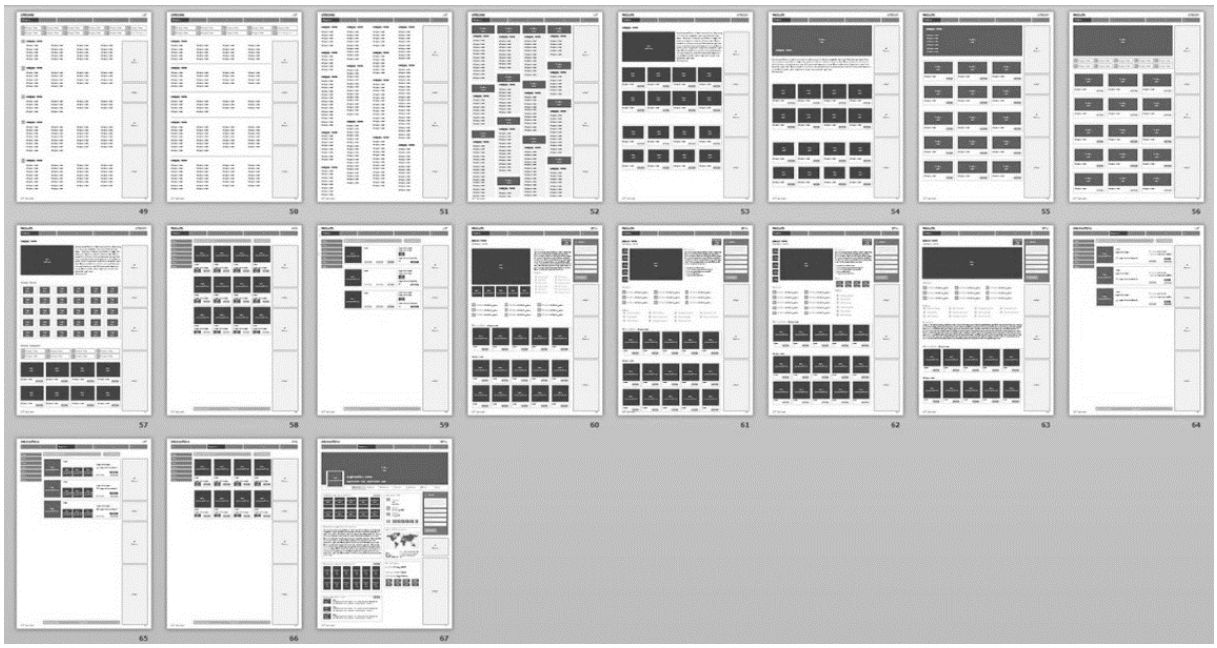

Figure 4: UI conception

2.6 UI design elements

Based on the platform concept and the initial UI conception, SYNYO created the design elements for the platform. The design elements are also used for additional materials and videos that are created to promote the platform and help users (e.g. during the registration or submission process).

Figure 5: UI design elements

3 Innovation Procurement Platform

3.1 Frontend

Each entity on the frontend is accessible from the main menu. It provides a filterable directory which can be viewed in list and grid view depending on the user's preferences. Furthermore, clicking on an item will open a new window which provides detailed information regarding a single item.

The frontend has pages regarding cookie and privacy policies, terms and conditions as well as a settings function which can be accessed via a button in the footer of the page which allows to opt-in and out of specific cookie settings.

This section provides screenshots to demonstrate the "look and feel" of the Innovation Procurement Platform's frontend functionalities.

3.1.1 Home

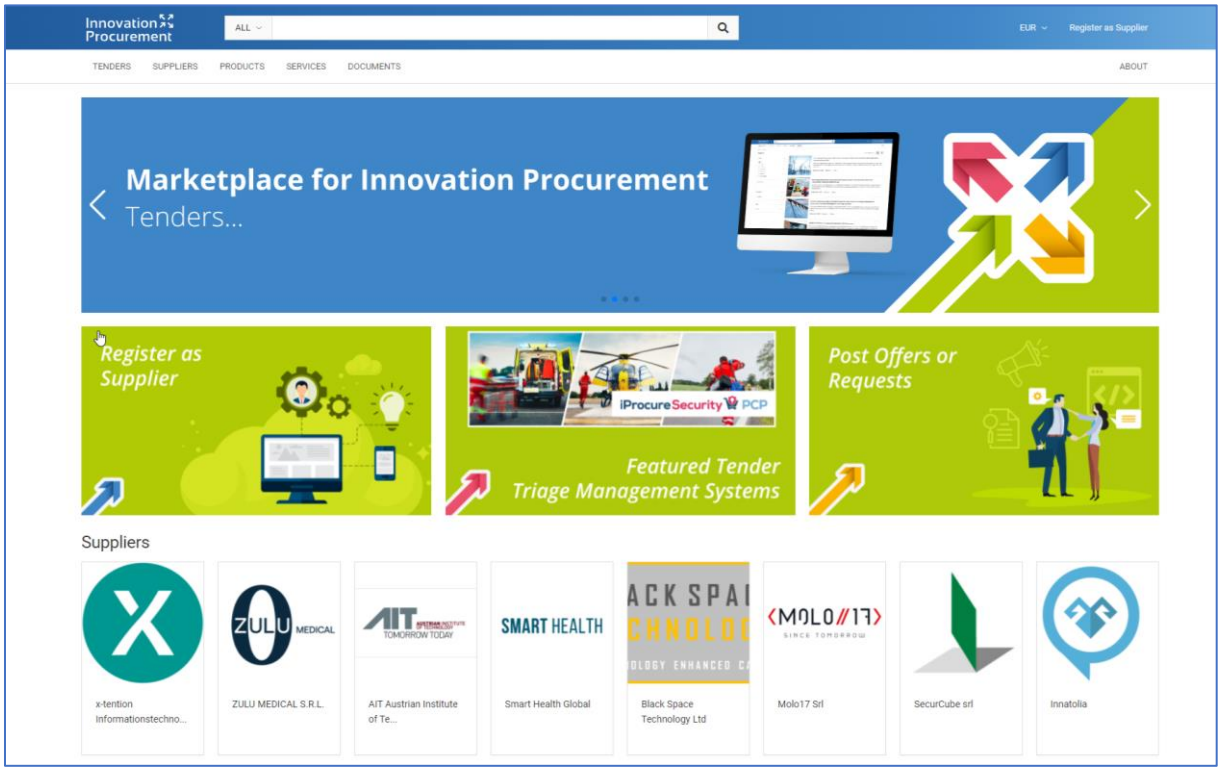

Figure 6: Home

3.1.2 Tenders

The tender section reports all the open, closed and forthcoming tenders. By clicking on the specific tender, the information is displayed, such as the Prior Information Notice (PIN), the general description of the tender, general requirements, tender issuer, and the tender summary (including Tender Stage, contract type, CPV Code, Budget and Language) as well as the expertise offers and requests.

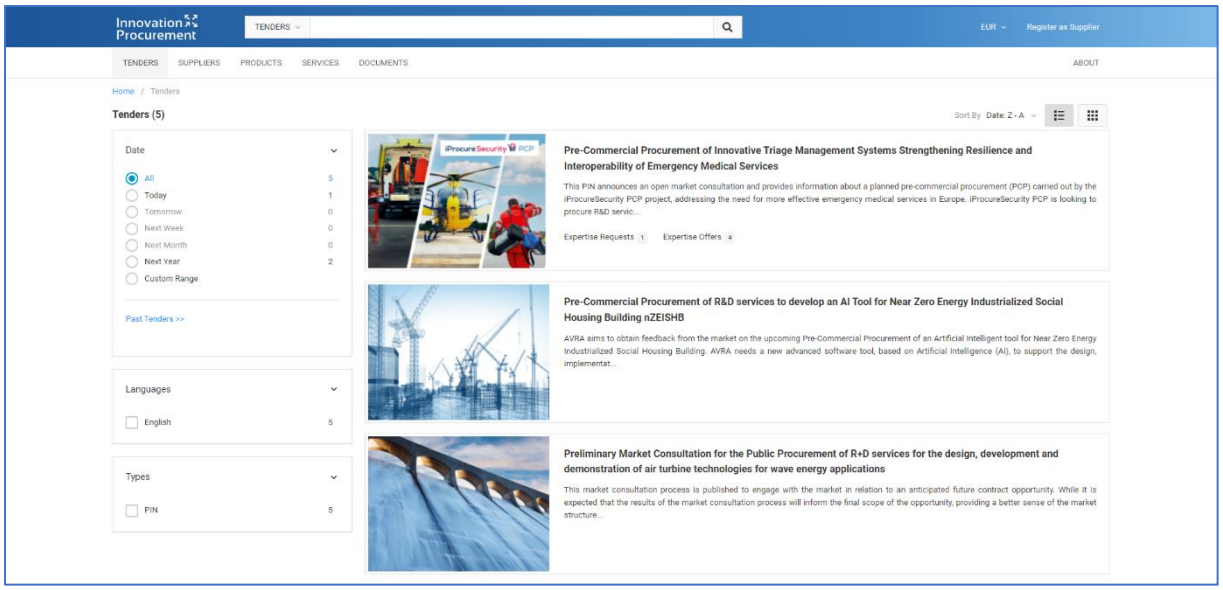

Figure 7: Tenders - List view

Within this section, suppliers can add potential expertise requests and offers for getting in touch with other suppliers to team up for upcoming tenders. In order to post requests and offers, the suppliers must be registered within the platform. The functionality for requests/offers, has been developed for the scope of the matchmaking. In fact, the iProcureSecurity PCP project wants to foster the cooperation and the creation of consortia, in order to create a solution which is fully comprehensive and covers all the collected requirements. This will be facilitated by merging skills and capabilities of different suppliers.

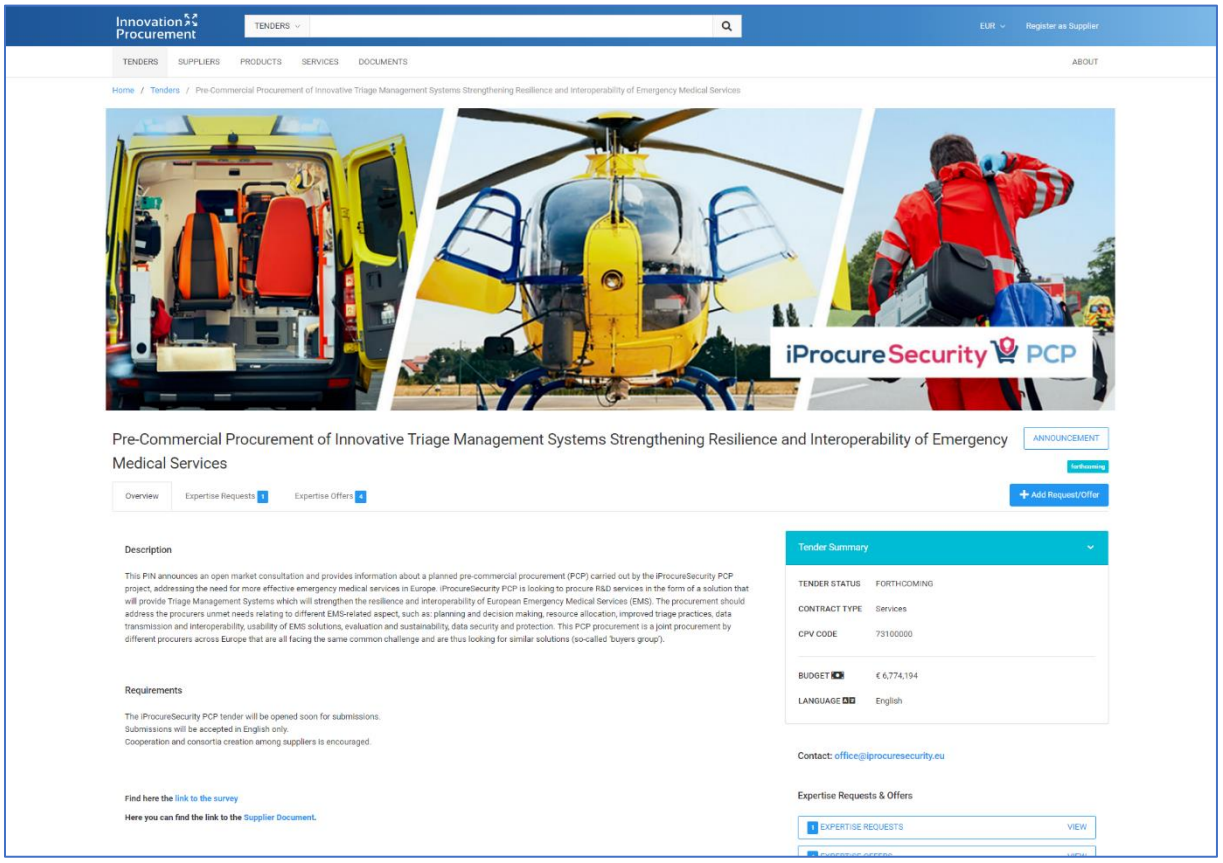

Figure 8: Tenders - Detail page

3.1.3 Products

This section is dedicated to the products. In order for the products to be displayed, the organisation must be registered as supplier within the Platform. All the registered suppliers will be able to add and display their products.

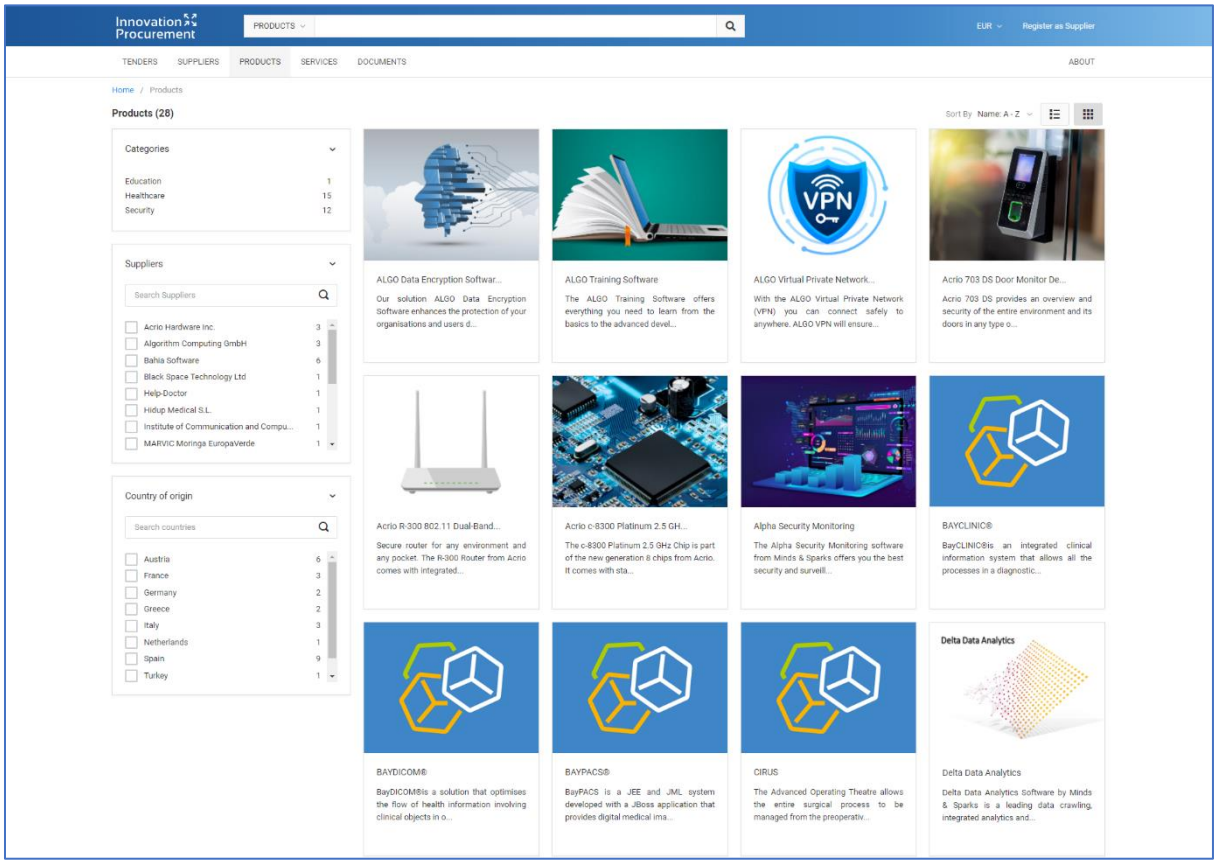

Figure 9: Products - Grid view

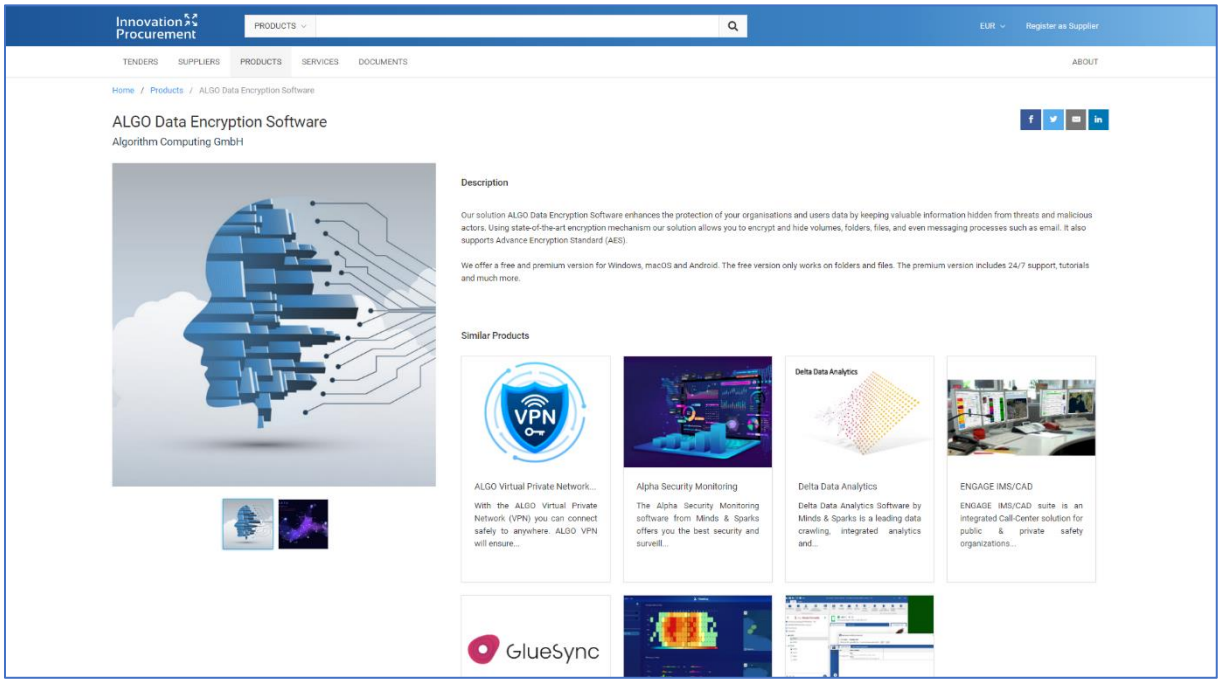

Figure 10: Products - Detail page

3.1.4 Services

This section is dedicated to the services. In order for the services to be displayed, the organisation must be registered as supplier within the Platform. All the registered suppliers will be able to add and display their services.

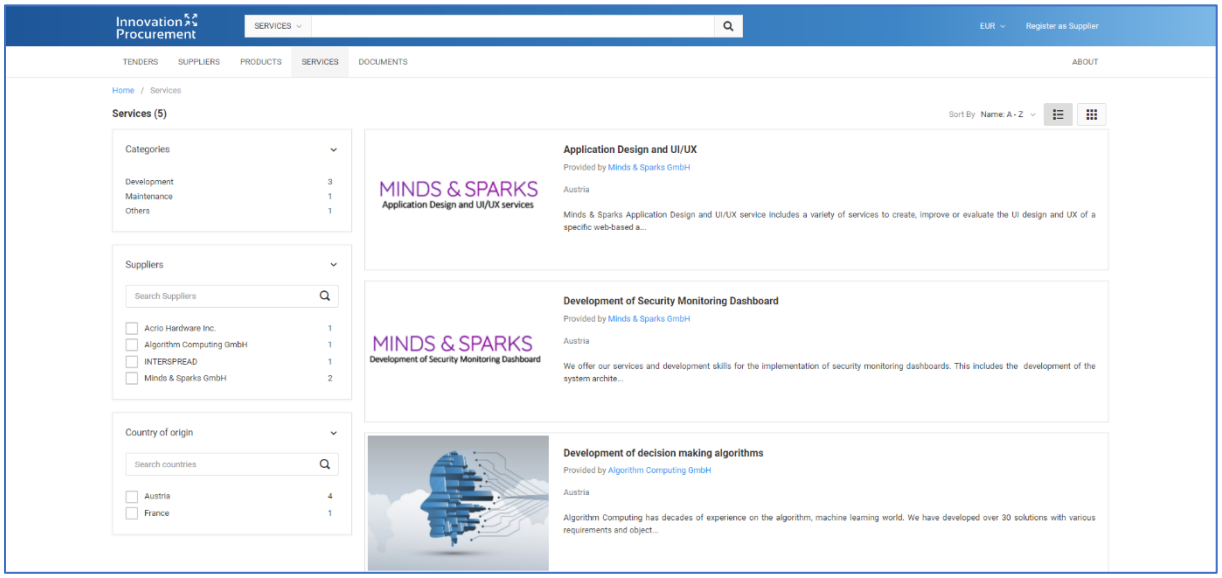

Figure 11: Services - List view

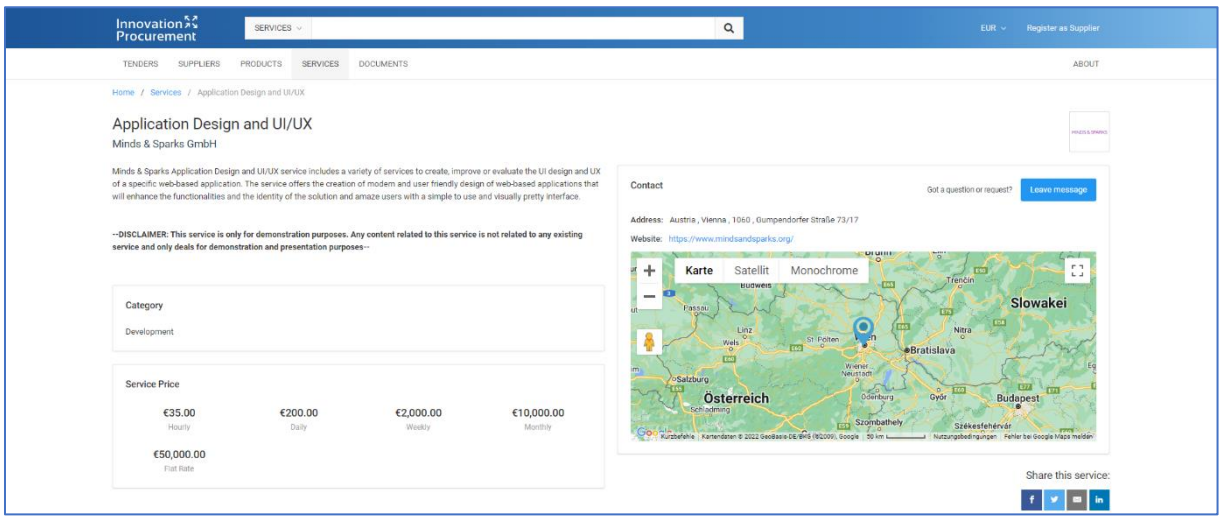

Figure 12: Services - Detail page

3.1.5 Documents

This section is dedicated to the documents related to the specific organisation. In order for the documents to be displayed, the organisation must be registered as a supplier on the Platform. All the registered suppliers will be able to add and display their documents.

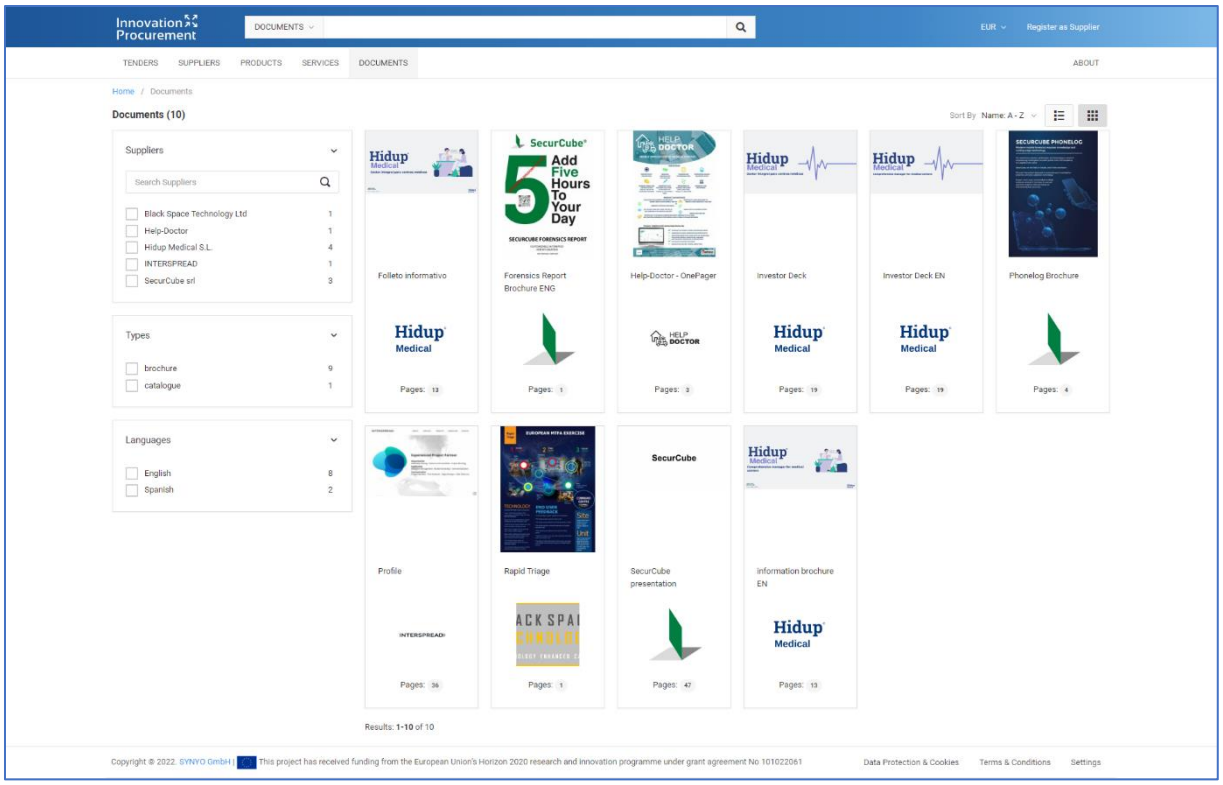

Figure 13: Documents - Grid view

3.1.6 Cookie Settings

The cookie settings can be accessed from all pages at any time to change the cookie preferences according to the end user's needs and requirements.

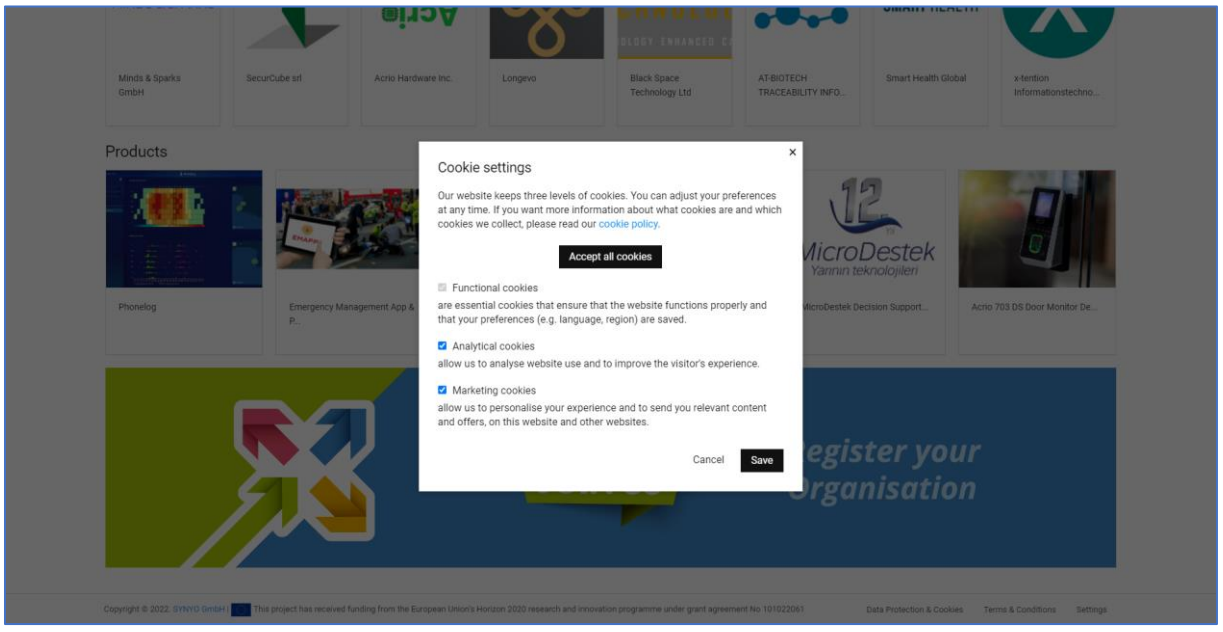

Figure 14: Cookie settings

3.2 Admin Base

The Admin Base is the central backend service that allows the end user to add data which can be displayed in the frontend. In order to do that, a user must first register an account. This is done via the frontend registration page, which leads to the backend registration form.

3.2.1 Registration

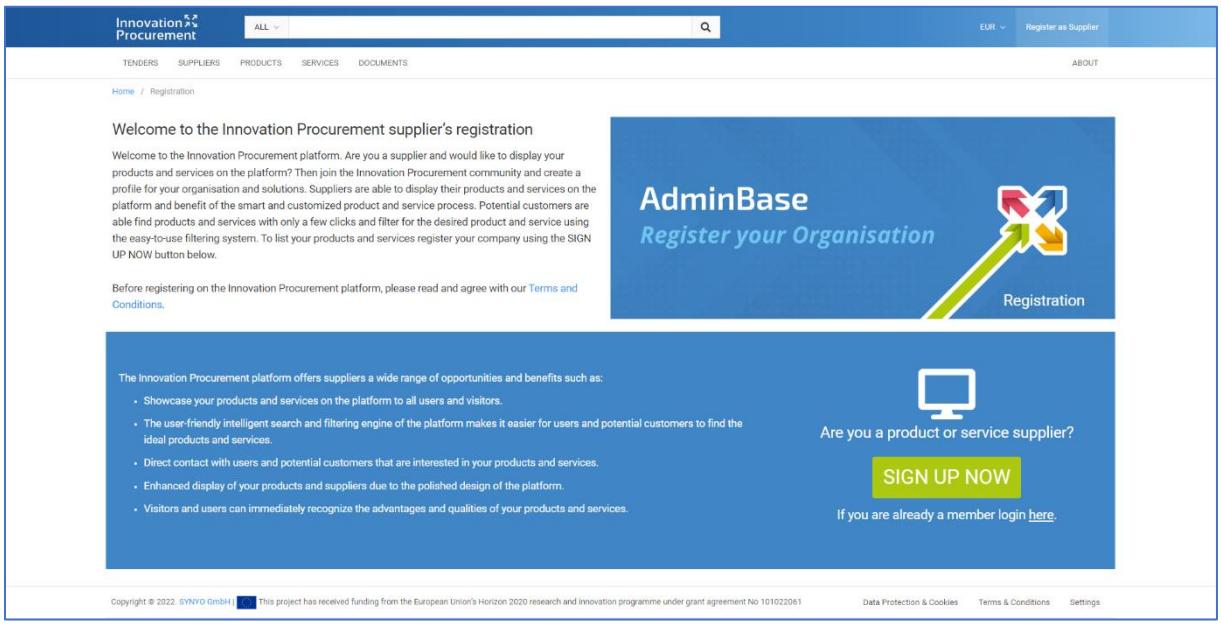

Figure 15: Registration - Frontend page

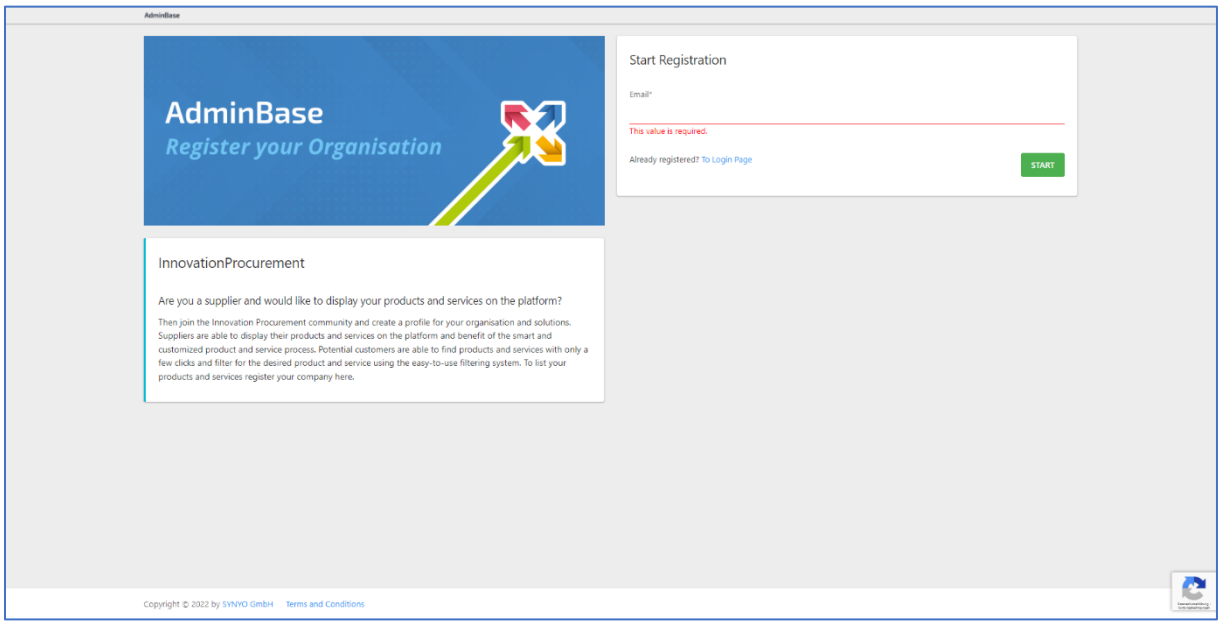

Figure 16: Registration - Admin base

3.2.2 Account

Each supplier has also the ability to administer their user account and profile. All data, such as user or company information, can be changed. There is also the possibility to change or reset the password as well as information regarding the deletion of a user account.

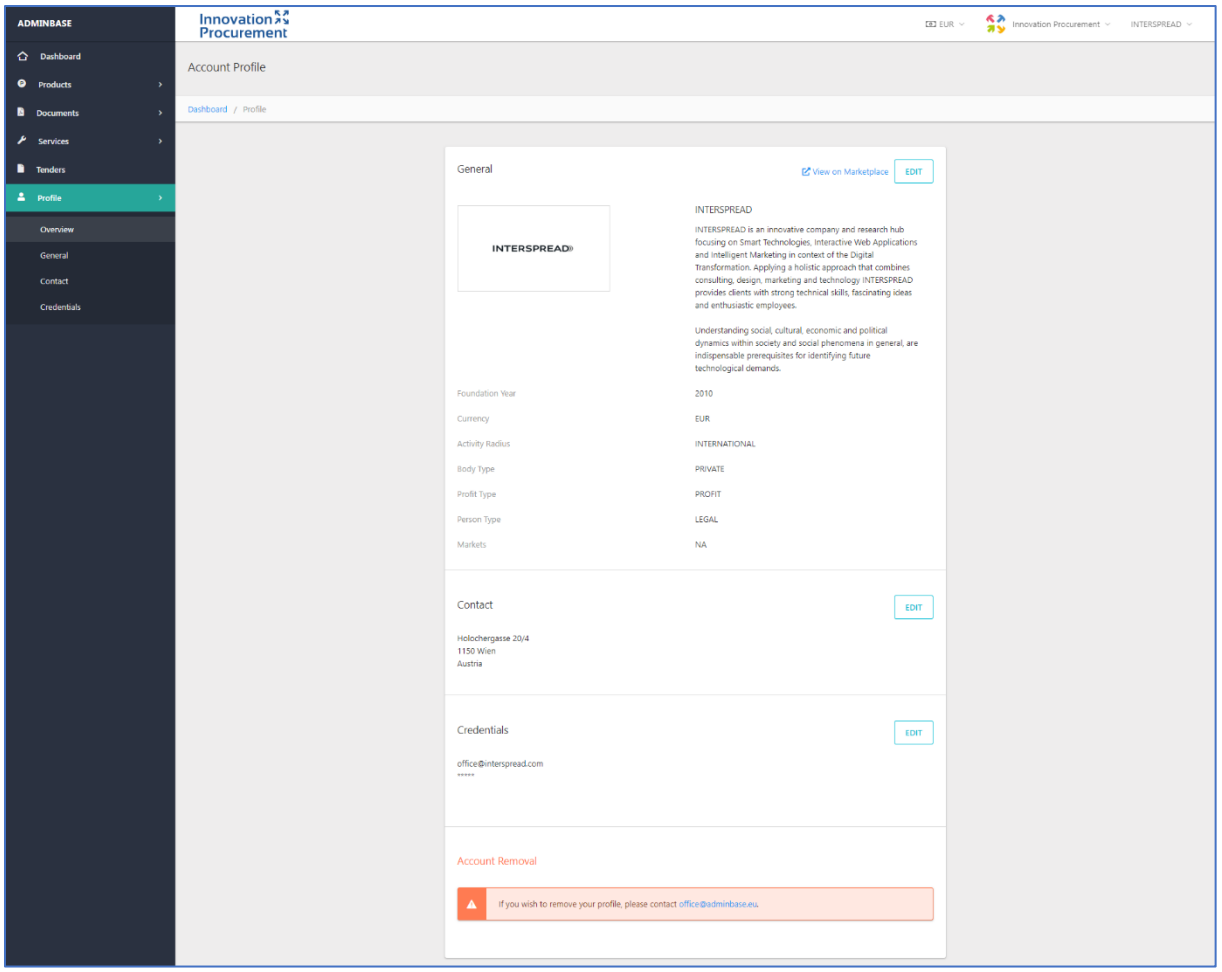

Figure 17: Account settings

3.2.3 Dashboard

After logging into the account, a dashboard will provide an overview of the functionalities a user has access to. It provides a description and an explanation text as well to help the user navigating through the interface.

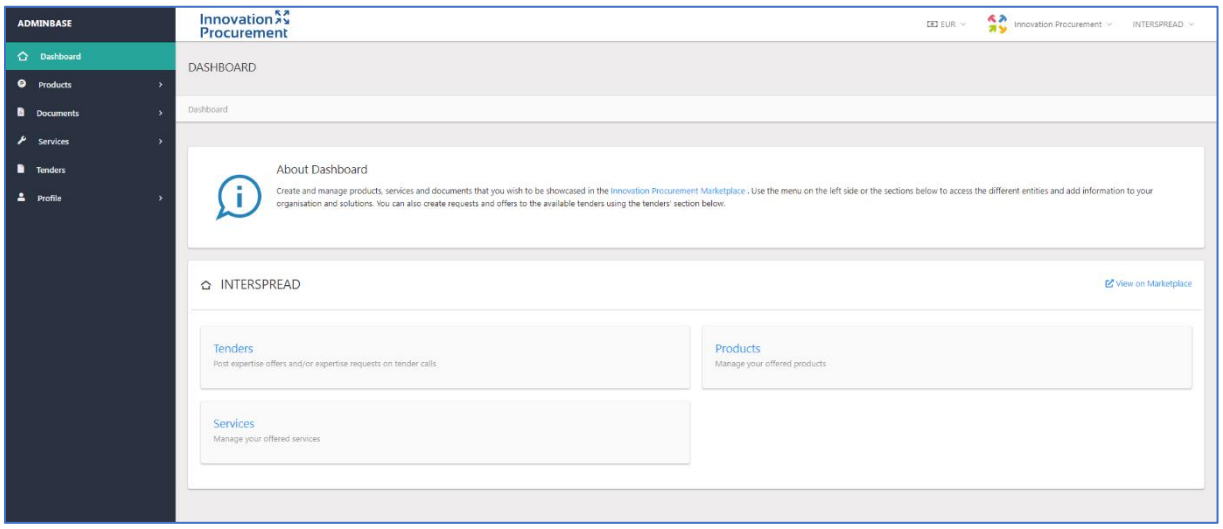

Figure 18: Dashboard

3.2.4 Documents

Documents can be viewed, added and edited via the Documents menu point. Like other entities, the overview provides an introduction text for better usability.

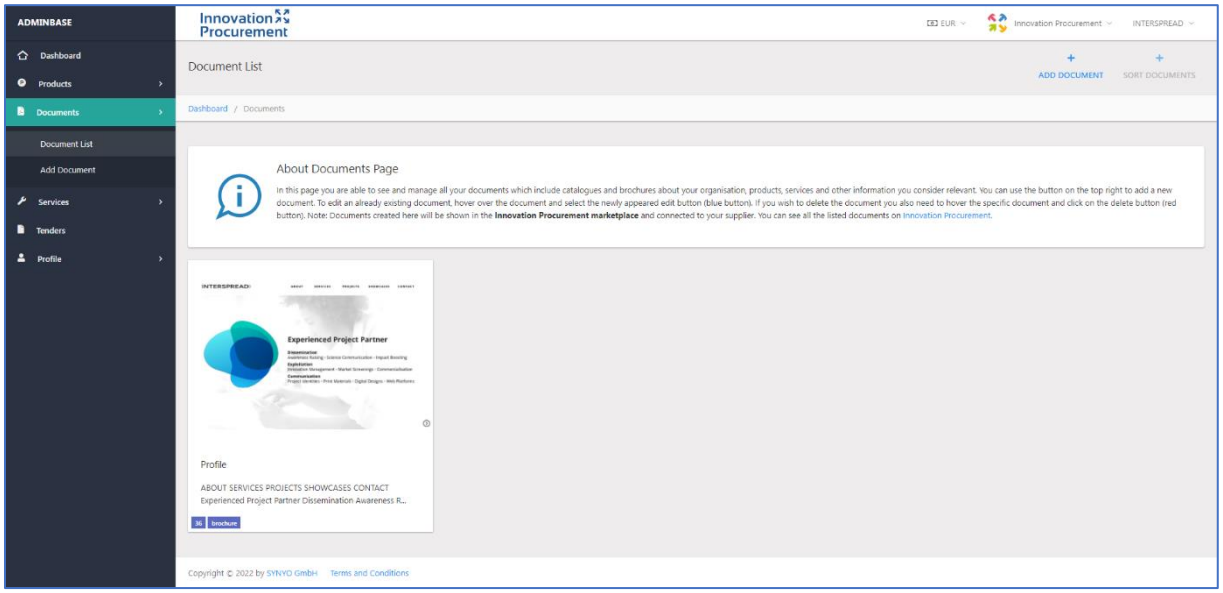

Figure 19: Documents - List view

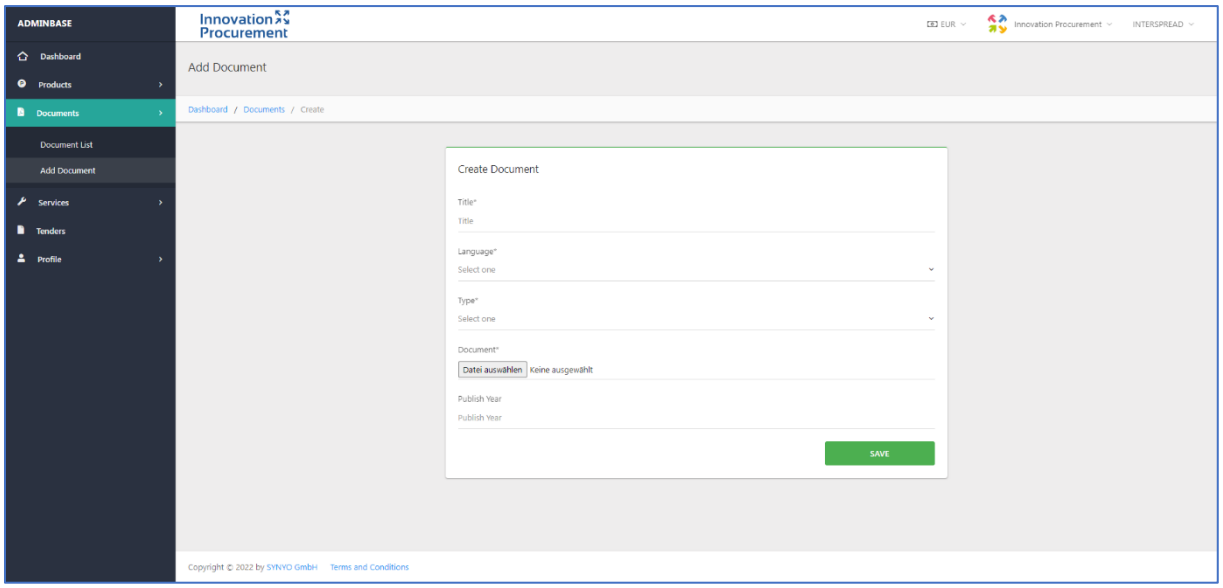

Figure 20: Documents - Add document

3.2.5 Products

Products can be administrated via the Admin Base too. An overview is provided from where the user can add or edit an existing product item.

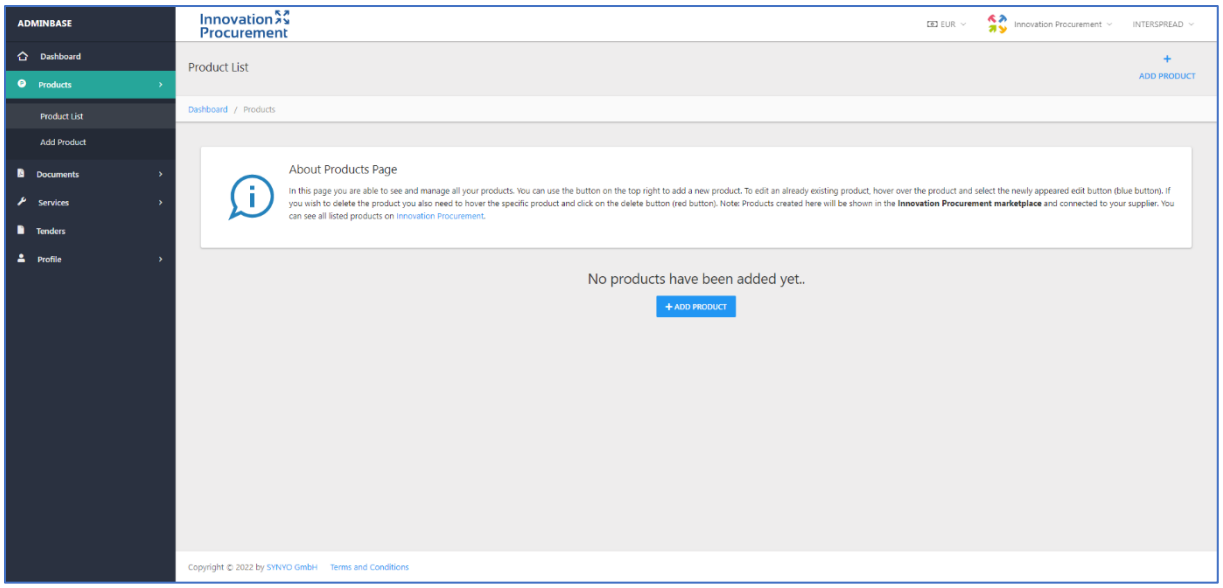

Figure 21: Products - List view

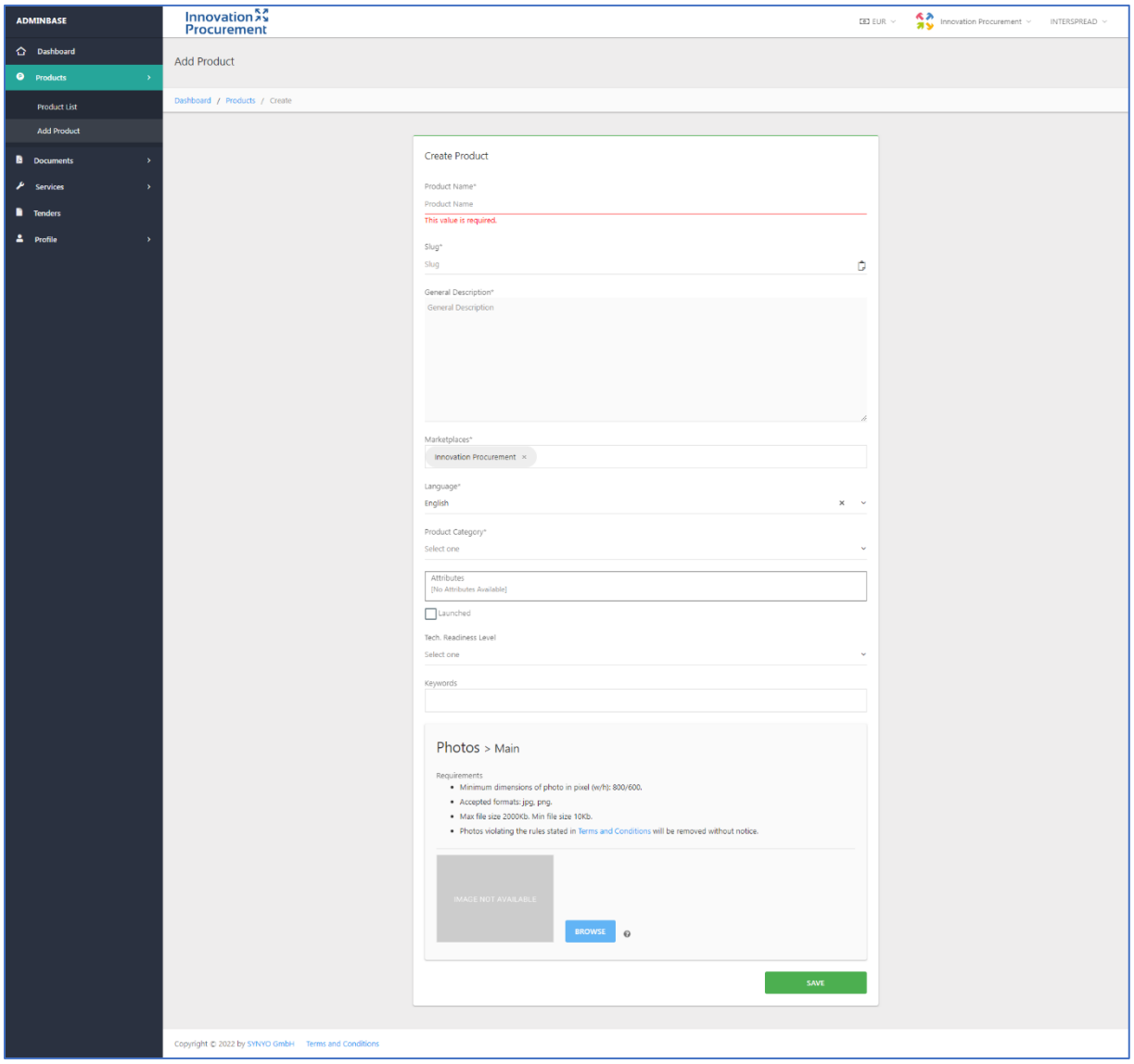

Figure 22: Products - Add product

3.2.6 Services

Similar to Products also Service can be administered. An overview is provided from where the user can add or edit an existing service item.

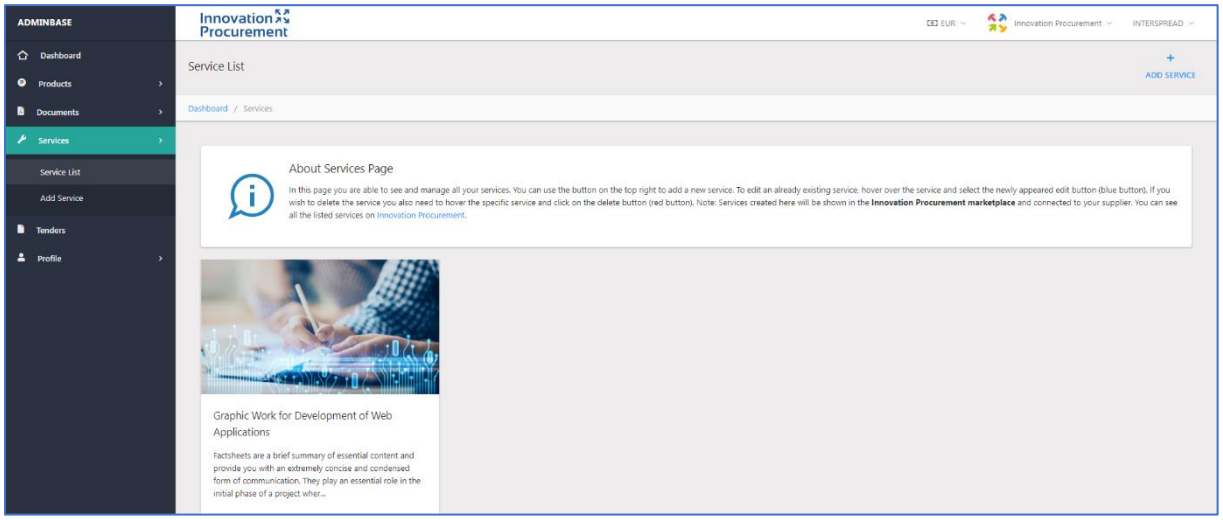

Figure 23: Services - Overview

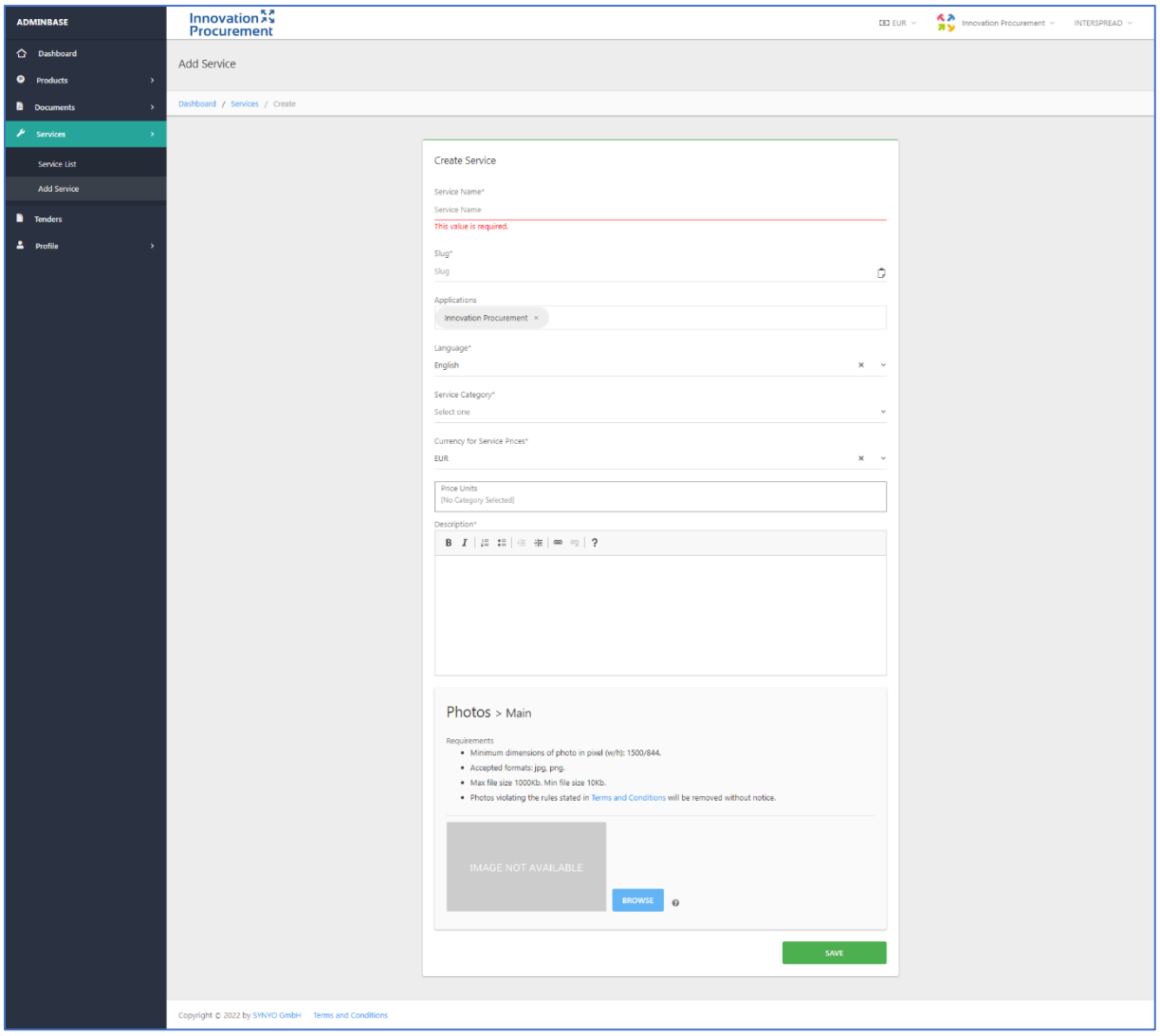

Figure 24: Services - Add service

3.2.7 Tender Expertise Request/Offer

In this page, a user can see the currently listed tenders in the Innovation Procurement Platform. By clicking on a specific tender, a detail page will open, presenting detailed information of the tender. If allowed by the specific tender, the user will be able to create requests and offers to the tender.

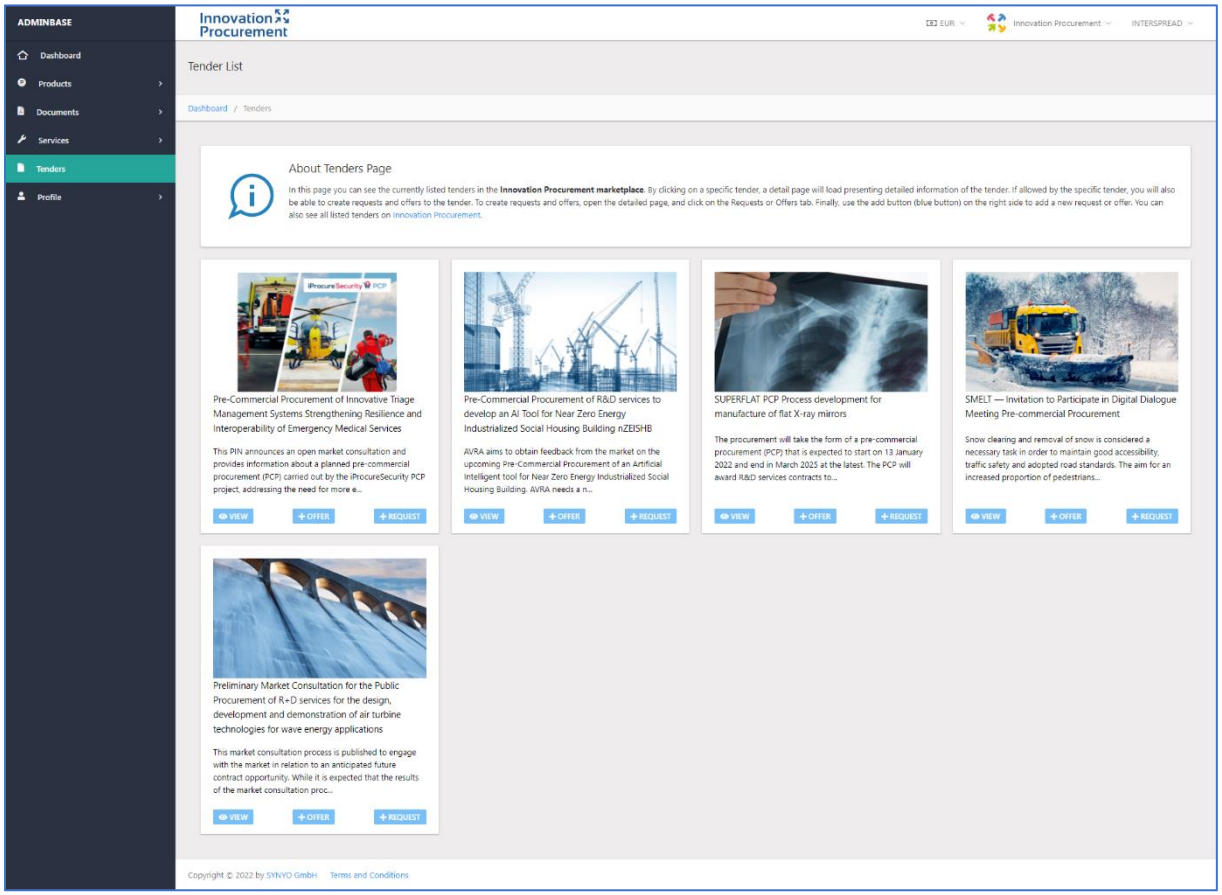

Figure 25: Tenders - Overview

3.3 Tender Manager

The tender manager consists of two main parts. The first part is the Tender Submission module which allows the suppliers to submit their documents in an easy and structured way. The second part is the Tender Evaluation module which allows the evaluators to access and rate the documents according the defined procedure described in the Tender Documents.

3.3.1 Tender submission

The supplier signs up on the Innovation Procurement Admin Base and expresses interest on a particular Call for Tender.

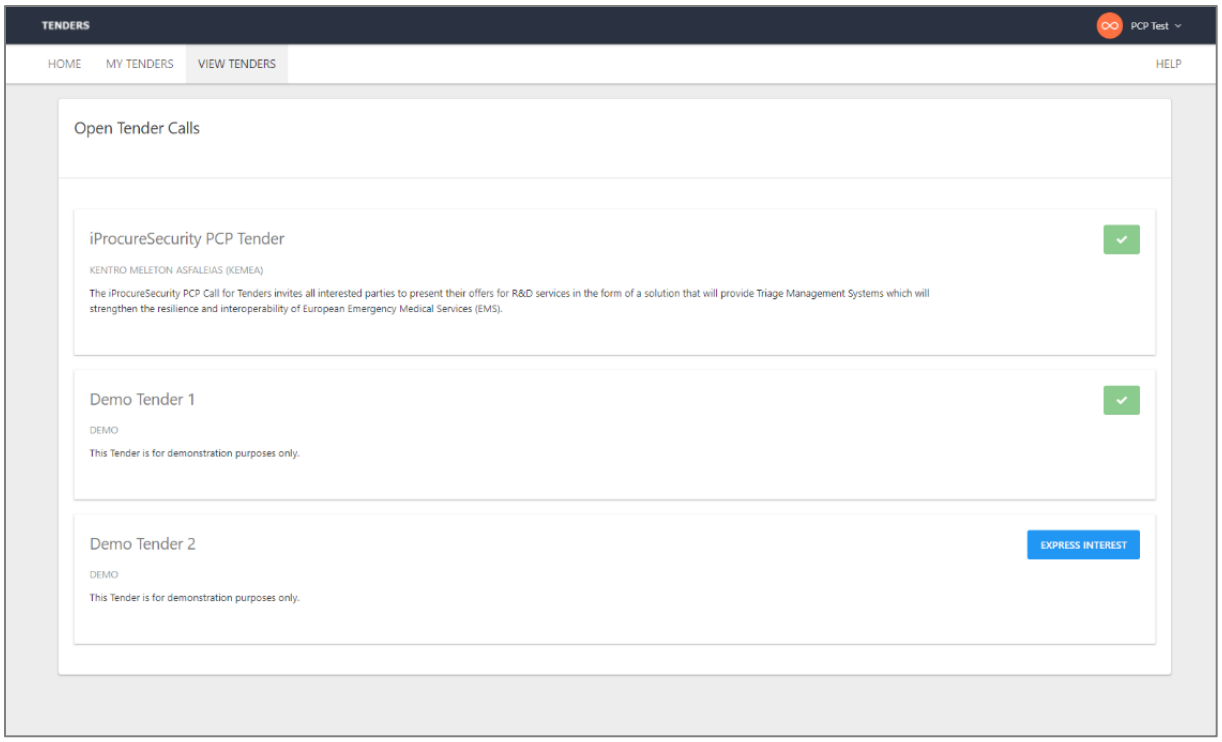

Figure 26: Overview on available tenders

The “My Tenders” tab shows all tenders where the supplier has expressed interest.

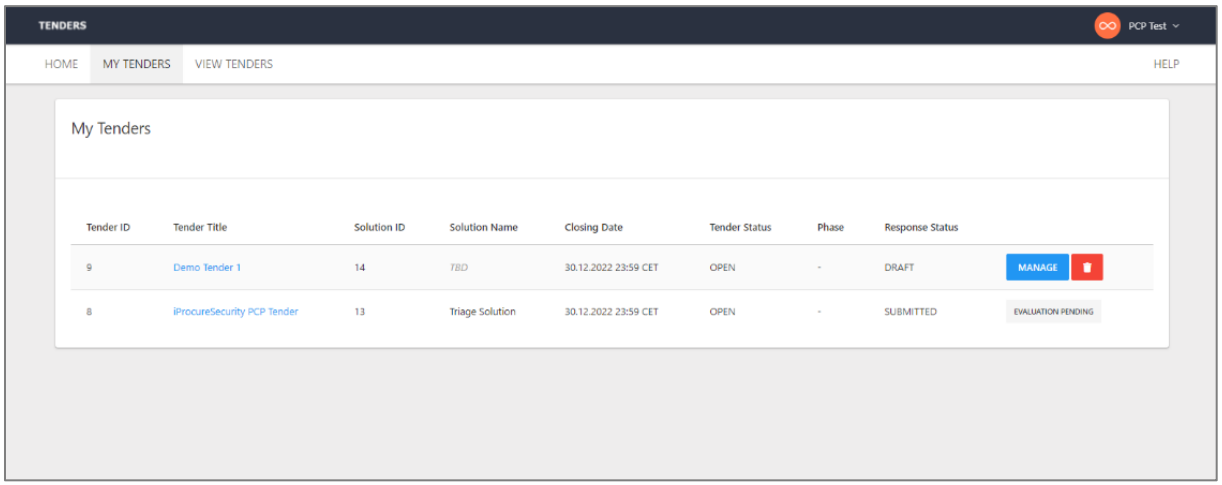

Figure 27: My Tenders - Overview

In the following step the supplier will see all available details on the selected tender and will be able to download the Call for Tender Documents.

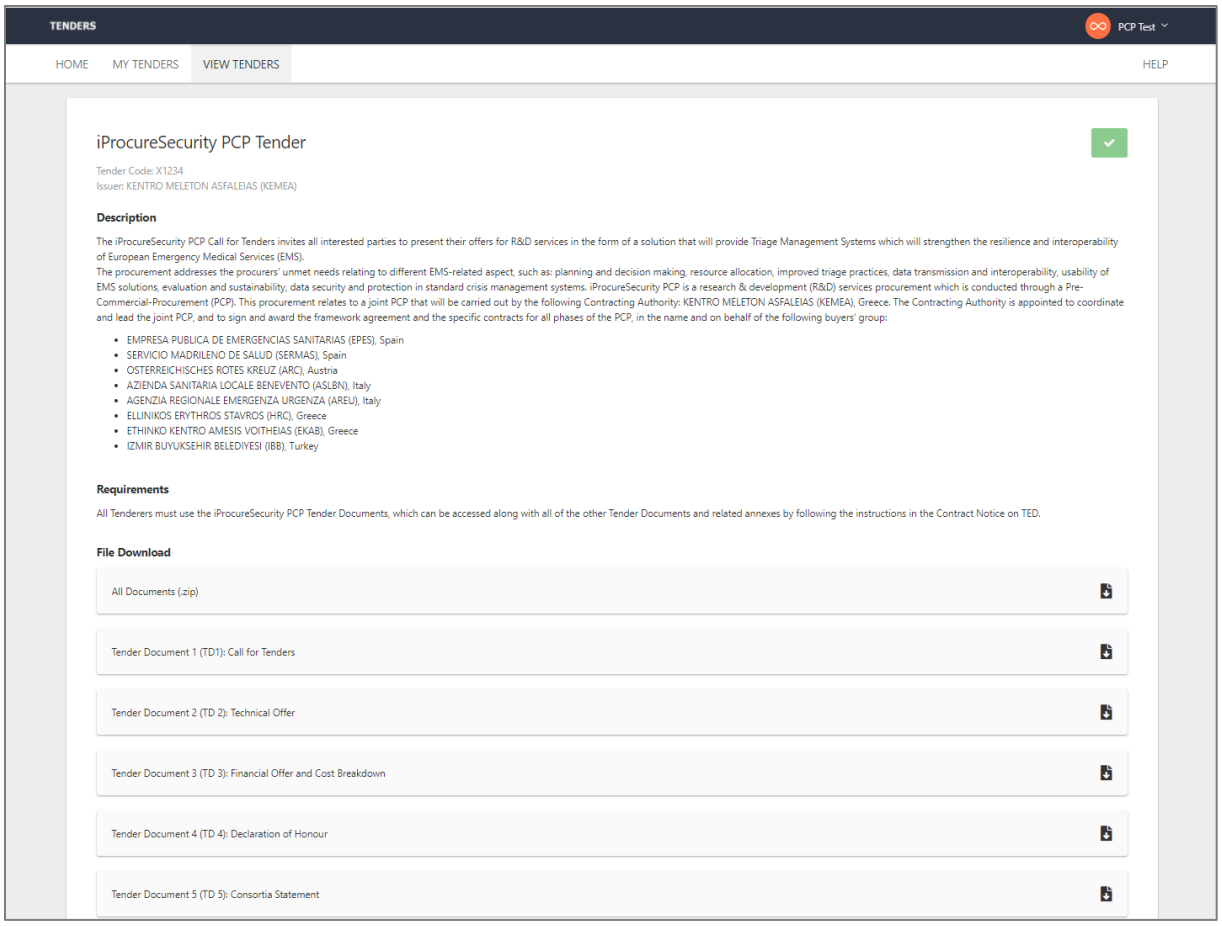

Figure 28: Tender Details and Downloads

As soon as the supplier is ready to submit the completed documents, the user is guided by the system through a structured process to provide the requested information.

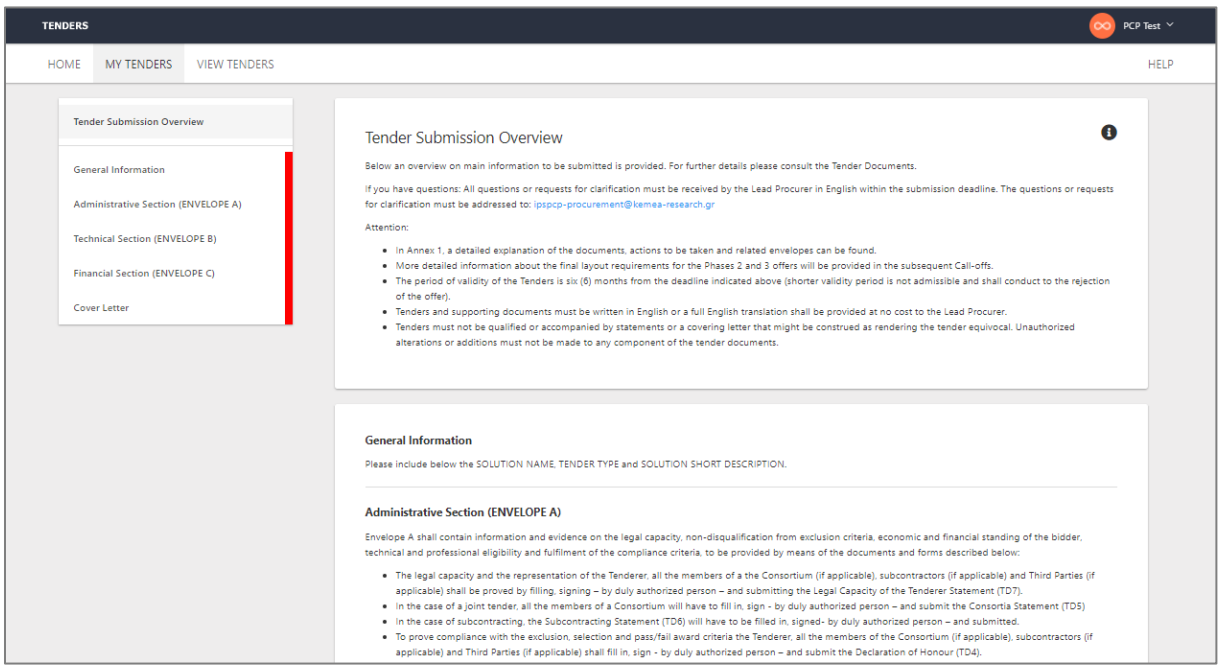

Figure 29: Tender Submission Process Overview

The system asks for a set of general information and for uploading the administrative, technical and financial envelopes individually. Additionally, a cover letter has to be uploaded as well as sent via post to the lead procurer.

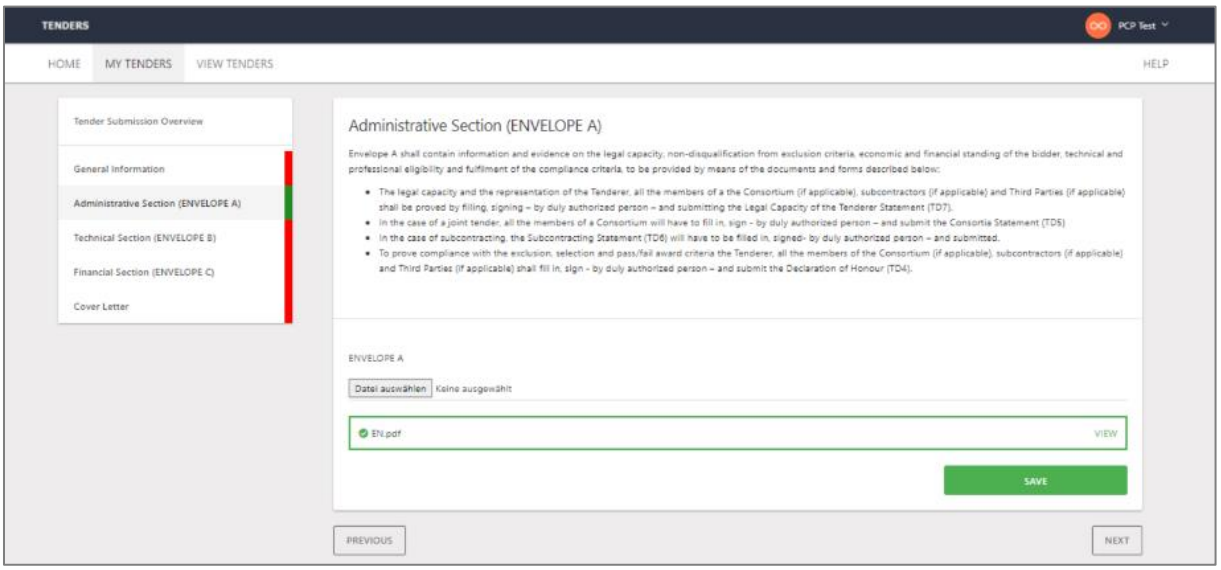

Figure 30: Tender Submission Upload

Before completing the submission, the user can check again all uploaded files.

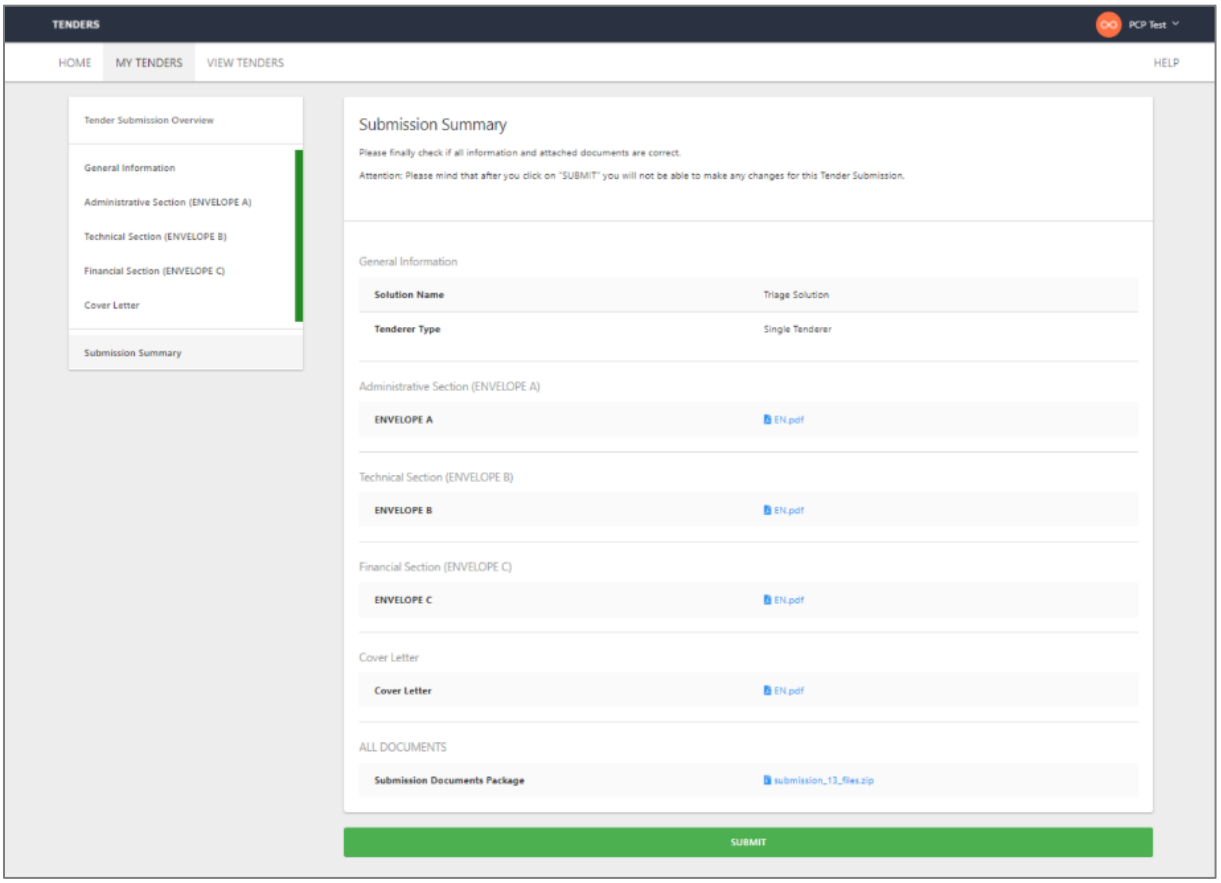

Figure 31: Tender Submission Check

Finally, the supplier has to confirm that all entered and uploaded data is correct. In addition, the supplier is advised that once the submission is complete, no further changes can be made.

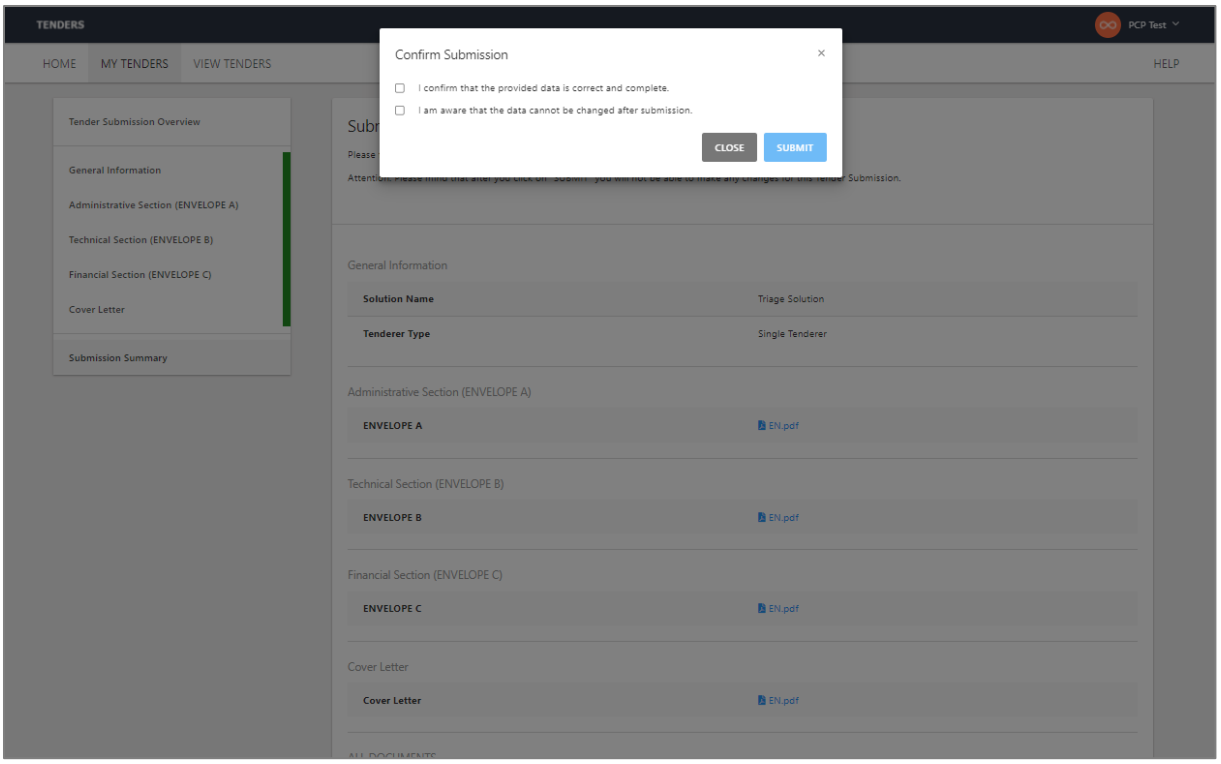

Figure 32: Tender Submission Confirmation

After submission the supplier will be informed that the submission process was completed. Also, the "My Tenders" tab will indicate the new status.

3.3.2 Tender evaluation

The tender evaluation system is currently completing the first development cycle and is being updated and aligned with the final decisions that have been taken during the finalisation of the Tender Documents. The tender evaluation module has a unique login screen which is made available only to the defined board members. The system will allow the Administrative Board to guide the evaluation procedure as defined in the Tender Documents and highlighted below.

The iProcureSecurity PCP Buyers Group will proceed with the tenderers' eligibility based on the information provided in the Administrative Section of the proposal (exclusion, selection and on/off award criteria, all related documents submitted in ENVELOPE A). This will be followed by the technical evaluation (all related documents submitted in ENVELOPE B) and the financial evaluations (all related documents submitted in ENVELOPE C).

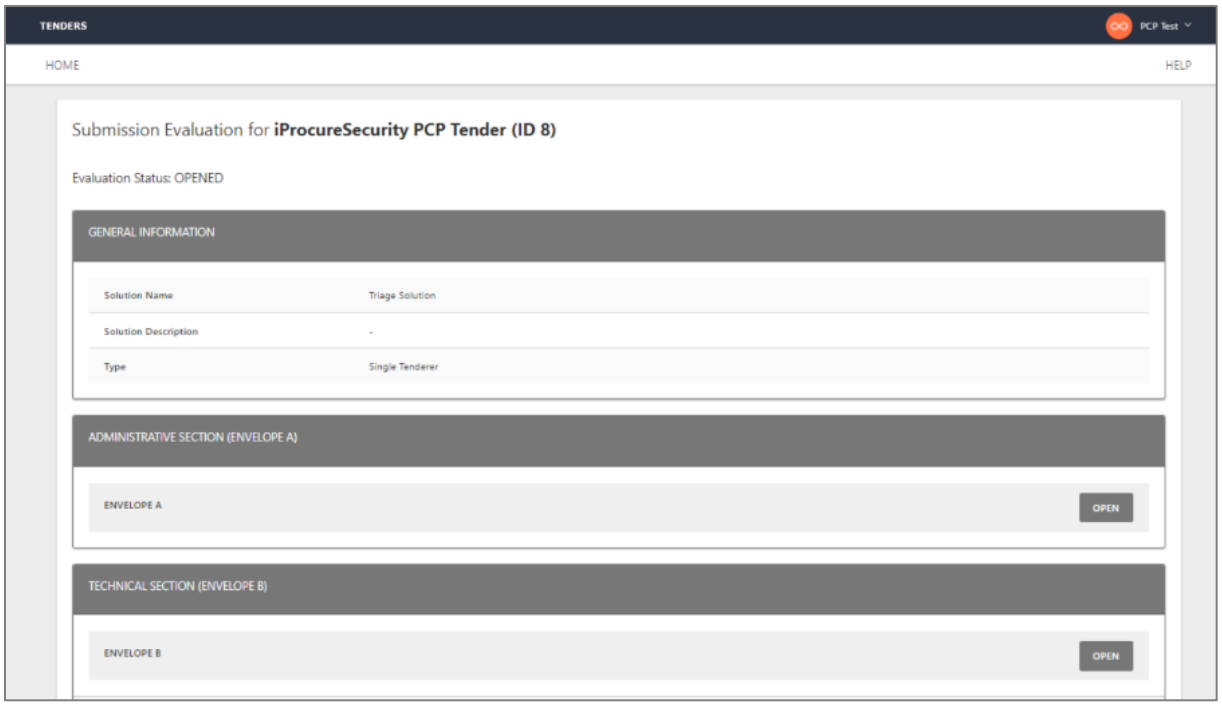

Figure 33: Tender Evaluation Overview

Then the Technical Committee and the Evaluation Committee will proceed to the scoring, according to the criteria and procedures described above. At the end of the evaluation procedure, a ranking will be drawn up, in which the tenders will be inserted based on the overall score achieved, in descending order.

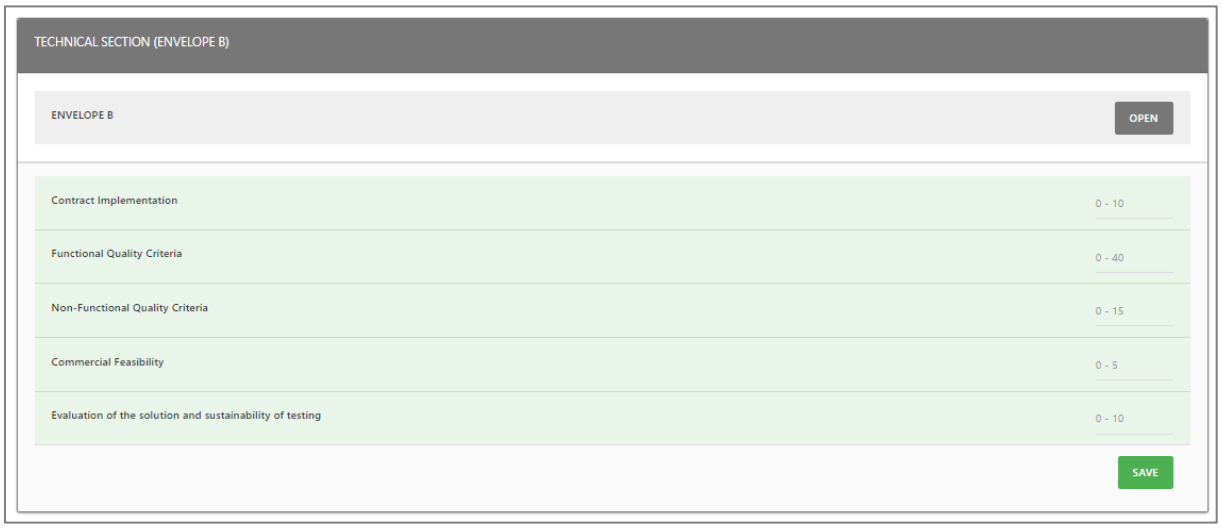

Figure 34: Tender Evaluation Scoring

In case that tenders of two or more tenderers obtain the same overall score, but with different partial scores for the price and for all the other different evaluation elements, the tenderer who obtained the best score on the Technical Offer will be placed first in the ranking.

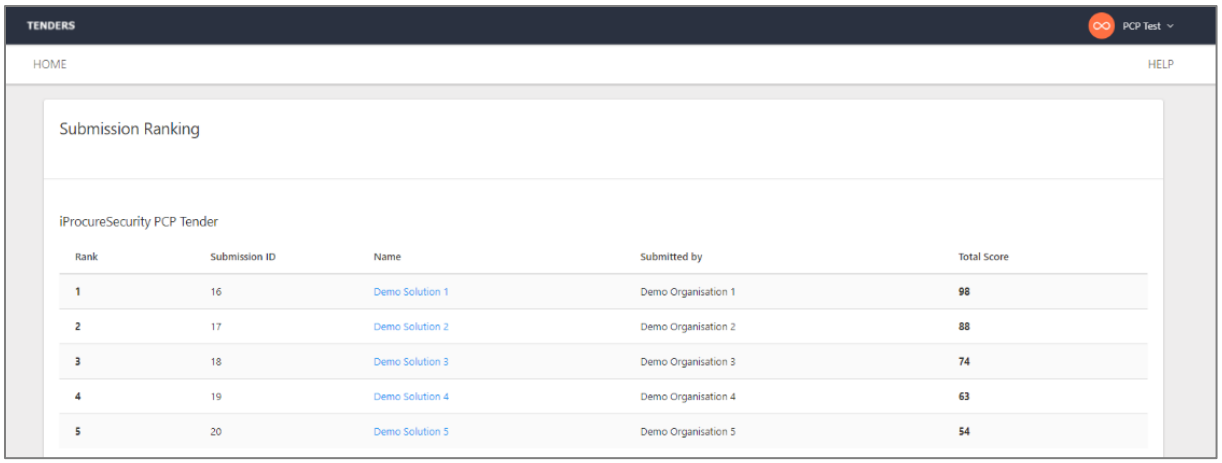

Figure 35: Tender Evaluation Ranking

The evaluation system is currently being tested and constantly improved to ensure it is fully validated and in place as soon as the evaluation procedures will start. As the consortium includes several procurers which are new to PCPs and the connected tender evaluation procedures, final testing will also include all board members. Thereby not only relevant end user feedback can be retrieved to ensure the tool is highly intuitive and usable. It also allows the consortium to actually go through the needed process steps of the evaluation and to ensure that all partners are fully aware of the upcoming evaluation tasks.

Furthermore, the Tender Manager component was built to ensure following important general transparency principles:

a) The exact time and date of the receipt of tenders, requests to participate and the submission of plans and projects can be determined precisely.
b) It ensures that, before the time limits laid down, no-one can have access to data transmitted.
c) Only authorised persons may set or change the dates for opening data received.
d) During the different stages of the procurement procedure access to all data submitted, or to part thereof, is possible only for authorised persons.
e) Only authorised persons must give access to data transmitted and only after the prescribed date.
f) Data received and opened in accordance with these requirements remain accessible only to persons authorised to acquaint themselves therewith.
g) Where the access prohibitions or conditions referred to under points (b), (c), (d), (e) and (f) are infringed or there is an attempt to do so, it is ensured that the infringements or attempts are clearly detectable.

3.4 Platform guidance materials

Besides that, technical development, SYNYO also worked on several supporting and guiding materials that will help the project to attract users to the platform and support them during different steps. Initially a Platform Manual for supplier registration was created as shown below.

Figure 36: Platform Manual

Furthermore, a tutorial video was created to explain suppliers the purpose of the platform and how to register.

Figure 37: Platform Video Tutorial

4 Conclusion

The Innovation Procurement Platform including the matchmaking, tender submission and evaluation functionalities is a core element of the iProcureSecurity PCP project. Besides the main goal of the project which is to innovate triage management, the project also seeks to contribute to increase the uptake of innovation procurement as a whole. As can be seen from this report, the development efforts will not only support the process of the current PCP project but should also help future innovation procurement actions.

The platform was designed to make it easy for suppliers to provide information about their organisation, products and services. Furthermore, it allows to easily make new offers and requests on available expertise and capabilities and to get in touch with other suppliers to team up and jointly address upcoming Call for Tenders. Especially for innovation drivers such as SMEs and start-ups it is important to raise awareness and get recognised. The first feedback from suppliers that registered was very positive. Further outreach activities will be conducted during the next months to promote the Call for Tender as well as the platform itself. Currently, the platform has a strong focus on suppliers. This was essential due to the tight schedule of the iProcureSecurity PCP project. However, in future also further features for procurers are considered e.g., to highlight new innovation procurement actions, to find and get in touch with interesting suppliers and to learn from ongoing and completed innovation procurement projects.

The provided system will be further updated and improved based on the insights of the project. An internal risk assessment is conducted regularly to ensure all processes can be performed as planned and all provided data is handled according to latest cyber security standards. Already during the initial development, these aspects have been considered carefully (e.g., during the selection of the available frameworks and components).

For the project consortium, the developed system will provide more convenience in disseminating, collecting and managing all relevant data and documents related to the tender. According to the learning of the pandemic, consortia and teams have to be able to work efficiently together also when no physical meetings are possible. The developed system also wants to contribute to solve this issue and thereby provide another important element to help distributed international procurer teams to work together remotely.