SUSNANOFAB

Grant Agreement No. 882506

Report on the Platform User Requirements

Document Details

Deliverable Number:	D5.3
Due date of Deliverable:	M4
Lead Beneficiary:	INL
Contributors:	All
Dissemination Level (*):	Public

Project Contractual Details

Project Title:	Integrated EU Strategy, Services and International Coordination Activities for the Promotion of Competitive and Sustainable Nanofabrication Industry
Project Acronym:	SUSNANOFAB
Contract No.:	882506
Project Start Date:	01-03-2020
Duration:	36 months

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement Nº 882506.

Document History

Version	Date	Description
Draft	2020.06.15	First Draft Version – Structure
Final Draft	2020.06.30	Final Draft – for Consortium inputs
Final	2020.07.01	Final Version

Abbreviations and Acronyms

Acronym	Description
WP	Work Package
CGs	Coordination Groups
EPPN	European Network for Pilot Production Facilities and Innovation Hubs
DIHs	Digital Innovation Hubs
EMMC	European Material Modelling Council
GDPR	General Data Protection Regulation
KPIs	Key Performance Indicators
APIs	Application Programming Interfaces

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement Nº 882506.

Table of Figures

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement Nº 882506.

Contents

Acknowledgements

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no. 882506 (SUSNANOFAB). The content of publication is the sole responsibility of the author(s). The European Commission or its services cannot be held responsible for any use that may be made of the information it contains. Project website: http://susnanofab.eu/.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement Nº 882506.

Executive Summary

This document is a deliverable of the SUSNANOFAB project - Integrated EU Strategy, Services and International Coordination Activities for the Promotion of Competitive and Sustainable Nanofabrication Industry, which is funded by the European Union's Horizon 2020 Programme under Grant Agreement #882506.

SUSNANOFAB is a concerted and long-term sustainable action on nanofabrication that will establish a robust network that tackles the missing links between policy, infrastructure, expertise and industry requirements worldwide. The SUSNANOFAB project proposes an integrated strategy at a European level that articulates the whole value-chain, aiming at the promotion of a competitive and sustainable nanofabrication industry.

At a strategic level, the project is committed to delivering an EU-wide Strategic Roadmap on Nanofabrication with international cooperation activities. At an operational and end-user level, the project will develop an Open Access Digital Platform that interoperates with current platforms, projects and other initiatives at the European level.

This deliverable is performed under the WP5 – Stakeholders engagement, dissemination, communication and exploitation, which general target is to create the suitable framework for awareness on the project´s activities and outputs following a coherent strategy. The WP5 comprehends the development of the SUSNANOFAB Open Access Digital Platform, a "one stop shop" of all information and communication related to nanofabrication. It will be the catalyst of the nanomanufacturing ecosystem, contributing to enhance the European networks and forge a sustainable community of stakeholders and facilitating the delivery of SUSNANOFAB outputs in terms of working group activities, brokerage and training services, best practices, strategic road mapping materials and more.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement Nº 882506.

1. Introduction

The SUSNANOFAB Open Access Digital Platform will be fully interoperable with previously developed platforms or networks (e.g. Open Innovation Test Beds, EPPN, Mapping of KETs Centres, Digital Innovation Hubs Catalogue). The SUSNANOFAB Platform will be designed and deployed envisaging a simpler and automated use of different datasets through the use of APIs and avoiding the sub-optimal use of information gathered under funded projects. The use of APIs aims to bring together different networks around a common digital umbrella and is expected to strongly contribute to the creation of a valuable nano-fabrication ecosystem, while also improving communication and data sharing among stakeholders.

The SUSNANOFAB core functioning mechanism will leverage on the EPPN's[1] modular based infrastructure which has also been developed in a way to interoperate with other existing databases and is supported by appropriate standards. The SUSNANOFAB platform development and its access to different existing digital networks will take into account different aspects of a sustainable data economy, namely: free flow of data, data access and transfer, data liability, portability, interoperability and standards, taking into account data confidentiality and integrity.

The objective is to develop the SUSNANOFAB platform by capitalising on the building blocks already developed under the EPPN and by adding relevant specific data modules in the scope of the nanofabrication ecosystem. (e.g. module focused on nanofabrication facilities and services). The platform will widen and enrich the offering with additional services and databases linked to other on-going initiatives as well as brokerage and training activities foreseen in the implementation of the project.

The sustainability of the nanofabrication ecosystem and its digital platform beyond the project completion will be enabled through an efficient governance structure and an industrially relevant business model. The governance structure will include the CGs with and advisory role, in order to guide strategically the platform in the medium term.

The users' requirements report is the first document developed in the framework of the platform development, and will set the basis for the architecture structure; system; data bases and functionalities of the tool.

The major fieldwork of this report are the results of the online survey launched for collecting the stakeholders' perspective in the main needs of a nanofabrication based platform. The consortium aims at creating a useful and robust platform to tackle the missing links in the nanofabrication value-chain, and for that end, the co-creation process with the main stakeholders of the project is an essential condition.

[1] https://www.eppnetwork.com/

2. Objectives

The main objective of the SUSNANOFAB Open Digital Platform is providing a unique and centralized tool that combines all the relevant nanofabrication data spread from different sources and make it available to all interested parties in an open and interoperable format. It should also promote access to nanofabrication infrastructures and provide a wide range of brokerage and training services.

The platform will be open and free of charge for membership of all kind of stakeholders. To attract users to the SUSNANOFAB network, the strategy is, along with making available valuable data on the nanofabrication ecosystem, to engage and bring the users from existing networks, such as EPPN, EMMC, DIHs, among others.

To analyse the needs of the nanofabrication stakeholders, an online survey was developed and spread in different channels, as partners' social media channels, partners' websites, SUSNANOFAB website, EMMC website, and mailing to members of the EPPN network and to the NANOFABNET consortium, the CSA project funded under the same call of SUSNANOFAB, which is working closely to SUSNANOFAB consortium to identify synergies and collaborate on strategic topics. In total, the survey received 80 responses from different types of stakeholders, among SMEs, Large Enterprises, RTOs, Academia, and Policy makers.

The main objective of the survey is to collect the feedback of different types of stakeholders, from different countries, backgrounds and sectors, in order to have a comprehensive result of the users' needs aiming at developing a useful and robust tool.

This report will analyse the results of such survey and set the basis for the platform structure, functionalities, data bases to be integrated, and documents to be available in the repository. It will include summary descriptions of the tasks that the system will support and the functions that will be provided in the tool.

2.1 KPIs

The SUSNANOFAB platform has defined ambitious goals for its key performance indicators. The target active members with public profiles to be achieved is 800. Once the platform is fully established, with its Governance Structure and Business Model approved, it will target a total of 2000 users.

Apart from the number users to be reached, the platform objective is to provide in its repository at least 30 best practices and common protocols, aiming at becoming a point of reference for EU and international best practices in the sustainable nanofabrication ecosystem.

The following KPIs are associated to knowledge transfer and brokerage during the projects, and are directly linked to the SUSNANOFAB platform, which will act as the tool to enhance and reach them.

Activities	Description of the Knowledge Transfer and Brokerage KPI	Targets
Network	N° of contacts between a "technology provider" and a "technology customer" on the platform. In order to monitor this aspect, the brokers will track such contacts established through the platform.	30
Collaborative Research	N° of common initiatives for R&D or upscale projects/requests for funding that will be prepared by consortia built through the platform.	6
Contract Research	Direct research contracts for joint developments of technologies to reach higher TRL and/or to upscale the technologies and/or use of facilities.	6
Licensing	Use of patents or other intellectual property under the payment of a fee. Agreements on the use of Intellectual knowledge for future technology development	3
Spin-Out/Joint Ventures, etc.	Establishment of a start-up company or similar, starting from a technology transfer idea on the SUSNANOFAB portal	1
Training	Training courses in support especially of SMEs / start-ups that aim at developing innovative products starting from knowledge transfer activities on the platform. Such training courses will be based on the identified training needs. The training will also address general topics related to IPR, business modelling, innovation management, nanosafety, characterisation, modelling etc.	6

Figure 1 - Knowledge Transfer and Brokerage KPIs

3. Methodology

The methodology strategy adopted for the development of the SUSNANOFAB platform is guided by the following phases:

Phase 1 - Design of the user requirements survey

The initial phase comprehends the creation of the user requirements survey and was defined by two main actions: information gathering from desk research on existing documentation and best practices on software development; and information based on the feedback of EPPN users' experience. Based on these two actions, a first draft of the online survey was prepared and shared among the consortium partners. It received suggestions and improvements from all the partners and the final version was ready to be launched.

Phase 2 – Launch of the survey

To launch the survey, the first step was the identification of the target stakeholders and the communication channels to be used to reach them. The main objective of the survey is to collect the feedback of different types of stakeholders, from different countries, backgrounds and sectors, in order to have a comprehensive result of the users' needs aiming at developing a useful and robust tool. The key stakeholders targeted for participating on the online survey were compiled by the project partners' networks, capitalising also on partners' direct involvement in ongoing related initiatives, as EPPN and EMMC networks, while respecting the GDPR Regulation. Also identified as a strategic stakeholder, the NANOFABNET consortium was target

to collaborate on the definition of the user requirements by participating on the online survey.

The strategy adopted for disseminating the survey was to use partners' social media channels; partners' websites; the SUSNANOFAB website and direct mailing to specific stakeholders from partners' networks. To ensure a common communication style, templates for social media posts, emails and news were developed to be used by the partners in the dissemination of the survey.

The user requirements online survey was available for nine weeks - from April 27th to June 29th 2020 - and collected a total of 80 responses.

Phase 3 – Analysis of the survey results

Understanding the user requirements is an important part for defining the system design and critical to the success of the software development. To ensure a successful outcome from the user requirements analysis, the developers and the design team must satisfy the users' needs when the development of the software is completed[2].

Once the analysis of the survey results is completed, the definition of the structure and features should be made available and evaluated. The evaluation must address the users' needs identified and take into account the potential issues that could occur on the implementation phase.

Phase 4 - Definition of the features of the Platform (Description of work)

The description of work regarding the definition of the features to be available on the platform will be defined in this phase. It is important to emphasize that the platform development will rely on the Oppornet[3] application. Oppornet is a web-based innovation platform capable of gathering data from open and public sources, institutional and individual members. It provides networking and matchmaking solutions in an interactive and participatory way. Oppornet allows the creation of different networks, publication of dynamic data and the uptake of APIs[4] for simpler and more automated access to and use of datasets.

The description of the work includes:

- Open platform backend: design and build of backend code platform for handling data, content management, etc. This will be built relying onto existing open source code (Oppornet);

[2] Maguire M., Bevan N. (2002) User Requirements Analysis. In: Hammond J., Gross T., Wesson J. (eds) Usability. IFIP WCC TC13 2002. IFIP — The International Federation for Information Processing, vol 99. Springer, Boston, MA

[3] https://oppornet.com/v3/

[4] Json protocol through REST API method will be used

- Interoperability with other networks: this task will include the identification of shared data and taxonomies;
- Definition of users' roles;
- Platform frontend design and build, including graphics, interface and editing/content management system, sharing economy facilities, communication tools, matchmaking and networking tools;
- Customisation of content management design for sharing resources, giving control to users and editors over the pages they create and allowing subsequent versioning;
- Search engine development optimization and proper refine menu.

Apart from the above mentioned tasks, this document includes the description of work to be followed in the platform implementation in terms of:

- Platform structure and sections;
- Databases and data sets;
- Functionalities
  - Matchmaking tool;
  - Event Calendar tool;
  - Event Registration tool;
- Documents to be available in the repository.

The final definition undertaken on phase 4 is the data classification and taxonomies to be used as basis of structured data. The classification will be further developed during the project, mainly on WP2[5], as it comprehends the elaboration of a series of documents to be translated to the Platform, essentially on the identification and categorisation of relevant programmes, project and initiatives; relevant services and infrastructures; stakeholders; and products from target sectors.

[5] WP2: Nanofabrication ecosystem linking all relevant initiatives

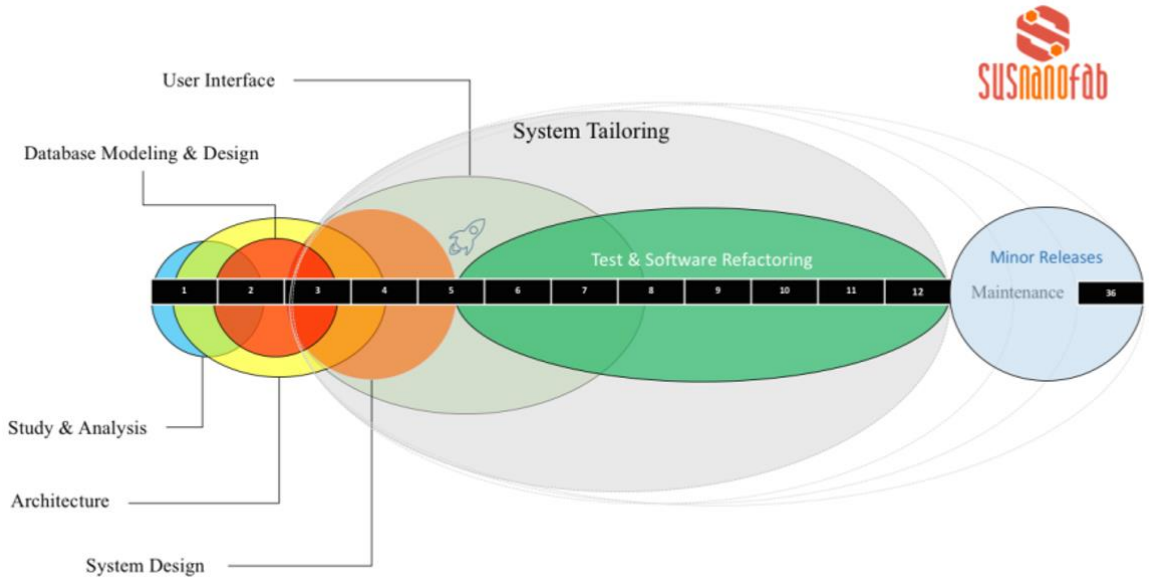

Figure 2 - Platform Development Chart

Phase 5 – Design and prototyping of the Platform

As the first deployment of the SUSNANOFAB platform must be available by M9, it will adopt the Agile & Scrum methodology. This method is a lightweight, iterative, flexible and incremental framework for managing complex platform development. Besides these benefits, it will allow the development team to work in a faster way, increasing the efficiency and the productivity, and incorporating the feedback from stakeholders, involving them in the developments' steps in a co-creation process.

Phase 6 – Platform custom deployment, testing and refractor

After the design of the system and user interface, the first release of the platform and major system tailoring activities will be performed on first year of the project. This task is to refactor the platform after its first deployment and testing in order to mitigate failures and respond to users' feedback. It will include a set of webinars to showcase the tool and retrieve feedback on its functionalities.

Phase 7 – Maintenance, minor releases and continuous improvement

The maintenance of the platform will then continue during the project with minor releases, which may be due to slight amendments of the activities related to the platform (e.g. services to be provided, available databases and link with other platforms and initiatives). This phase will comprise the development of the SUSNANOFAB helpdesk and will ensure the platform redesign until the end of the project.

4. User Requirements Survey Analysis

The user requirements survey started with a brief introduction of the SUSNANOFAB project, stressing the Open Access Digital Platform co-creation process as the foundation to its development towards a meaningful and instrumental tool to cover the whole nanofabrication ecosystem.

The first question of the survey had the objective to categorize the stakeholders in two main groups: nanofabrication providers and nanofabrication requesters. The results showed a majority of nanofabrication providers.

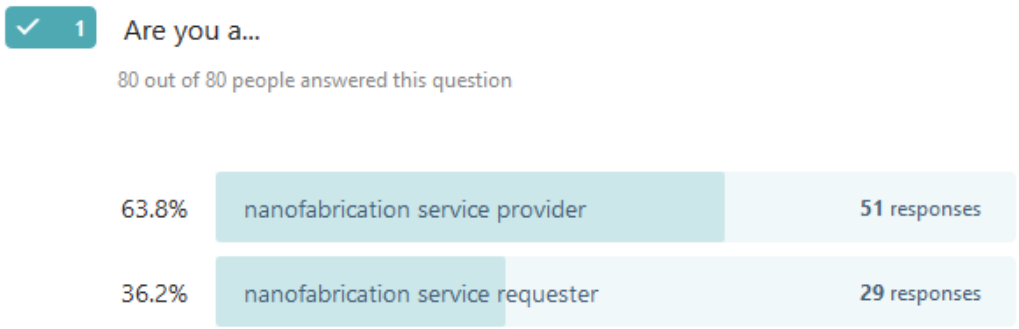

Figure 3 - Question n. 1

The second question aimed at identifying the type of entities represented by the stakeholders. The three main groups were representing Academic Institutions (32.5%); SMEs (28.8%) and RTOs (25%). Although there were also stakeholders representing Large Companies and Public Authorities. The National Metrology Institute and Testing Laboratory, Student and Academic Researcher were responses given in the "other" option.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement Nº 882506.

Figure 4 – Question n. 2

The third question of the survey addressed the activity sector of the stakeholders. For defining the activity sectors, instead of adopting the extended list of the Statistical Classification of Economic Activities in the European Community (NACE codes), the consortium opted to make use of the same activity sector list addopted in the EPPN aiming at facilitating the interoperability between both platforms. The list was defined by KET Observatory.

In this question the stakeholders could select more then one option. There were 251 options chosen in total, that correspond an average of 3 options per reply. The most selected sector was ICT (13%), followed by Energy (12%) and Medical and Healthcare (12%). Nevertheless, all the 14 sectors had a meaninful representation on the survey.

From the results compiled in this question, it can be concluded that nanofabrication is a transversal and multidisciplinary field, and to cover all the nanofabrication value-chain, all the 14 industry sectors listed must be considered for the development of the SUSNANOFAB Open Digital Platform.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement Nº 882506.

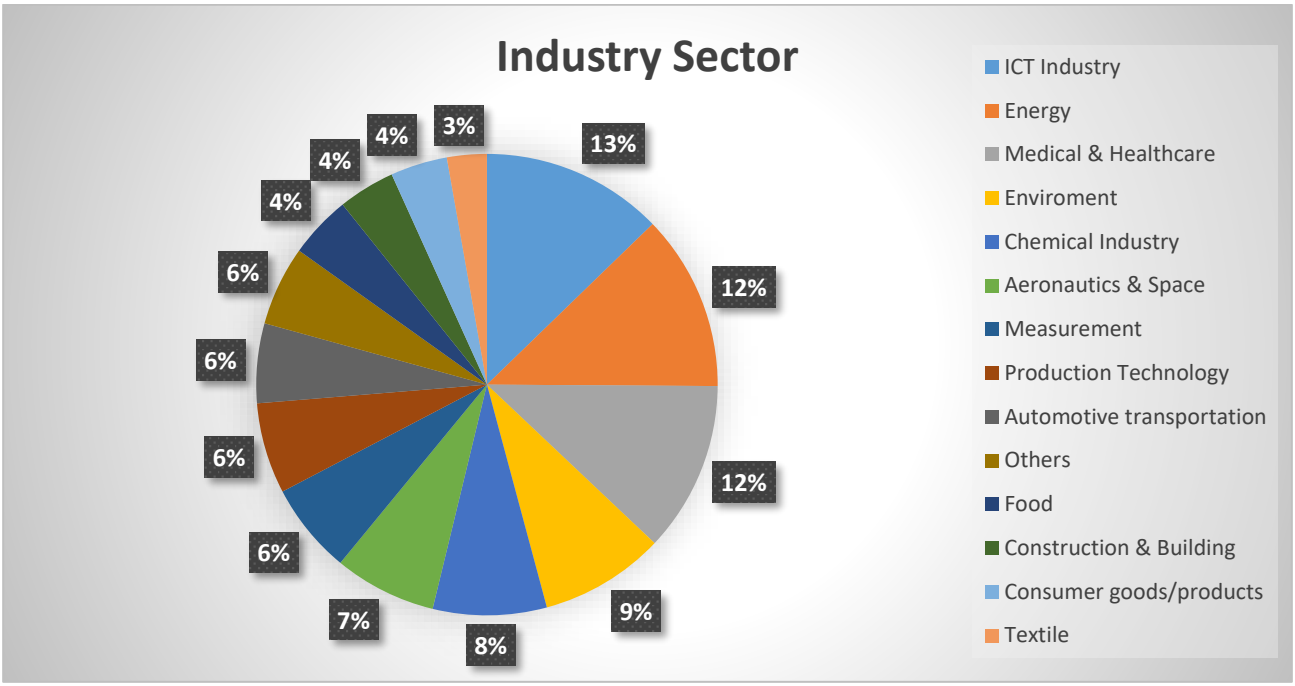

Figure 5 - Industry Sector Chart

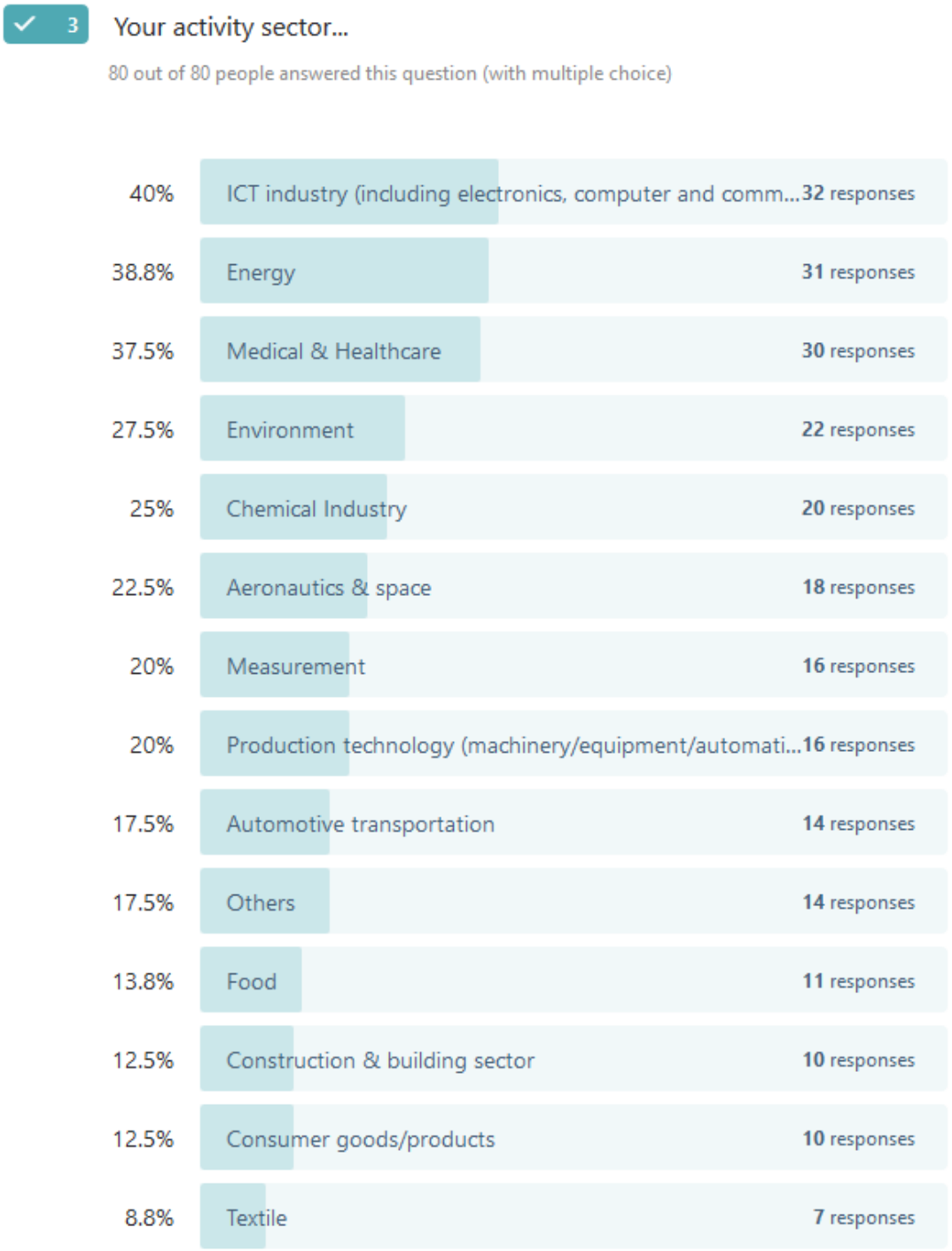

Figure 6 - Question n. 3

These three first questions were framed to identify the stakeholders that took part on the user requirements survey. It can be concluded that the majority of the group are nanofabrication service providers from academic institutions from a huge variety of sectors. To this extend, the SUSNANOFAB platform must address the needs of

both nanofabrication services providers and requesters, from research, innovation and industry approaches, and must tackle all the 14 sectors listed, framing them in the six categories already defined in the proposal stage: Health, Climate Change & Energy, Food & Natural Resources, Inclusive and Secure Societies, Mobility and Digital & Industry.

The next questions undertake the functionalities and tools that stakeholders would like to see in the SUSNANOFAB platform. Question number four addressed the main sections that the stakeholders would like to have, in which was possible to select multiple options. The most voted section was the international cooperation opportunities section (32%), followed by the funding opportunities section (29%), and match-making tool section (21%). The interoperability of data bases was also valued by the stakeholders, with 17%. The "other" option was open and the suggestion received was on "thin film collaborations".

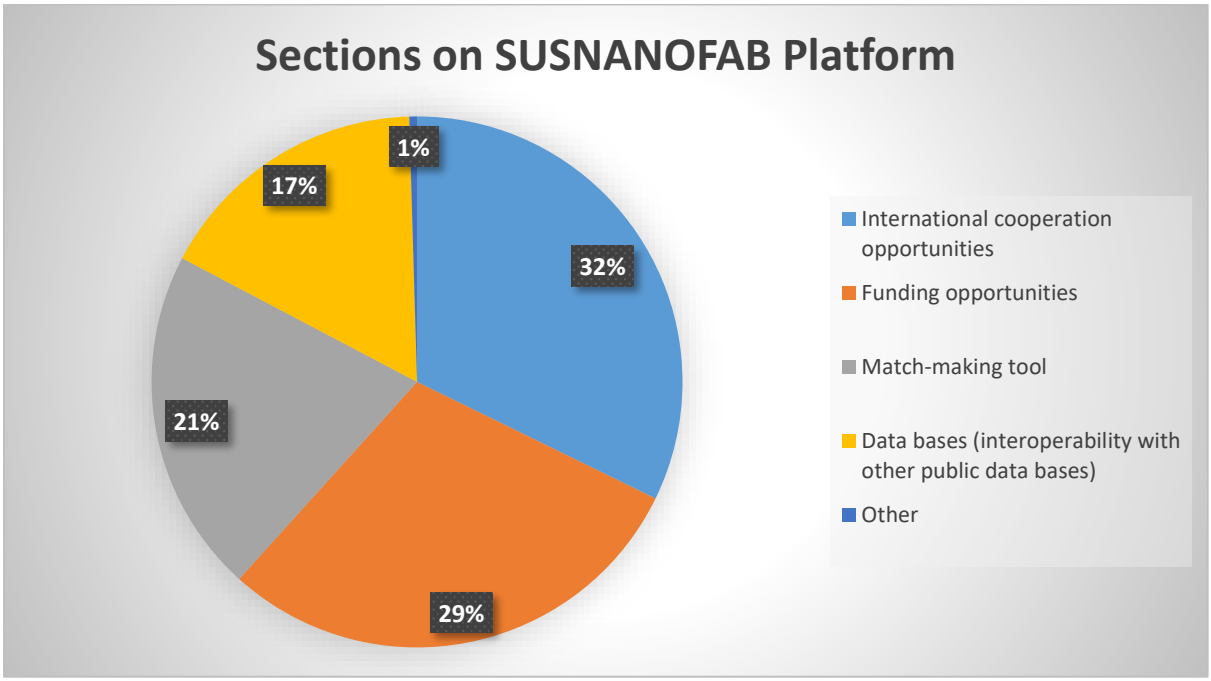

Figure 7 - Platform Sections Chart

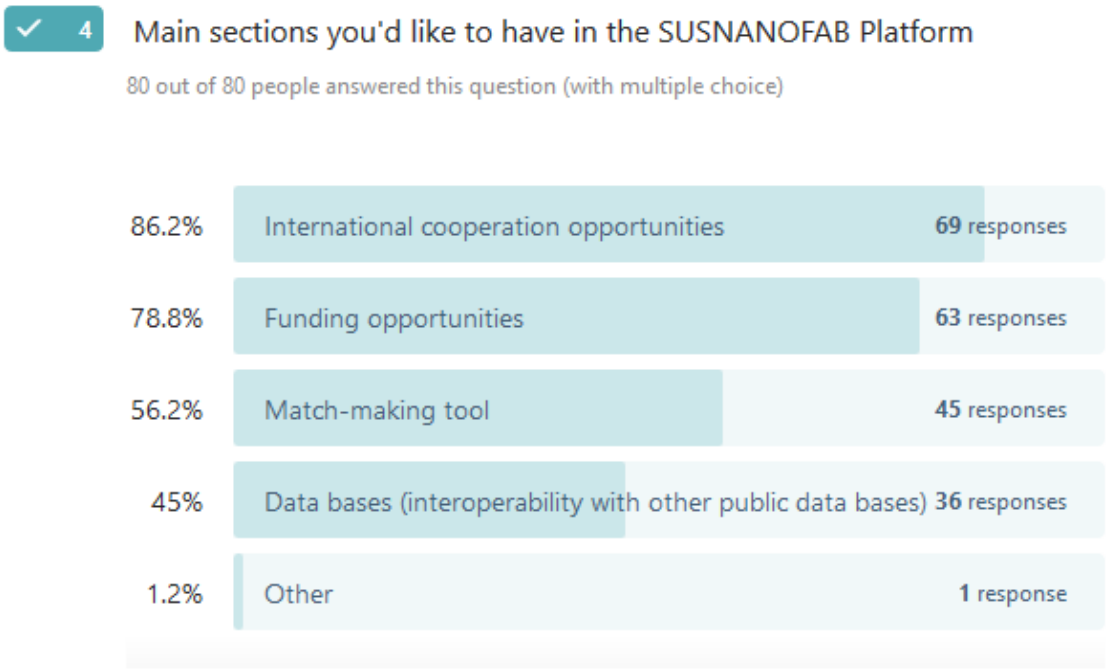

Figure 8 – Question n. 4

The next group of questions was related to information that stakeholders believe that would be useful for their business. These were raking questions, from 1 to 5, meaning 1 not at all, and 5 very much. This group of questions comprehended 7 sub-sections. The lower rating was the section on analysis of nanofabrication services available in the US. All the other sections were rated on average of 4 out of 5.

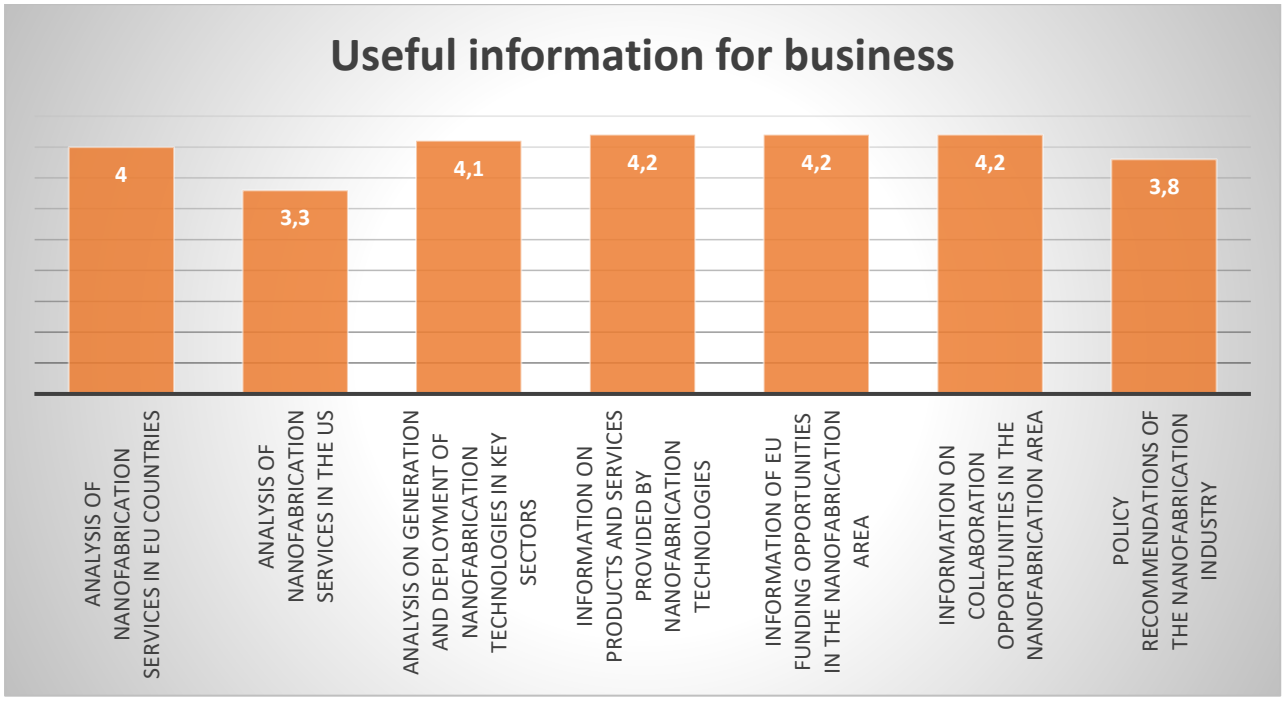

Figure 9 – Group of questions n. 5

The next group pf questions were also for ranking from 1 to 5. But instead of approaching information, stakeholders had to rank the actions they believe would be useful for their business.

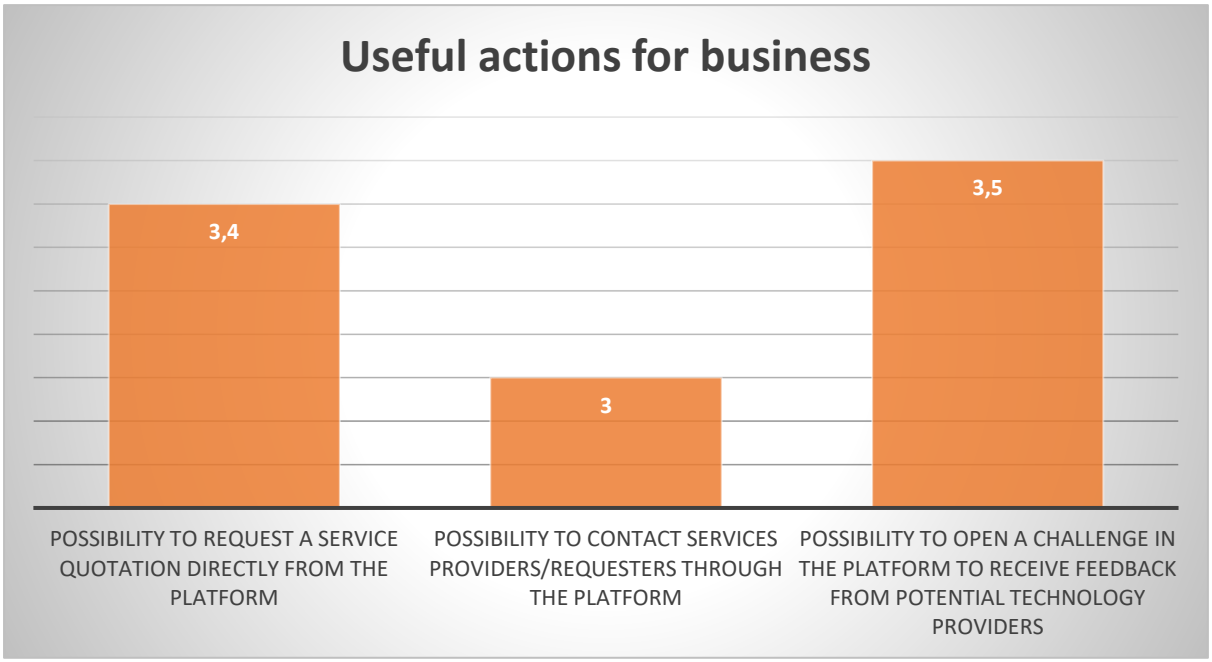

Figure 10 - Group of questions n. 6

The next group of questions was associated to tools and functionalities that stakeholders would appreciate in the SUSNANOFAB Platform.

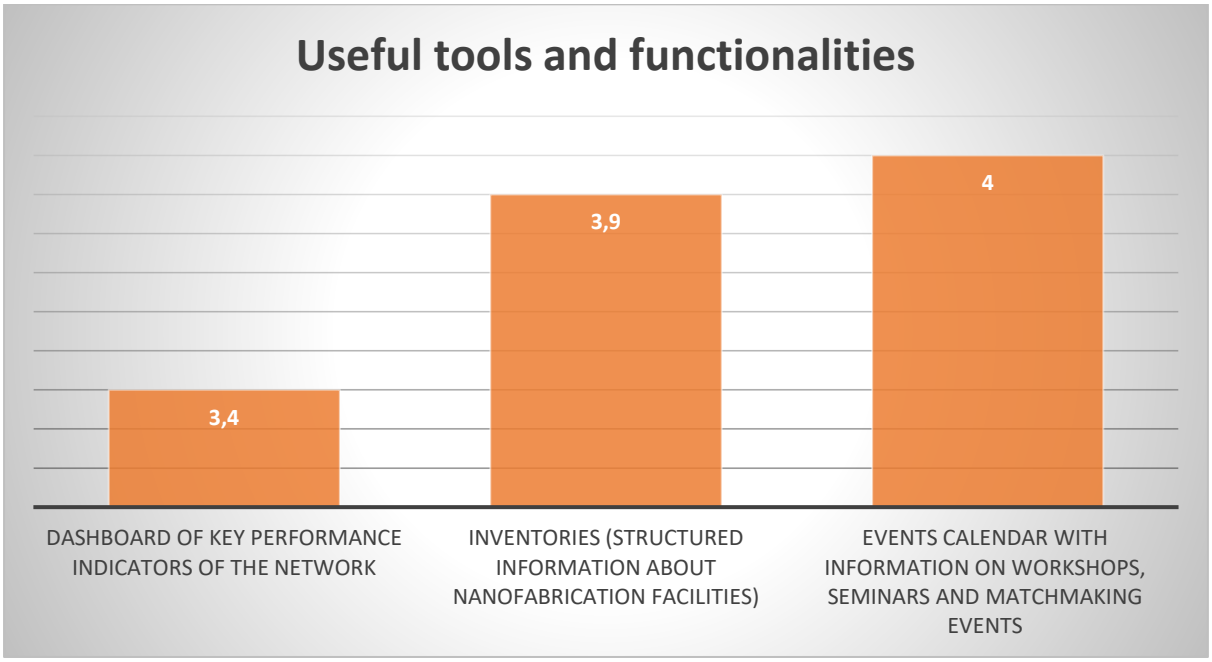

Figure 11 - Group of questions n. 7

Regarding the usability, the stakeholders were asked from which device they would be accessing the SUSNANOFAB Platform, and the majority of 62% would be using desktop, against 35% of users accessing from both mobile and desktop, versus only 2.5% of the stakeholders that would be using only the mobile.

Figure 12 - Question n. 8

The following questions are still associated to the usability of the platform and stakeholders had to answer with yes or no options. From the results, it can be infered that most of the stakeholders are willing to create an user account in a nanofabrication based platform that provides valuable data, features and tools mentioned in the survey. Although, they would prefer not to create it from pre existing accounts of different platforms.

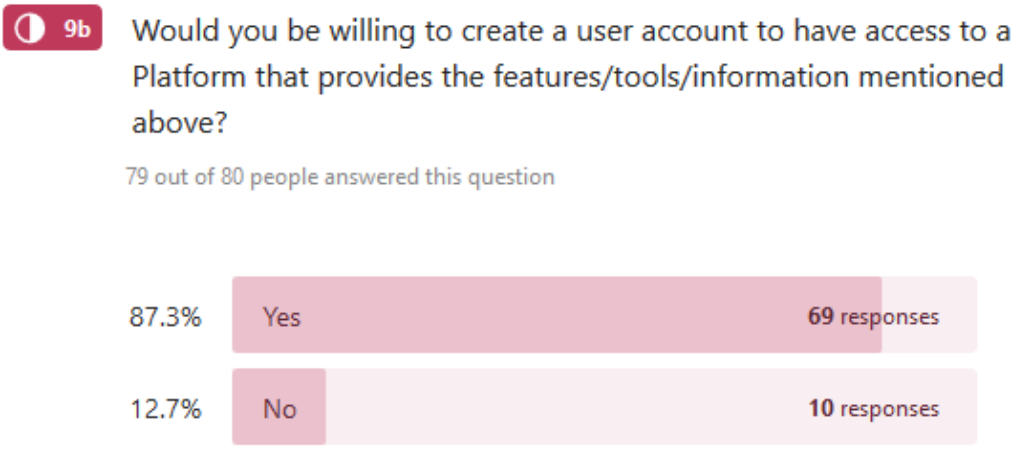

Figure 13 – Question n. 9

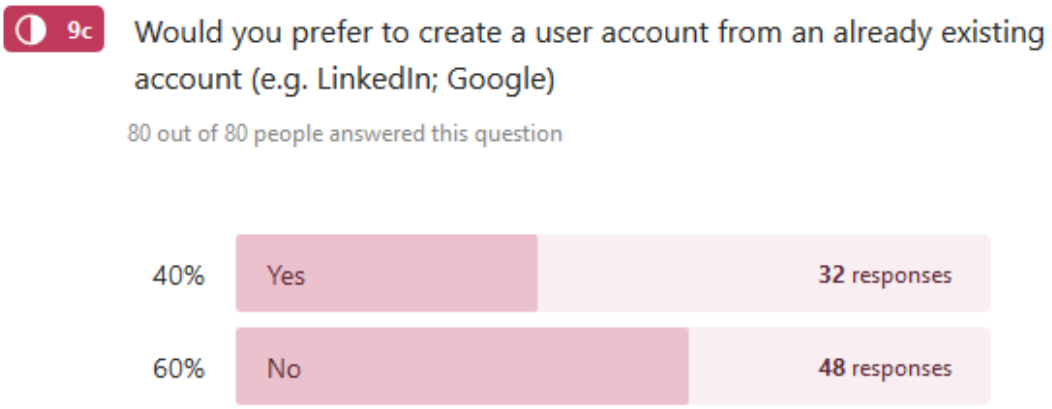

Figure 14 - Question n. 9 (b)

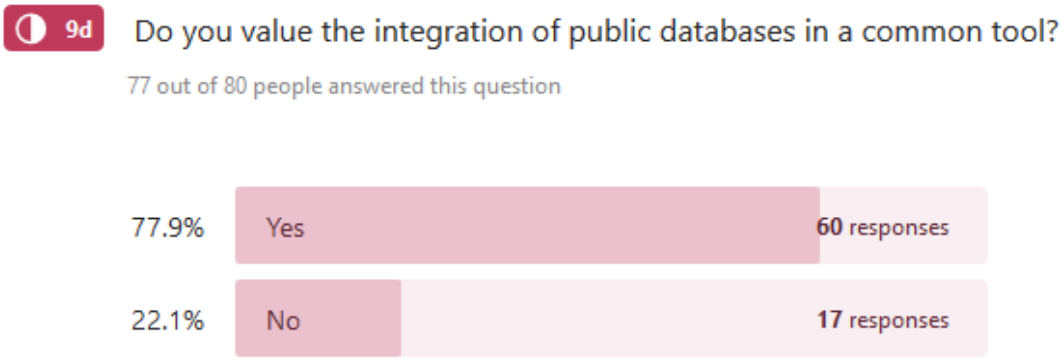

Figure 15 –Question n. 10

And the final question of the user requirements survey was open to leave any comment or suggestion for the development of the SUSNANOFAB Platform. The main comments received are quoted below:

"It is important to present well-segmented information so that it does not get lost and become a dive in a sea of unintelligible data. Information must be in manageable size packages."

"We think there is a lack of information about latest findings on safety and health at the workplace in the nanotech industry, translation into guidelines, and how those differ between countries."

5. Overall Survey Analysis & Description of work

Following the analysis of the results of the user requirements survey, the next step is the description of the work to be executed in the development stage – design, prototyping and deployment - to reach the operational objectives and to tackle the needs of the stakeholders.

5.1 Definition of the platform structure and sections

The home and entry point of the platform will be the SUSNANOFAB website[6]. The website content will be adapted to a simple and minimalist approach, aiming at bringing the focus to the platform.

To be part of the SUSNANOFAB network, it will be necessary to create a user account. Following the principle of data minimization, the minimum personal data will be requested at this stage.

As result of the user requirements, the sections that stakeholders valued the most are international cooperation opportunities, funding opportunities and the matchmaking tool. These three sections, plus the repository section should be made available as the core sections of the tool. Behind these features, the mechanism to feed their content should be a robust set of interoperable databases.

The funding opportunities section should retrieve automated and updated data from the EU Funding & Tender Opportunities[7], as the Grants & Tenders services has web services available for external systems, providing a list of all calls for proposals and tenders with related metadata.

The international cooperation opportunities section will be established during the project duration and later translated to the platform. One of the main outputs of the project is the EU wide strategic roadmap on nanofabrication, which will include international cooperation activities. To deliver this roadmap, 3 cooperation groups will be activated covering the whole nanofabrication value chain, each of them will include 20 experts from EU and USA, and from different backgrounds. This task will comprise the organisation of interactive sessions, through workshops, online surveys, web forums and questionnaires to encourage proactive analysis of the nanofabrication context and scenarios, identification and assessment of drivers and challenges. All these activities will be enhanced by the SUSNANOFAB platform, promoting great international cooperation opportunities.

Users of the SUSNANOFAB platform will also be involved in international cooperation opportunities thought the brokerage and training services, as well as in the two big networking and stakeholders' engagement events. Registrations to these activities will be made directly through the platform.

[6] https://susnanofab.eu/
[7] https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/home

The matchmaking section will bridge the gap between the sustainable nanofabrication supply and demand. This section will enable users to define their networking profiles and to create marketplace entries, searching for or offering a product, a service or a partnership. These opportunities should be listed in this marketplace area, facilitating the matchmaking.

The matchmaking among the users will be possible on a continuous way, virtually on the platform, but also physically in the events to be hosted by the SUSNANOFAB project. Allied with the registration tool, user will be able to register to the SUSNANOFAB events, define their profiles to be made public, check the registered profiles and request one-to-one meetings to be held during the events.

Still in the matchmaking section, associated to the events also and with the cooperation opportunities mentioned above, an event calendar should be made available in this section. It will comprehend a simple calendar, highlighting the dates of SUSNANOFAB events and other relevant events and conferences in the nanofabrication ecosystem, such as: Nanotechnology for Renewable Materials, International Conference on Material Science and Engineering, Nanosafe biannual event, European Nanofabrication Research Infrastructure Symposium, etc.

To summarise, the matchmaking section should include three subsections: the matchmaking tool (that will include the marketplace), the event registration tool, and the event calendar tool.

The repository section will become a point of reference for EU and international policy recommendations, best practices and common protocols regarding sustainable nanofabrication. Its structure will be clustered around the six target sectors:

- Health;
- Climate change & energy;
- Food and natural resources;
- Inclusive & secure societies;
- Mobility;
- Digital & industry.

Interoperability of the SUSNANOFAB platform with other platforms will be exploited in order to integrate existing best practices from other initiatives. The repository will also include public information, standards and standardisation activities.

All the public deliverables and documents from the SUSNANOFAB project should also be made available in the repository. The consortium will define the metadata for each document to be upload, improving the search engine functionalities. Key words should be related to sector information, type of document and other categories to be defined.

5.2 Databases integration into the Platform

The SUSNANOFAB platform aims at bringing together the outcomes of existing EU funded projects and initiatives and ultimately strengthen the technology uptake across Europe in an open data ecosystem where access to dynamic data is provided. For that end, web services will be designed and deployed envisaging a simpler and automated use of different datasets through the correct and secure employment of APIs and avoiding the sub-optimal use of information gathered under funded projects.

The use of APIs to bring together different networks around a common digital umbrella is expected to strongly contribute to the creation of a valuable nanofabrication ecosystem and dramatically improve communication among stakeholders.

Below is the table of the key linked initiatives that will allow maximizing and data from the nanofabrication ecosystem and bringing them together in a structured and dynamic way into the SUSNANOFAB Platform.

Digital Platform	Research Centres	Pilot Lines	OITB	DIH	Industry (Technology Supplier)	Industry (Technology User)	Education and and Training	Materials Modelling	Characterisation	Safety	Best Practices
EPPN	X	X	X		X	X					
EMMC and marketplace projects					X	X	X	X	X		X
NanoSafety Cluster							X			X	X
EC4SafeNano Platform							X			X	X
AM Platform	X				X						X
Mapping of KETs Centres database	X				X						
DIH Catalogue				X	X						

Figure 16 - Key linked initiatives to the SUSNANOFAB Platform

Further details on the databases to be integrated as the mechanism to feed the sections and tools of the platform will be defined during the prototyping and deployment of the SUSNANOFAB platform.

5.3 Dashboards

The SUSNANOFAB platform will display an area with a series of dashboards including the following:

- **Report analysis on nanofabrication services available in the EU Countries**: the preliminary data for this section will be collected in the framework of WP2, specifically in the report on the existing and relevant services and infrastructures (D2.3). This report will categorise and define the data taxonomy for the services list that will be available in the tool, and will map the offering of existing relevant services and access to infrastructures that compose the European nanofabrication ecosystem. The information collected

will be framed under a sectorial analysis and will link the KETs Centres from DG GROW, DIH Catalogue and EPPN.

- **Sectorial analysis of generation and deployment of nanofabrication technologies per key sectors:** the data to be used in this analysis will be collected in WP2 as well. Aiming at identifying the most relevant opportunities for the integration of nanofabrication in the European industrial ecosystem, a comprehensive mapping of the nanofabrication landscape in target sectors.
- **Data on products and services provided by nanofabrication technologies**: In the same task mentioned in the previous bullet, a list of exemplary target products will be reported and will serve as basis for this dashboard.

To summarise, the dashboards will rely on data from the nanofabrication ecosystem linking all relevant initiatives (WP2). It should display the statistical data in a user friendly interface and creative graphic designs.

6. Data categories and taxonomies

To achieve the interoperability between databases, to adopt a common language, and to guarantee possibilities of growth of the SUSNANOFAB platform, it is crucial to define the data categories and taxonomies that will be used as the basis of the structured data. The data taxonomy will provide a unified view of the data in the platform, and more important: it will allow common terminologies and semantics across multiple systems and databases.

The data categories to be used on the SUSNANOFAB platform comprises the taxonomies used in EU organizations, EU statistic frameworks and will also be composed from deliverables to be developed during the project.

Not many of the data categories and taxonomies can be defined in this early stage. But it is important to emphasize the value of defining an effective and comprehensive data categorisation to organize the data volume that will be available in the platform.

In the user and entity level descriptions, there are some data categories adopted in the framework of the EPPN project that can be capitalised in the SUSNANOFAB. It will allow the interoperability and the maximization of the use of data already collected and categorised.

6.1 Entity activity sector

The activity sector taxonomy adopted in the user requirement online survey, is the same addopted in the EPPN aiming at facilitating the interoperability between both platforms. This list is the Market Sector adopted by the KET Observatory.

Activity Sectors:
Aeronautics & space
Automotive transportation
Chemical Industry
Construction & building sector

Consumer goods/products
Energy
Environment
Food
ICT industry (including electronics, computer and communication related products)
Measurement
Medical & Healthcare
Production technology (machinery/equipment/automation)
Textile
Others

6.2 Entity type

The classification of the entity type was adopted in the user requirements online survey as well, and is the following:

Entity type
Academic Institution
SME
RTO
Large Enterprise
Public Authority
Energy
Environment

6.3 Key Enabling Technologies

The Key Enabling Technologies classification to be adopt is the Ket Observatory indication for KETs taxonomy:

Key Enabling Technologies
Nanotechnology
Advanced materials
Photonics
Micro- and nanoelectronics
Industrial biotechnology
Advanced manufacturing technologies

Subcategories for Nanotechnology
Nanomedicine
Nanomembranes
Nanostructured coatings
Nanoparticles, Nanowires and tubes

Nanoemulsions and pigments
2D materials

Subcategories for Advanced Materials
Electronic and optical functional materials
Environmental materials (e.g. recycling, resource efficiency, less impact, CO2 capture/utilisation)
Industrial materials (incl. Catalysts, membranes, adhesives, filters)
High performance materials (strong, light weight, resistant)
Materials for energy storage and generation
Smart and multifunctional materials (incl. Phase change, shape memory, self-healing, self-manufacturing)
Surface engineering and coatings

Subcategories for Photonics
Displays (LCD, plasma)
Photodetectors (solar cells, photo-diodes, photo-transistors)
Optical fibres
Laser based applications
Intelligent sensor-based equipment
Lightning (LED, OLED)
Optical communication and networks
Optical component & systems

Subcategories for Micro- and nanoelectronics
Quantum technology
Optoelectronics (optical networks, optical sensors)
Outside system connectivity (communication, data transfer, wifi)
Power electronics
Printed/flexible electronics
Equipment technology
Memory and storage
Analogue and mixed signal devices (µ-wave, RF, THz)
Computing (low power computing, high performance computing, new computing (non von Neumann, beyond CMOS, beyond Moore))
Heterogeneous components & more than Moore (MEMS, NEMS, sensors, transducers)
Heterogeneous integration/embedded systems

Subcategories for Industrial biotechnology
Vitamins

Polymers, bioplastics
High value food & feed additives
Enzymes
Amino acids
Antibiotics
Biobased chemicals
Biofuels

Subcategories for Advanced manufacturing technologies
Smart Manufacturing / Industry 4.0
Robotics / Human machine interaction
Process industry (processing of novel materials, structures, etc.)
Monitoring and control
High performance computing / cloud-based simulation services
Additive manufacturing
High-performance production (flexibility, productivity, precision and zero defect)
High-performance, high precision processing
Intelligent/ sensor-based equipment

6.4 List of nanofabrication services

The list of nanofabrication services will be an outcome of the deliverable D2.3 – Report on existing relevant services and infrastructures. It will be the starting point for the planning and deployment of brokerage services; and also the categorisation adopted in the services to be available in the SUSNANOFAB platform.

6.5 List of products per target sectors

In the same way as the previous section, the list of products per target sectors will result from the mapping of the landscape of nanofabrication in target sectors and list of exemplary target products.

7. Conclusion

The SUSNANOFAB Platform user requirements have been analysed and specified in this document. The requirements are based desk research and on the analysis of an online survey addressed to relevant stakeholders, which will be target users of the platform.

It is essential to highlight that the development of a robust platform to tackle all the nanofabrication ecosystem addressing the identified needs of the stakeholders is a working process. It does not comprehend one single task, but instead, a set of tasks to be developed throughout the entire project implementation.

The description of work defined in this document will be continuously updated and reviewed during the platform design and prototyping, aiming to improve it to accomplish an excellent and robust tool on its final deployment.

The datasets to be made available and the data categories and taxonomies to be adopted in the SUSNANOFAB platform will need further elaboration and refinement in the later stage of the project. Other data categorisation and taxonomies, as well as extra datasets that are not included in this report will probably overcome during the prototyping and further development of the platform. This document may be updated during the project lifetime.