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List of Abbreviations

CA - Consortium Agreement

BNN - BioNanoNet Forschungsgesellschaft mbH

D - Deliverable

EC - European Commission

EU - European Union

GA - Grant Agreement

GDPR - General Data Protection Regulation

HaDEA - Health and Digital Executive Agency

M - Month

NSC - NanoSafety Cluster

OF2i - OptoFluidic Force Induction

PAT - Process Analytical Technologies

PDW - Photon Density Wave Spectroscopy

PEDR - Plan of Exploitation and Dissemination of Results

TUS - Turbidity Spectrometry

WP - Work Package

Publishable Executive Summary

This deliverable D7.3 – "*Building a stakeholders framework*" is developed as part of the NanoPAT project, which is a European Union Horizon 2020 Research and Innovation Program, under the Grant Agreement number 862583. It has been produced by BNN, as leader of WP7 on "*Knowledge Transfer & Dissemination*", based on the input from all project partners to map relevant stakeholder groups and relevant organisations/clusters/networks. Furthermore, this map will be used to plan targeted stakeholder engagement activities that will address the relevant stakeholder groups.

Introduction

Deliverable D7.3 "*Building a stakeholders framework*" is developed as part of the NanoPAT project. It includes an initial map of relevant stakeholders for NanoPAT, as well as an initial plan of engagement activities fostering stakeholder involvement. All project partners have been involved in the creation of both the stakeholder map and the plan for stakeholder engagement.

The identification of the relevant project stakeholders and the implementation of the plan for stakeholder engagement are crucial for the success of the project and for the sustainability of its outputs in the long term.

After a short description of the process of stakeholder mapping (Description of action), the deliverable presents the categories of stakeholders that have been identified for NanoPAT, distinguishing between internal and external to the project. Results-Section 3 explains the process to be followed by NanoPAT for the stakeholder assessment. Finally, Results-Section 4 shows an initial plan of activities for tailored stakeholder engagement.

As the project progresses, the map of relevant stakeholders and the list of activities for the stakeholder engagement will be updated according to the project needs. These updates will be reflected in the deliverables D7.4 "*Preliminary community building action plan incl. education and engagement*", D7.6 "*Final Plan for the Exploitation and Dissemination of Results*" and D7.7 "*Final community building action plan incl. education and engagement*", in the months M24, M48 and M48 respectively.

Description of task

Deliverable D7.3 with the title "*Building a stakeholders framework*" is an important document for WP7 that deals with "Knowledge Transfer & Dissemination". This deliverable is due in M16 (September 2021) and the lead beneficiary is BNN.

Stakeholders and their engagement are a key element for the success of this project mainly with respect to maximising impact and sustainability of the project output in the long term. This deliverable presents the results of stakeholder identification by NanoPAT partners during the first 16 months of this project, as well as an initial plan of stakeholder engagement activities. The stakeholder map and the plan for stakeholder engagement will be updated according to the project needs during the project lifetime.

Specifically, D7.3 relates to Task 7.2 and 7.3, which are described in the NanoPAT Grant Agreement.

Description of action

The stakeholder mapping process aims to identify which stakeholders need to be engaged, in order to achieve the highest impact for the project. The stakeholder selection is based on the content, the expected results and the intended impacts of the project, as well as the available resources, the objectives of the engagement and the willingness or the ability of the stakeholders to engage and to be involved in the project.

Stakeholder mapping is a collaborative process of research, debate and discussion that draws from multiple perspectives to determine a key list of relevant stakeholders across the entire stakeholder spectrum. The process of stakeholder mapping can be divided into three phases, as illustrated in Figure 1. The map of relevant stakeholders is not a static list and it will be regularly evaluated through the project lifetime.

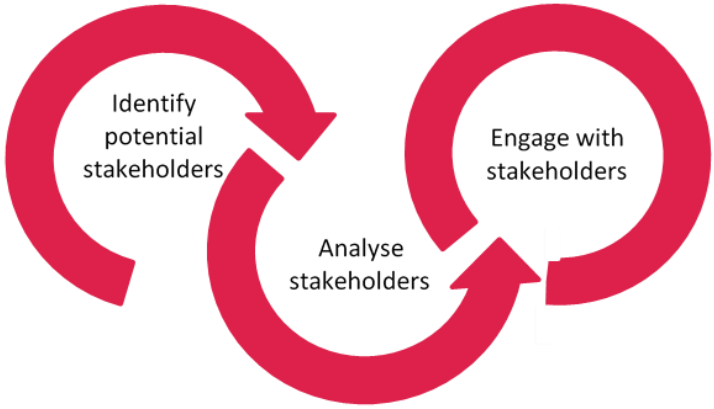

Figure 1: *Phases in the process of stakeholder mapping.*

Stage 1: Identification of stakeholders

At the identification stage, the brainstorming of all potential stakeholders takes place without particular screening. All project partners are involved in this task, building upon their own contact networks. Therefore, the identified stakeholders at this stage include everyone who might potentially have some interest in NanoPAT and results.

The list of the identified stakeholders relevant for the project is provided in *Annex 1*.

Stage 2: Analysis of stakeholders

Further analysis is carried out at the second step to better understand stakeholders' relevance and interest to the project and the perspective they offer. All partners are again

involved in this step, evaluating (i) the willingness of each stakeholder to engage with NanoPAT and to participate in its activities, and (ii) the potential influence of each stakeholder towards the results and impact of the project.

Based on this analysis, each stakeholder can be easily placed in the power/interest matrix (see Figure 5) determining his/her management and further actions .

The stakeholder mapping follows after the stakeholder analysis, i.e., the stakeholder is added to the list of NanoPAT stakeholders, assigning a category of power/interest, level of support to NanoPAT, indicating their stakeholder group, country where the stakeholder is established/operational, and some more relevant information (see Table 3). This mapping process of stakeholders will be further carried out by the project partners within the next months and will be reported in the upcoming deliverables. The stakeholder list may change during the lifetime of the project. Therefore, it will be regularly monitored and updated.

Stage 3: Engage with stakeholders

NanoPAT understands stakeholder engagement as the process by which a project communicates and gets to know its stakeholders, their special interests and needs. By getting to know them, the project is able to better understand what they want, when they want it, how engaged they are and how the project's plans and actions will affect their goals. Furthermore, the project can improve its communication and adapt its strategies and operations, having long-term benefits such as brand reputation or first mover advantage.

Therefore, to engage with stakeholders, a tailored strategy will be defined to fit the engagement of each specific group of stakeholders. An overview of the first ideas for engaging with the stakeholders is shown in Table 4.

Results

NanoPAT has consulted and will further consult with all project partners to identify all relevant stakeholders for the project.

NanoPAT has divided its stakeholders into two categories:

A. Internal Stakeholders: Stakeholders within the project, i.e., the project partners and the funding organisation.

B. External Stakeholders: Other stakeholders that (may) have an interest in NanoPAT activities and outcomes:

- Advisory board: External individuals to the project who engage with the project at different points along the work plan, complementing the consortium's industrial and technical insight in relevant fields.
- Scientific Advisor: External individuals to the project who voluntarily support NanoPAT in concrete issues/activities.
- Research and Education Communities: This group includes universities and research centres, participants in related EU projects, research societies, academia, research institutes, applied technology, open innovation hubs and non-industrial clusters/associations/networks.
- Technology Developers Industries: large international producers of dispersions of polymer nanoparticles that may be interested in buying the technologies that are being developed in NanoPAT and potentially willing to include them in their own products that will be then further sold to end users (i.e., technology for measuring nanoparticles).
- End users: potential end users/buyers/customers of NanoPAT outcome (e.g., device, final product for characterization of nanoparticles).
- Industrial Clusters/Associations/Networks
- Regulatory Authorities, e.g., national ministries, agencies, etc.
- Policy Makers, i.e., authorization and permitting bodies, regulators, standardization bodies, etc.
- Investors: this group will include stakeholders that are interested in investing in NanoPAT technologies. This group will be analysed within the next months once

NanoPAT technologies are more developed and the exploitation plan is more advanced.

- General Public, i.e., environmental NGOs, citizen organisations, students, individual citizens, non-for-profit organizations, schools, public initiatives, etc.
- Media, i.e., magazines, social networks, websites, web, TV, local TV, newspapers, radio stations, etc.

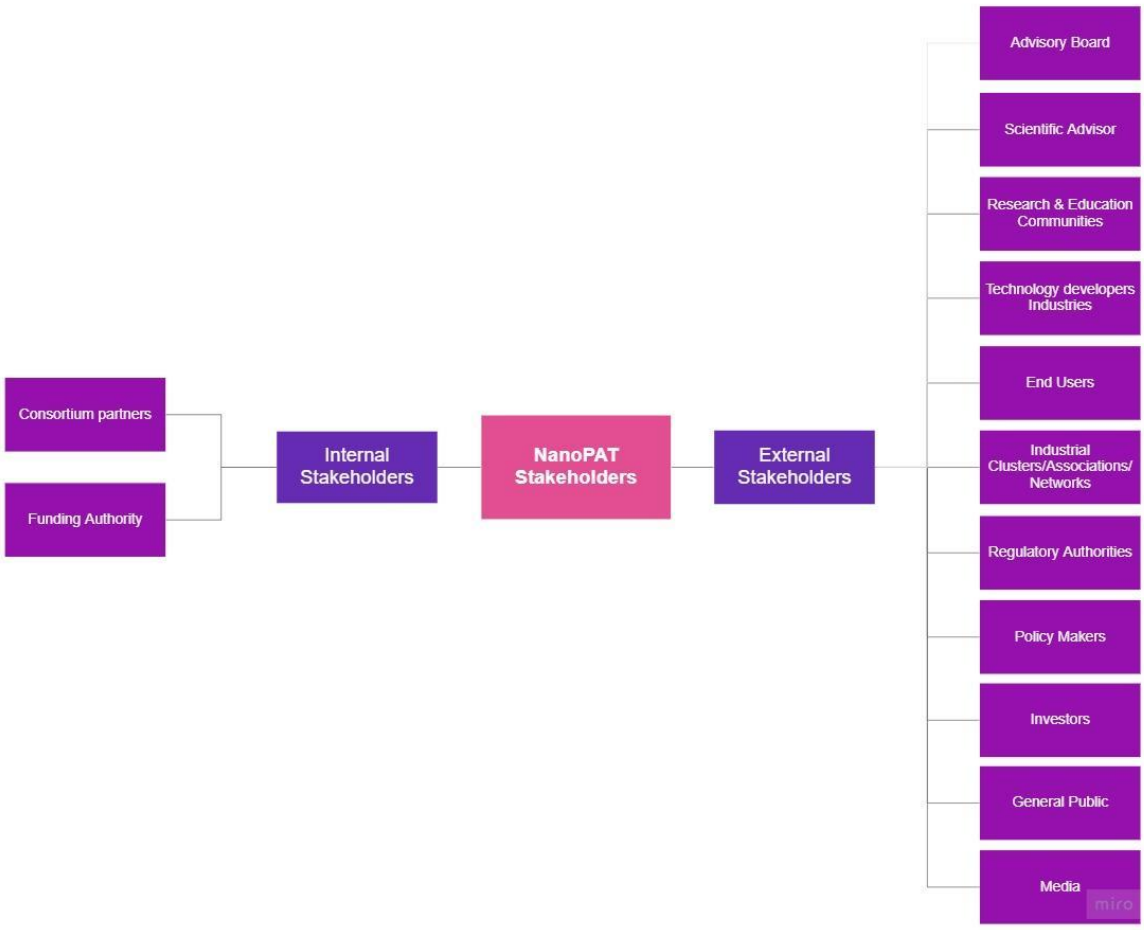

Figure 2: *Stakeholder groups of NanoPAT (initial identification).*

The current list of potential stakeholders is presented in *Annex 1*. As the project progresses, an expanded list will be produced and updated regularly. A final list will be provided in deliverable D7.6 "*Final Plan for the Exploitation and Dissemination of Results*" in M48, May 2024.

The first ideas for engaging with relevant stakeholders have been defined and are presented in Table 4. This strategy will be expanded and adapted as the project evolves. Similar to the list of stakeholders, the final list of stakeholder engagement activities carried out by NanoPAT will be

provided in deliverable D7.6 "*Final Plan for the Exploitation and Dissemination of Results*" in M48, May 2024.

1. Identification of Stakeholders

1.1. Project internal stakeholders

1.1.1. Consortium partners

15 EU partners (Universities, Research and Technology Organisations, SMEs and large Industry) distributed across 8 European countries.

The partners are from the following countries: Austria, France, Germany, Greece, Netherlands, Portugal, Spain, Switzerland. Our partners bring together solid scientific knowhow in the relevant fields and strong industrial and commercial involvement to ensure that the value chain of commercial actions can progress swiftly towards the introduction of new real-time solutions for the monitoring of nanoparticle production processes. All partners contribute actively to the project, ensuring the flow of ideas and project results to the wider community. Our experts are instrument developers, process data and modelling experts, academic process researchers, industrial processing experts, as well as innovation and dissemination specialists.

NanoPAT Consortium[1] consists of 15 partners (Universities, Research and Technology Organisations, SMEs and large Industry) distributed across 8 European countries. These are Austria, France, Germany, Greece, Netherlands, Portugal, Spain, Switzerland.

[1] https://www.nanopat.eu/team-nanopat/

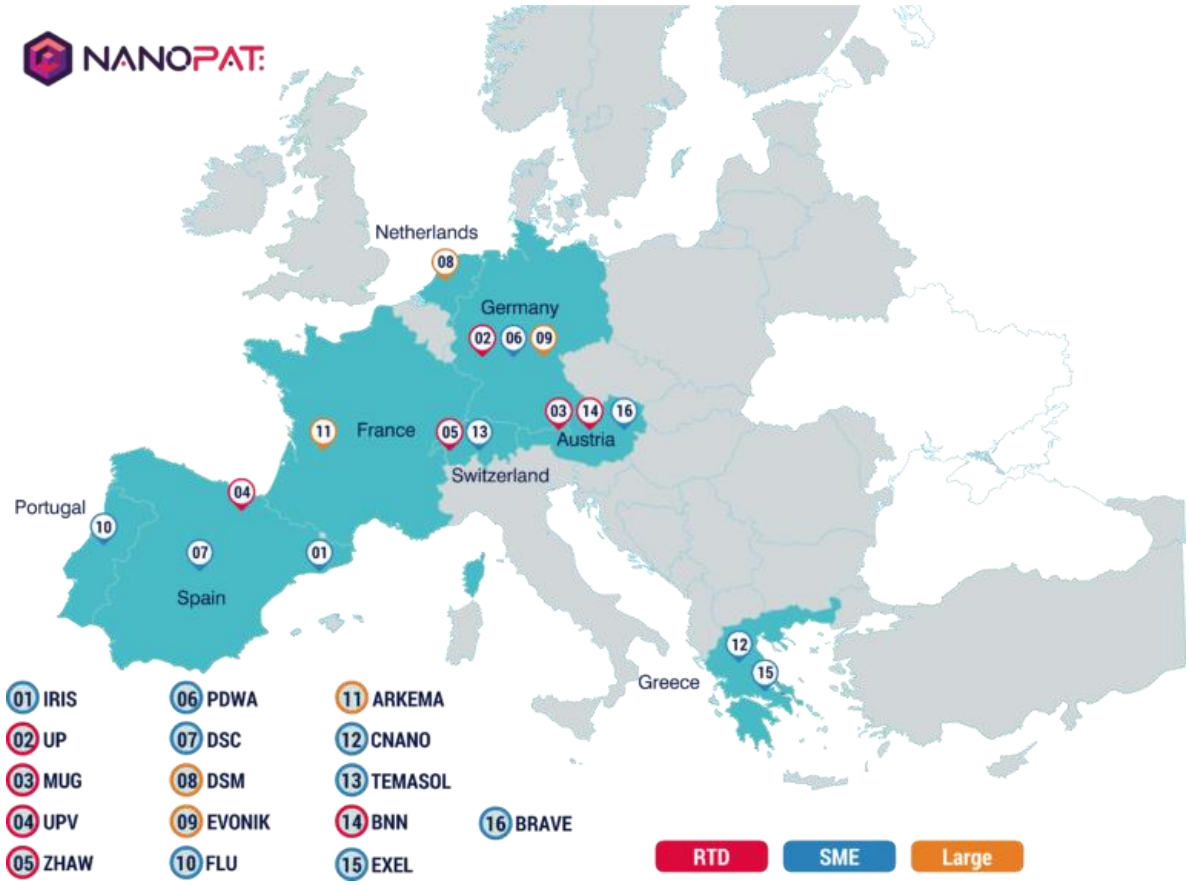

Figure 3: *NanoPAT partners.*

Internal communication is important for information sharing and to maintain a high commitment among the Consortium members. This contributes to a successful dissemination and exploitation of research outcomes and engagement in spreading the project results. Thus, it is an extremely important element for delivering the goals of NanoPAT. WP leaders and task leaders are encouraged to communicate regularly with their co-task participants and to organise discussion meetings concerning task progress, planning and implementation, and development of joint documentation, including input into periodic reports and deliverables.

For the coordination team, communication with the Consortium is on an *ad hoc* basis, as required, and is more formal via regular project meetings that provide updates on overall project progress.

For more details on internal communication please refer to deliverable D7.2 "*Preliminary Plan for the Exploitation and Dissemination of Results (PEDR)*" and in particular to its tables 1 and 2.

1.1.2. European Commission

The European Commission represents the European Union as the contractual partner and funding body for grants, so it is a major stakeholder. The Project Advisor, Yanaris Ortega García (Health and Digital Executive Agency (HaDEA)), is the designated contact point for the Project Coordinator. Communication of project results to the European Commission is achieved through interim and periodic reporting and the submission of milestone and deliverable reports.

1.2. Project external stakeholders

All potential stakeholders identified by the *market analysis* carried out by WP8 - *Market Analysis & Innovation Impacts* (see Exploitation part of deliverable D7.2 - *Preliminary Plan for Exploitation and Dissemination of Results*, for more details) have been taken into consideration for the work shown in this deliverable.

NanoPAT project outcomes will be of interest to a large number of different sectors, such as energy, food, computer science, transport, chemical polymers, pharmaceutical & cosmetics, coatings, security, automotive, aerospace, nano-paintings, metal finishing market, construction, medical devices, etc.

NanoPAT has a very broad potential for monitoring the synthesis and conversion processes involving an infinite variety of nanoparticles and media types. As a subset representative of this potential, NanoPAT will validate the combination of different nano-characterization technologies in 5 industrial case-studies (Figure 4), demonstrating the viability of the proposed PAT solutions for the industrial nanoparticles production of polymers, silica, hydroxyapatite, zeolites and for the dispersion of ceramic nanoparticles into coatings via electrodeposition method.

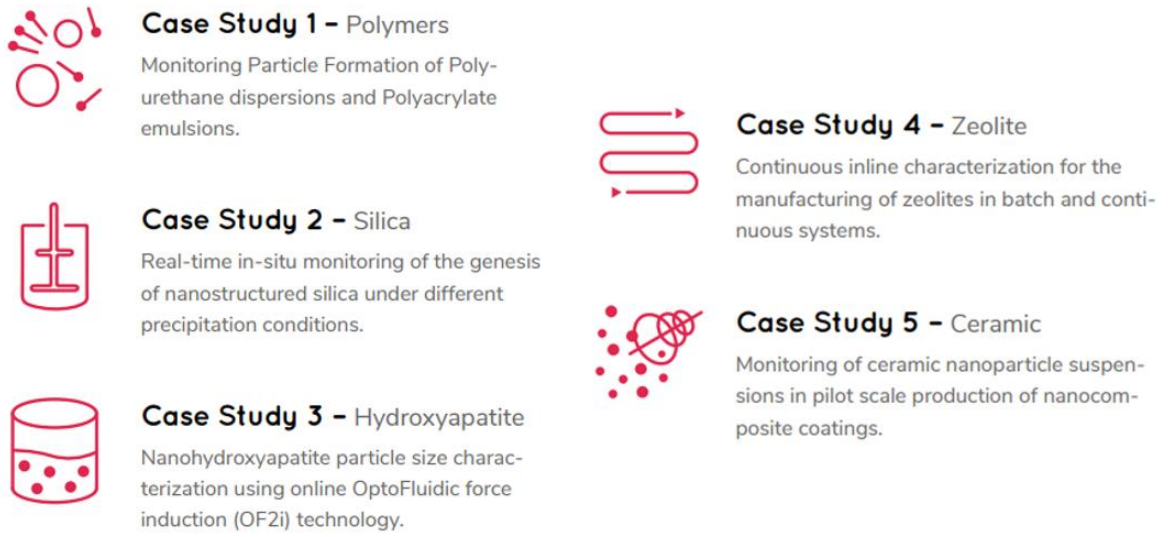

Figure 4: *NanoPAT's case studies.*

Stakeholder engagement is broader than just Communication and Dissemination activities. The project will engage *unidirectionally with the relevant stakeholders* by sending out information and updates on project results (e.g., webpage, publications, press releases, newsletter articles, presentations and posters in conferences, etc.). Furthermore, *bidirectional-engagement* will be used to follow knowledge transfer and training, raising the awareness and interest of potential users (e.g., workshops, webinars, etc.).

Moreover, an email address[2] and a contact form on the project website[3] have been set up so external stakeholders interested in NanoPAT that are willing to work, contribute or share their ideas with us, can do it.

A first step in the Stakeholder Engagement Strategy is the internal identification of stakeholders, i.e., starting from the existing network of each project partner. Based on this internal mapping we will of course identify other stakeholders that are outside of the partners' already existing networks. Networks consisting of all stakeholder groups play a crucial role in the implementation of the communication and dissemination plans of the project (and consequently in successful implementation of exploitation activities).

More information on the NanoPAT project's communication and dissemination strategy is provided in D7.2 "*Preliminary Plan for the Exploitation and Dissemination of Results (PEDR)*".

The current list of identified stakeholders is presented in *Annex 1*. All partners have been highly involved in the process of identification of the most relevant stakeholders for the project (and the partners). As the project progresses, an expanded list will be produced and updated regularly according to the project needs. A final list will be provided in deliverable D7.6 "*Final Plan for the Exploitation and Dissemination of Results*" in M48, May 2024.

1.2.1. Link to Key Platforms and Clusters

NanoPAT will actively participate at key platforms and clusters to allow for information exchange, collaboration, feedback and sustainability for the project. This will contribute to establishing a legacy for NanoPAT beyond the project lifetime.

The most relevant key platforms and clusters that have been identified so far are listed in table 1. The identified key platforms and clusters are included in the list of identified stakeholders (see *Annex 1*), which will be updated during the project runtime. Some activities have already been started and will be reported as soon as they come to concrete actions.

[2] nanopat_coordination@iris-eng.com

[3] https://www.nanopat.eu/contact-us/

Table 1: *Identified Key platforms and Clusters (Status October 2021).*

Cluster / Platform / Network / Council/ Association	Name
Cluster/Project	NMBP-08 projects (PATs)
Cluster/Project	NanoCommons
Cluster	EU NanoSafety Cluster
Cluster/Project	NMBP-12 projects (Nanofabrication)
Council	EMMC - European Materials Modelling Council
Council	EMCC - European Materials Characterisation Council
Network	EPPN - European Network for Pilot Production Facilities and Innovation Hubs
Network	COSMIC (MSCA GA 721290): European Training Network for Continuous Sonication and Microwave Reactors
Research centre within the UP (equivalent to POLYMAT - UPV)	innoFSPEC - Center for innovation competence (Innovative Faseroptische Spektroskopie und Sensorik)
Transfer and innovation project conducted by UP	Innovative Hochschule - BMBF - excellence programm
Association (Industry)	A.SPIRE - Association Sustainable Process Industry through Resource and Energy Efficiency
Association (Industry)	EFFRA (European Factories of the Future Research Association)
Cluster	EPIC - European Photonics Industry Cluster
Association (Industry)	Nanotechnology Industries association (NIA)
Association (Industry)	ENNA (European Nanoscience and Nanotechnology associations)
Association (Industry)	EUSPEN
Association (Industry)	GDCh Arbeitskreis Prozessanalytik
Association (Industry)	Secpho
Association (Research)	EURAMET (European Association of National Metrology Institutes)
Association (Research)	Nanometrology Lab LTFN
Association (Research)	National Metrology Institute of Germany (PTB)
Association (Research)	EuroLab
Public standards organisation	CEN - European Committee for Standardization
International standards organisation	ISO - International Organization for Standardization
Cluster/Project	Open Innovation Test Beds
Industrial Research initiative	PAC (Process Analytical Chemistry)
Technology platform	SusChem
Technology platform	SusChem-AT
Association (Research)	Nanospain
Association	FAN
Association (Industry)	Association of Nanotechnology Industry of the Czech Republic
Association	DV-Nano
Association	Nano in Germany

2. Analysis of Stakeholders

A further element in the Stakeholder Engagement process is the stakeholder assessment, where each stakeholder is assessed as to its expectations and requirements.

Table 3 presents the process and template that will be used internally to continuously monitor and assess stakeholders. To achieve GDPR compliance, individual stakeholders will be clustered at a partner level and will not include any personal data (i.e., name and email address of individuals). This will decentralise the communication with the stakeholders, which will be personally contacted by the respective NanoPAT partners. The implementation plan of this strategy requires a mapping of all relevant stakeholders. The stakeholder analysis will identify channels for the proposed communication and dissemination efforts and determine, where these stakeholders are located in the Power/Interest and Support/Resistance matrix. Furthermore, it will monitor key driving factors such as financial interests, knowledge, business interests, etc. and will allow for a tailored engagement strategy.

The following questions form the basis for identification of the interests of the stakeholders:

- What do stakeholders expect from the project and how do they benefit?
- Does the stakeholder have interests that conflict with those of the project?
- How committed is the stakeholder to the project? Are they willing to commit resources?
- Are there relationship conflicts between stakeholders that may hinder the project?

The responses to these questions will allow NanoPAT to determine the level of stakeholder interest and manage this appropriately by using the matrix (Figure 4), thus reducing risk of failure and waste of project resources.

Figure 5 shows the Power / Interest Matrix used for the stakeholder analysis. Each quadrant indicates the level of NanoPAT engagement required for meeting each stakeholder's needs. Power is the magnitude of the potential disruption to the project, i.e., the ability of the stakeholder to change or stop the project. Interest is the amount of involvement the stakeholder has in the project. Thus, the Power / Interest Matrix represents the overlap between the needs of the stakeholder and the needs of the project. Those with both power and interest must be managed closely as they have a major influence on the project. Those with power but low interest must be kept satisfied to ensure that a single stakeholder cannot derail the project. Those with interest but low power must be kept informed to ensure that they remain engaged. The remainder (low power, low interest) must be monitored, with minimal effort, to ensure that they are aligned and informed with the project.

As mentioned above, stakeholders in the top right corner (high power/high interest) are the key players and are the most relevant for the NanoPAT engagement activities, to keep them interested and actively involved. Such stakeholders will be regularly contacted, consulted and informed about NanoPAT results and activities.

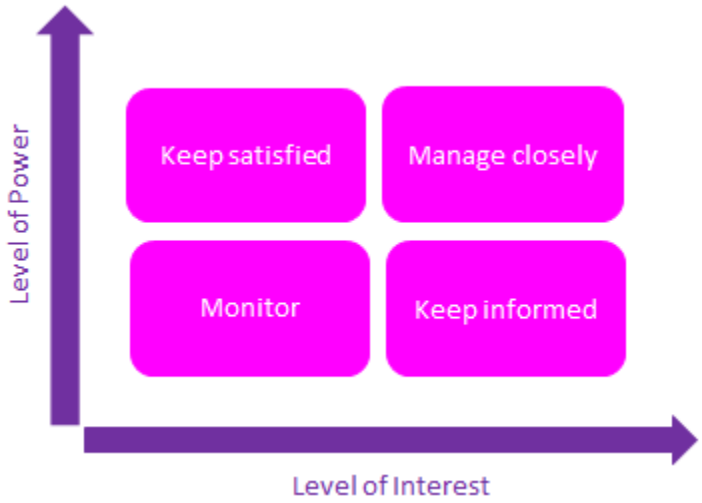

Figure 5: *Power/Interest Matrix – Stakeholder influence versus interest.*

Table 2 summarises the action to be taken with each stakeholder towards its location in the power/interest matrix.

Table 2: *Actions to be taken towards power/interest of stakeholder.*

Power/Interest of the stakeholder	Listed in the Stakeholder list?	Key actions towards such stakeholder
Key stakeholders (High power & high interest)	Yes	• Collaborate and closely manage. • Engage soon. • Continuous communication.
Influential stakeholders (High power & low interest)	Yes	• Keep satisfied. • Efforts to make them Key stakeholders. • Communication actions to increase their interest.

Interested stakeholders (Low power & high interest)	Yes	• Keep informed. • Continuous communication about project progress, actions and results. • Potential consultation regarding areas of stakeholders' interest (especially regarding specific questions or uncertainties that the project faces).
Passive stakeholders (Low power & low interest)	(Yes)	• Monitor with minimum effort • No specific actions to address them • Inform them through general comm/diss activities (e.g., website)

The level of *support* and specific *driving factors* of each stakeholder will be continuously analysed for optimized stakeholder involvement (see Table 3).

The *support* refers to the degree of alignment of the stakeholder with the project, which is discriminated into the current status and where the project would like them to be denoted by the letter "C" and "D", respectively. Five levels of support are considered for each stakeholder:

- *Unaware*: The stakeholder is unaware of the project and its potential benefits to them.
- *Resistant*: The stakeholder is aware of the project but is opposed to it.
- *Neutral*: The stakeholder is neither supportive nor opposed to the project.
- *Supportive*: The stakeholder is in favour of the project and wants it to succeed.
- *Leading*: The stakeholder is actively engaged in project success and assists the project team.

The *driving factors* for each individual stakeholder, i.e., which interest(s) the concrete stakeholder has in the project, will be also taken into account as they will be unique to each stakeholder and will help us to identify underlying factors important for defining the relationship between NanoPAT and the stakeholder. The driving factors that will be considered are:

- Financial interests: The stakeholder will make or lose money (or income) because of the project.
- Moral and ethical values: The stakeholder does or does not believe that the project represents an ethical undertaking that should be sanctioned but society.
- Rights: Legal rights, such as Occupational Health & Safety, affect the stakeholder's opinion of the project.

- Regulations: Developing regulatory framework regarding safety of nanomaterial will play a role in the development of nano-enabled products as well as associated nano-characterisation and innovation processes.
- Religious beliefs: The stakeholder's religious beliefs result in an opinion about the project.
- Political opinions: The political opinions of the stakeholders cause them to support or resist the project.
- Business interests: The stakeholder will realize an increase or decrease in business revenue as a result of the project.
- Knowledge: The level of knowledge a stakeholder has about a project is often a large factor in determining their support.
- Demographics: The age and population characteristics affect the support for, or resistance against, the project.
- Environmental stewardship: The stakeholder is supportive or opposed to the project because of its environmental footprint.
- Value of ownership: The stakeholder will gain or lose value of something they own, like a property.
- Communication preferences: Stakeholders have vastly differing communication preferences which affect their support for the project.

Based on the above-mentioned parameters, which are summarised and monitored in Table 3, NanoPAT will develop and continuously update a stakeholder-specific engagement strategy.

Table 3: *Structure of list of stakeholders, which includes parameters for analysis of stakeholder engagement (Template).*

Stakeholder group	Stakeholder Specific (Organisation Name)	Type of Organisation (select from the list)	Contact NanoPAT (Organisation)	"Gate Keeper" (i.e., organization is a network itself & acts as multiplier) (Y/N)	Power / Interest matrix * low power and low interest --> Monitor * high power, low interest --> Keep satisfied * low power, high interest --> Keep informed * high power, high interest --> Manage closely	Support vs. Resistance * Unaware * Resistant * Neutral * Supportive * Leading Status: Current (C) / Desired (D)	Driving factors	Engagement Strategy

Stakeholder analysis continues during the entire project, requiring continuous monitoring and adjustments to the engagement strategy for each one.

The stakeholders that have been identified so far for the project are listed in Annex 1.

3. Stakeholder Engagement Activities

As briefly mentioned above, NanoPAT will carry out different activities within the project in order to engage with the relevant stakeholders. These include *one-way* communication activities (e.g. webpage, social media, videos, publications, press releases, newsletter articles, etc.) and *bi-directional* ones (i.e., Knowledge transfer activities such as workshops, webinars, etc.).

More details on the *one-way* communication activities are provided in the deliverable D7.2 "*Preliminary Plan for Exploitation and Dissemination of Results (PEDR)".* An overview of the bi-directional activities is shown in Table 4 and 5.

Table 4: *Overview of activities planned for stakeholder engagement.*

Type of Activity	Where	Stakeholder addressed	Information of interest
Presentation / Workshop	Conference / Event	Scientific community Industry	Increase interest on the PATs
Presentation / Workshop / Booth	Industrial Fair / Show	Industry	Increase interest on the PATs Increase the exploitation potential of the project outcomes
Knowledge Transfer / Training: • Workshop • Training • Webinar	Online event organized by NanoPAT	Scientific community Industry	Webinars and trainings on the PATs
Meetings/Webinars /Workshops	F2F: Trade fairs, exhibition and conferences	Regulatory authorities Policy Makers	Based on the results of the standardisation and Data Management activities,

	Online: Workshops, field-related events	Standardization bodies	presentation of those results to stakeholders. Feedback is expected to be provided to policy makers and regulatory authorities (lobbying) based on any valuable technical outcomes.

All partners have been involved in the first planning of activities for the stakeholder engagement (the template used for collecting them is presented in Table 5.

Table 5: *Template used for the planning of Stakeholder Engagement Activities in the different WPs.*

Related WP	WHAT is planned?			WHO do we address?			HOW? (setting)			WHEN (timing)	
	Topic / Content	Purpose of Activity	Envisaged Outcome	Target Group	Sector	Internal / External	Type of Activity	Linked to other EU project (Y/N)	If YES, which project?	Date / Timeplan (Mxy)	Link to other event
WP x											

Some Knowledge Transfer & Training Activities have been already carried out for the project internal (Consortium partners) and external stakeholders (see Tables 6 and 7, respectively).

Table 6: *Overview of internal Knowledge Transfer & Training activities (Status 30th September 2021)*

Kind of Partner	Organisation giving the training	Topic for the training/activity	Kind of Training (External / Internal)	Activity	When did the activity take place?	Targeted audience
Technology provider	IRIS	TUS	Internal	Visit from IRIS to POLYMAT --> Teach them how to use the TUS equipment to analyse the polymer particle size	14-18.06.2021 (IRIS - Nicola Palombo)	NanoPAT partners (POLYMAT)

RTO pilot	UP	PDW	Internal	Training on PDW spectroscopy and particle size analysis, hold within the framework of WP2	08.07.2021	NanoPAT partners (WP2)
RTO pilot	UP	PDW	Internal	Visit from UPV/POLYMAT to UP (Potsdam) --> Teach them the PDW technique in the innoFSPEC lab	31.05.2021 - 02.07.2021 (POLYMAT - Usue Aspiazu)	NanoPAT partners (POLYMAT)
RTO pilot	UP	PDW	Internal	Visit from ZHAW to UP (Potsdam) --> Teach them the PDW technique in the innoFSPEC lab	28.06.2021 - 02.07.2021 (ZHAW - Despina Emmanouilidou)	NanoPAT partners (ZHAW)
RTO pilot	UP	PDW	Internal	Visit from EVONK to UP → Tour of innoFSPEC lab, demonstration of PDW spectroscopy, discussion of experimental progress	09.08.2021 (Agnieszka Ochenduszko)	NanoPAT partners (Evonik)
Other	BNN & TEMASOL	SbD workshop	Internal	Project-internal workshop to introduce all partners as well as to get a common understanding of ‚Safety-by-Design', emphasizing possible advantages of applying it. Interactive part: get all partners involved in setting ‚Safety-by-Design' in the context of the NanoPAT project and to start an open discussion.	29.06.2021	NanoPAT partners
Other	TEMASOL	SbD assessment	Internal	Visit of Blanca to UPV/POLYMAT checking their lab and processes for doing a safety	15.07.2021	UPV/POLYMAT

				assessment.		
Other	NanoCommons & TEMASOL	Workshop on GRACIOUS Wiki (1)	Internal	Introduction to the GRACIOUS Wiki - "Terminology Harmonizer Tool"	20.05.2021	NanoPAT partners
Other	NanoCommons & TEMASOL	Workshop on GRACIOUS Wiki (2)	Internal	More detailed explanation to the GRACIOUS Wiki - "Terminology Harmonizer Tool"	17.06.2021	NanoPAT partners

Table 7: *Overview of external Knowledge Transfer & Training activities (Status 30th September 2021)*

Kind of Partner	Organisation giving the training	Topic for the training/activity	Kind of Training (External / Internal)	Activity	When did the activity take place?	Targeted audience
Technology provider	BRAVE	OF2i	External	Seminar on OF2i	11.05.2021	University GRAZ / Institute of Molecular Biosciences — IMB
RTO pilot	UPV/POLYMAT	Course on Emulsion Polymerization Processes (EPP)[4]	External	Training on how to produce polymeric nanoparticles to academic and industrial audience	Sept.-Oct. 2021	Academia Industry

[4] Course on Emulsion Polymerization Processes: https://www.nanopat.eu/course-on-emulsion-polymerization-processes/

Conclusions

NanoPAT stakeholders are crucial for the NanoPAT objectives on demonstrating the three novel, real-time nano-characterisation PATs that are being developed in the project (PDW, OF2i and TUS), including real-time data handling for digital process monitoring and product quality control and validating them in five industrial case studies (ceramic, polymer and mineral nanoparticles manufacturing and converting environments) and pairing them with new data-analytical technologies in order to provide, for the first time, a real-time analysis for manufacturing processes of particles in the nanometer scale with sub minute temporal resolution. For this reason, the NanoPAT consortium has carefully identified an initial list of stakeholders and developed a strategy for optimized stakeholder involvement, which allows for analysis of the stakeholder-NanoPAT profile and mapping of all stakeholders with particular emphasis on the most relevant stakeholders.

As a result of our initial mapping, an extensive list with more than 200 potential stakeholders has been created and can be found annexed to this deliverable (*Annex 1* – Stakeholder List).

Both the stakeholder list and the list of engagement activities are non-exhaustive and will be continuously updated throughout the project lifetime by all project partners. The final version of both lists will be provided by the end of the project, in deliverables D7.6 "*Final Plan for the Exploitation and Dissemination of Results*" in month M48 (May 2024).

Annex

Annex 1 – Current list of identified stakeholders relevant for NanoPAT

Extract of the list of stakeholders that has been created with the inputs of all NanoPAT project partners. This list will be monitored and updated within the next months and until the end of the project.

Stakeholder category	Stakeholder group	Stakeholder Specific (Organisation Name)
Internal	Consortium partners	IRIS, UP, MUG, UPV, ZHAW, PDWA, ANALISIS-DSC, DSM, Evonik, Fluidinova, Arkema, Cnano, BNN, EXEL, TEMASOL, BRAVE
Internal	Funding authority	European Commission
External	Advisory Board	A. SPIRE (Mihai Barcanescu)
External	Advisory Board	GDCh Arbeitskreis Prozessanalytik (Christoph Herwig)
External	Advisory Board	INL – the International Iberian Nanotechnology Laboratory (Lars Gösta Montelius)
External	Advisory Board	Secpho (Gawel Walezak)
External	Advisory Board	NIA - Nanotechnology Industries Association (Chiara Venturini)
External	Scientific Advisor	7p9 - Sevenpastnine (Thomas Exner)
External	Research & Education Communities	NMBP-08-2019 RealNano
External	Research & Education Communities	NMBP-08-2019 CHALLENGES
External	Research & Education Communities	NMBP-08-2019 NanoBat
External	Research & Education Communities	NMBP-08-2019 PAT4Nano
External	Research & Education Communities	NMBP-08-2019 NanoQI
External	Research & Education Communities	INFRAIA-02-2017 NanoCommons
External	Research & Education Communities	NMBP-28-2017 GRACIOUS
External	Research & Education Communities	NMBP-07-2017 OYSTER

External	Research & Education Communities	NMBP-12 SUSNANOFAB
External	Research & Education Communities	NMBP-12 NanoFabNet
External	Research & Education Communities	NMBP-35 NanoMECommons
External	Research & Education Communities	EMCC
External	Research & Education Communities	EMMC
External	Research & Education Communities	EU NanoSafety Cluster (NSC)
External	Research & Education Communities	EU NSC - Coordination Team
External	Research & Education Communities	EU NSC - WG A "Communication, Training and Education" - Chair: Martin Himly
External	Research & Education Communities	EU NSC - WG B "Materials and Standards" - Chair: Costas Charitidis
External	Research & Education Communities	EU NSC - WG C "Exposure and Hazard Assessment" - Chair: Wouter Fransman
External	Research & Education Communities	EU NSC - WG D "Models and Tools for Risk Assessment" - Chair: Tommaso Serchi
External	Research & Education Communities	EU NSC - WG E "Innovation and SbD" - Chair: Andrew Nelson
External	Research & Education Communities	EU NSC - WG F "Data Management" - Chair: Egon Willighagen
External	Research & Education Communities	EU NSC - WG G "Regulations and Risk Governance" - Chair: Steffi Friedrichs
External	Research & Education Communities	EPPN (see SUSNANOFAB) - European Network for Pilot Prodution Facilities and Innovation Hubs
External	Research & Education Communities	COSMIC (MSCA GA 721290): European Training Network for Continuous Sonication and Microwave Reactors
External	Research & Education Communities	innoFSPEC - Center for innovation competence (Innovative Faseroptische Spektroskopie und Sensorik)
External	Research & Education Communities	Innovative Hochschule - BMBF - excellence programm
External	Research & Education Communities	European Association of National Metrology Institutes (EURAMET)
External	Research & Education Communities	Nanometrology Lab LTFN
External	Research & Education Communities	National Metrology Institute of Germany (PTB)
External	Research & Education Communities	EuroLab
External	Research & Education Communities	International Iberian Nanotechnology Laboratory (INL)
External	Research & Education Communities	IPCG (International Polymer Colloids Group)

External	Research & Education Communities	RECENDT (Research Center for Materials Characterization and Non-Destructive Testing)
External	Research & Education Communities	Centrum für Angewandte Nanotechnologie (CAN) GmbH
External	Research & Education Communities	NanoAnalytics
External	Technology developers Industries	Molecular Imprints
External	Technology developers Industries	Malvern Panalytical
External	Technology developers Industries	ASML Netherland BV
External	Technology developers Industries	Bruker Nano
External	Technology developers Industries	Applied materials Inc
External	Technology developers Industries	Johnson and Johnson Visual
External	Technology developers Industries	Agilent
External	Technology developers Industries	Leica
External	Technology developers Industries	Keison
External	Technology developers Industries	Olympus
External	Technology developers Industries	Nikon Metrology
External	Technology developers Industries	Precision Eforming
External	Technology developers Industries	Accu-Scope
External	Technology developers Industries	Oplink
External	Technology developers Industries	Cyber Optics
External	Technology developers Industries	Hexagon
External	Technology developers Industries	FARO Technologies
External	Technology developers Industries	Glenammer
External	Technology developers Industries	Oclaro
External	Technology developers Industries	Carl Zeiss Optotechnik
External	Technology developers Industries	Jenoptik
External	Technology developers Industries	Keyence
External	Technology developers Industries	Creaform
External	Technology developers Industries	Nanometris
External	Technology developers Industries	Onto Innovation
External	Technology developers Industries	FRT GbBH
External	Technology developers Industries	Mettler Toledo

External	Technology developers Industries	Accurion GmbH
External	Technology developers Industries	Aixtron SE
External	Technology developers Industries	Anfatec Instruments
External	Technology developers Industries	AQUANOVA AG
External	Technology developers Industries	attocube systems AG
External	Technology developers Industries	Arry Nano AG
External	Technology developers Industries	Covestro
External	Technology developers Industries	Zeiss Microscopy GmbH
External	Technology developers Industries	Evonik Industries AG
External	Technology developers Industries	Fries Research and Technology GmbH
External	Technology developers Industries	FRITSCH GmbH
External	Technology developers Industries	FutureCarbon GmbH
External	Technology developers Industries	Hielscher Ultrasonics GmbH
External	Technology developers Industries	IoLiTec
External	Technology developers Industries	JPK Instruments AG
External	Technology developers Industries	Kleindiek Nanotechnik GmbH
External	Technology developers Industries	Klocke Nanotechnik GmbH
External	Technology developers Industries	LayTec AG
External	Technology developers Industries	NanoFocus AG
External	Technology developers Industries	Nanogate
External	Technology developers Industries	Nanoscribe GmbH
External	Technology developers Industries	Scienta Omicron GmbH
External	Technology developers Industries	Particular GmbH
External	Technology developers Industries	Physik Instrumente (PI) GmbH & Co. KG
External	Technology developers Industries	PlasmaChem GmbH
External	Technology developers Industries	Sentech Instruments GmbH
External	Technology developers Industries	Süss MicroTec AG
External	Technology developers Industries	Sympatec GmbH
External	Technology developers Industries	WiTec AG
External	Technology developers Industries	NANOBALA sro
External	Technology developers Industries	NenoVision sro
External	Technology developers Industries	PIKATEC CZ sro

External	Technology developers Industries	NAFIGATE Corporation as
External	Technology developers Industries	Contipro as
External	Technology developers Industries	FILTREX sro
External	Technology developers Industries	NANO CHEMI GROUP SRO
External	Technology developers Industries	Pardam Nano4fibers
External	Technology developers Industries	FN - NANO SRO
External	Technology developers Industries	ING MEDICAL sro
External	Technology developers Industries	iuven.io sro
External	Technology developers Industries	IQ Structures sro
External	Technology developers Industries	JIMIPLET sro
External	Technology developers Industries	SEN WORLD, SRO
External	Technology developers Industries	SPUR as
External	Technology developers Industries	Pardam Nano4fibers
External	Technology developers Industries	SAFETY NANO PROTECT sro
External	Technology developers Industries	Retap, Ltd. s ro
External	Technology developers Industries	Nanologix corporation sro
External	Technology developers Industries	Nanopharma as
External	Technology developers Industries	NanoTrade sro
External	Technology developers Industries	Lada Vyvialova Creative Platform Ltd.
External	Technology developers Industries	NAFIGATE Corporation as
External	Technology developers Industries	AdvaMat sro
External	Technology developers Industries	NanoTrade sro
External	Technology developers Industries	HE3DA sro
External	Technology developers Industries	Bochemie a.s.
External	Technology developers Industries	NanoInnova Technologies
External	Technology developers Industries	Intenanomat S.L.
External	Technology developers Industries	MECWINS, S.L.
External	Technology developers Industries	GRAPHENELIGHT
External	Technology developers Industries	VLC Photonics
External	Technology developers Industries	ANCOR TECNOLOGICA CANARIAS, S.L.
External	Technology developers Industries	INAEL Electrical Systems
External	Technology developers Industries	42TEK S.L.

External	Technology developers Industries	NANO4ENERGY
External	Technology developers Industries	ISM3D
External	Technology developers Industries	TAMAG Iberica S.L.
External	Technology developers Industries	Star Defence Logistics & Engineering, SL
External	Technology developers Industries	NEOKER, S.L.
External	End Users	Química del Nalón S.A.
External	End User	EMFUTUR Technologies
External	End User	Repsol S.A.
External	End User	Agroindustrial Kimitec
External	End User	NANORIOJA S.L.U.
External	End User	Yflow SD
External	End User	Nanomateriales y Polímeros SL
External	End User	TECNOLOGÍA NAVARRA DE NANOPRODUCTOS S.L.
External	End User	NanoBioMatters Industries S.L.
External	End User	Grupo Antolin Ingeniería S.A.
External	End User	Endor Nanotechnologies
External	End User	Aragonesa de Componentes Pasivos, S.A.
External	End User	NANOIMMUNOTECH S.L.
External	End User	TOLSA
External	End User	ZF Biolabs
External	End User	Graphenea S.A.
External	End User	APPLYNANO SOLUTIONS
External	End User	GrafeTECH Europe S.L.
External	End User	Acciona Infraestructuras
External	End User	ATOS Spain
External	End User	Tecnopackaging S.L.
External	End User	Nanotecnologia Spain S. L.
External	End User	BIOINICIA S.L.
External	End User	CIDETE INGENIEROS SL
External	End User	LAIMAT

External	End User	Ramem S.A.
External	End User	Alya Technology & Innovation S.L.
External	End User	IATEC, S.L.
External	End User	Gnanomat S.L.
External	End User	NANOGAP SUBNM POWDER, S.A.
External	End User	SOLUCIONES NANOTECNOLÓGICAS S.L.
External	End User	Sgenia
External	End User	AVANZARE Innovación Tecnológica S.L.
External	End User	Torrecid SA
External	End User	Dynasol Elastomers S.A
External	End Users	Allnex
External	End Users	AkzoNobel
External	End Users	Arkema
External	End Users	Airbus
External	End Users	BASF
External	End Users	Elix Polymers
External	End Users	Inovyn
External	End Users	Stahl
External	End Users	Synthomer
External	End Users	Tesa
External	End Users	Vinavil
External	End Users	Wacker
External	Industrial Clusters/Associations/Networks	A. SPIRE - Association Sustainable Process Industry through Resource and Energy Efficiency
External	Industrial Clusters/Associations/Networks	Secpho
External	Industrial Clusters/Associations/Networks	NEODYNAMIKI
External	Industrial Clusters/Associations/Networks	GASER GROUP
External	Industrial Clusters/Associations/Networks	EFFRA - European Factories of the Future Research Association
External	Industrial Clusters/Associations/Networks	EPIC - European Photonics Industry Cluster

External	Industrial Clusters/Associations/Networks	NIA - Nanotechnology Industries association
External	Industrial Clusters/Associations/Networks	ENNA - European Nanoscience and Nanotechnology Associations
External	Industrial Clusters/Associations/Networks	CEFIC (European Chemical Industry Council)
External	Industrial Clusters/Associations/Networks	PAC (Process Analytical Chemistry)
External	Industrial Clusters/Associations/Networks	SusChem
External	Industrial Clusters/Associations/Networks	SusChem-AT
External	Industrial Clusters/Associations/Networks	EUSPEN - European Society for Precision Engineering and Nanotechnology
External	Regulatory Authorities	ECHA - European Chemicals Agency
External	Regulatory Authorities	OECD - Organization for Economic Cooperation and Development
External	Policy Makers	CEN - European Committee for Standardization
External	Policy Makers	CEN / TC 352
External	Policy Makers	ISO - International Organization for Standardization
External	Policy Makers	ISO / TC 229
External	Investors	
External	General Public	ECOS
External	Media	Social Media - Twitter
External	Media	Social Media - LinkedIn
External	Media	Social Media - YouTube
External	Media	BNN newsletter
External	Media	NSC newsletter
External	Media	Partners' Newsletters
External	Media	NanoPAT Newsletter

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