

DELIVERABLE

6.1

A collection of training materials for researchers and engineers



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1. INTRODUCTION

This deliverable compiles the results and output gathered for each of the subtasks of GoNano Task 6.1: *“Training, guidelines and co-creation toolkit for researchers and engineers”*. As part of its overall efforts towards training and community capacity building in Work Package 6, the objectives and aims of Task 6.1 were described as follows: *“(…) providing training for researchers and engineers in order to foster a truly European Community of Practice. The focus of the trainings will be on how to recognise, include, design and co-create research to take into account societal needs and to contribute to solving societal challenges”* (p. 28 of the Description of Action (DoA)).

Task 6.1 consists of multiple subtasks, as listed in the DoA (p. 28).

1. Arrange online training webinars that *“focus on the GoNano pilot studies methods for citizen engagement and stakeholder co-creation, on the business case for working in an inclusive and co-creative way for aligning Nano product development efforts to societal needs and values, and on the White Papers and other key results of GoNano”*
2. Develop written training materials, which are *“adapted version of the design manuals and guidelines from task 2.2, as well as some overall guidelines and recommendations for enhanced societal engagement in innovation of nanotechnology”*
3. Develop and make a downloadable toolkit publicly available, which *“include slides, a poster, small videos, topic suggestions and guidelines for how to involve users as a source of creation in Nano R&I”*.

The next chapter summarises the main results and output of each of these subtasks. The annexes contain the collection of training materials in their entirety.

Annex A provides links to the section on the GoNano project website and the YouTube Channel where the webinar training videos are publicly available. It also includes all the texts from the website section that describes the respective webinars and the individual sessions, as well as the questions and answers that were asked and answered during the live webinars [subtask 1].

Annex B provide an overview of the three micro-credentials that RMIT have scheduled the production of, which are based on the outputs from the GoNano project: The first one focussing on RRI, the second on co-creation, and the third on putting the two together in practice.

Annex C provides a link to the section ‘The Road of Co-Creation: Training materials for researchers and engineers’ on the GoNano project website and contain all guidelines, manuals and templates [subtask 2].

Annex D provides a link to the section ‘Toolkit for Researchers and Engineers’ on the GoNano project website and contain all the tool and materials that are part of the toolkit. screenshots from the website section “Toolkit for researchers and engineers” and the various content of the downloadable toolkit [subtask 3].

2. SUMMARY OF RESULTS AND OUTPUT FROM THE SUBTASKS

2.1. SUBTASK 1: ARRANGE ONLINE TRAINING WEBINARS

In order to cover all the wide range of related topics, concepts, experiences and insights, a three-part webinar series was developed and held:

- The first webinar titled *“What is co-creation and why co-create in research and innovation?”* was presented live on Thursday May 28th, 3.00-4.30pm CET. It delved into the concept of co-creation, what is it, what you can achieve and how you can achieve it. Additionally, it also focused on the different types of stakeholders to involve in co-creation projects.
- The second webinar titled *“Co-creation in practice”* was presented live Thursday June 4th, 3.00-4.30pm CET. It focused on the methodological considerations and practical aspects of organising co-creation events, providing examples from GoNano on how you can design, plan and invite participants for a co-creation project.
- The third webinar titled *“Outcomes and results of co-creation”* was presented live on Thursday June 11th, 3.00-4.30pm CET. It looked into the possible outcomes and results one can achieve from a co-creation process, providing examples from the from the Pilots in the GoNano co-creation process. Finally, the policy recommendations to support responsible research and innovation practices from the GoNano white papers were also presented.



Figure 1: Illustration used to advertise for the GoNano webinar series

There were certain things we took into account when preparing the webinars. Technical issues like losing connection to the internet, microphone/webcam/screensharing problems and the like can affect the presentations, and thus jeopardize the webinar and the recordings hereof. To ensure that the content would be presented as intended, it was decided to produce videos of the respective presentation sessions for the three webinars in the preparation phase. The respective video presentations were then divided in between and shown during the three live webinars.

A total of eight videos were produced for the webinars. All of them have been uploaded on the GoNano YouTube channel¹ and made available on the GoNano project website². Figure 2 is a screenshot that provides an overview of the eight webinar session videos, disclosing their respective titles, time duration and the webinars in which they were shown.

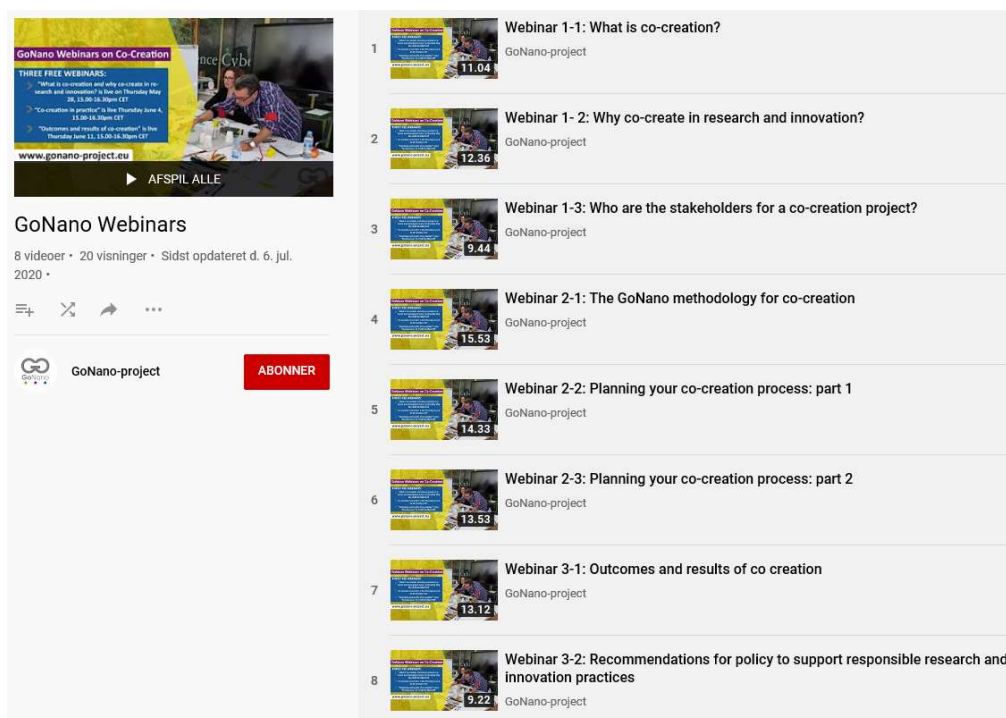


Figure 2: Overview of the 'GoNano Webinars' section on the GoNano YouTube channel

To make the three live webinars interactive, each of them included Q&A sessions to give room for questions and discussions. Several of the consortium partners participated in the webinar as the 'GoNano expert panel', ready to answer questions from the rest of the participant. The questions and answers and that were asked and answered during the respective live webinars have been transcribed and made available on the same section on the GoNano project website along with the webinar videos.

See **Annex A** to find the link to the webinar videos, as well as the written questions and answers from the Q&A sessions.

To further capitalise on these valuable training videos and to reach wider audiences, their content will also be repackaged by partner RMIT and added to their suite of digital learning modules called micro-credentials. RMIT have scheduled production of three such micro-credentials based on outputs from the GoNano project: The first one focussing on RRI, the second on co-creation, and the third on putting the two together in practice.

The first micro-credential, which draws upon content from the GoNano stakeholder and citizen workshops of WP3 and WP4 and the GoNano winter school of WP6, has already been successfully built and launched. The second and third micro-credentials are scheduled for the second half of 2020.

See **Annex B** for more details on the micro-credential learning modules.

¹ GoNano Youtube Channel: <https://www.youtube.com/channel/UC3QGpL7UIG7F4HalyIaW06A>

² GoNano project website: <http://gonano-project.eu/>

2.2. SUBTASK 2: DEVELOPING WRITTEN TRAINING MATERIALS

Seeing as the primary target group is researchers and engineers in the nanotechnology field that do not have experience with Responsible Research and Innovation (RRI) and co-creation practices, great considerations were put into how to both develop and present the written manuals, guidelines and recommendations for enhanced societal engagement in innovation of nanotechnology. The final outcome was – ‘The Road of Co-Creation’ – a section on the GoNano project website, which take the visitor through the entire process of developing and carrying out co-creation events, providing them with the necessary training materials and recommendations that are relevant at the different steps along the way.

Figure 3 shows the top of the website section ‘The Road of Co-Creation: Training materials for researchers and engineers’. The visitors encounter a brief contextual description of the GoNano projects’ objectives and efforts for providing training and capacity building for R&I actors, followed by a large roadmap.

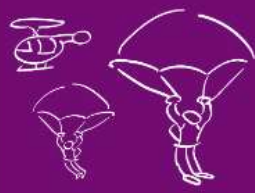
The roadmap is intended to function as a graphic table of content, allowing the visitors to both get an overview of the steps and to access the training material in each of them. When the visitors move their cursor on top of one of the boxes, the title and illustration in it is replaced with a short teaser text informing them about the step. By clicking on the box, the visitor will access the place on the page with the full description of the step and the related training materials.



Figure 3: Screenshot of the top of ‘The Road of Co-Creation: Training materials for researchers and engineers’ section on the GoNano website.

Figure 4 showcases an example of what the visitors encounter when they click on one of the respective boxes on the roadmap to access a given step. Each step has a larger box at the top with a slightly more elaborate account than the previous teaser text. It briefly introduces what the step is about and how the provided training materials will support them in continuing further on to the next steps in the journey.

As the visitor scroll down on the page, they will be able to read the full explanation of the step and the presentations of the various training materials. The training materials are PDF-files that can be accessed and downloaded via inserted links on the page. In addition to the training materials, several of the steps also include links to other relevant outputs of the GoNano project, e.g. the information materials developed for the GoNano co-creation workshops, Deliverables and the respective videos that were created for at presented during the webinars.



4 METHODOLOGICAL CONSIDERATIONS

The fourth step is about the methodological considerations in relation to your project – figuring out how the co-creation process(es) of your project should be designed and which methods to use.

The training materials will help you do this by showing how it was done in the GoNano project. You'll be provided with guidelines and manuals for different co-creation workshops, as well as the examples background information about nanotechnologies for citizens and other actors to prepare them for participating in co-creation. The methodological considerations should you prepare for the next step of organizing and carrying out your actual co-creation event(s).

Now that you've set an initial goal (or several) for your co-creation project, worked on clarifying its scope and made some considerations with regards to which actors you want to participate in the co-creation and how to engage them, it's time to contemplate how the co-creation process(es) should be designed and which methods to use.

There are many different ways to do this, but to exemplify how it can be done, we'll give a brief survey of the co-creation design and methodology of the GoNano project. The GoNano methodology for co-creation is a facilitated continuous process aimed at aligning R&I projects and processes with societal needs and values. Through its co-creation process, lay participants learn about nanotechnology and the professional stakeholders learn about societal needs and values in order to allow for enhancing their responsiveness to them. The methodology is somewhat comprehensive and is not necessarily suitable to be used as a template for a methodology in another project. However, it can serve as inspiration for how such co-creation process(es) can be approached and which methods that can be applied.

The design and methodology of the co-creation process in GoNano

As mentioned in the first step, the overall goal of the GoNano project was to demonstrate how responsiveness to societal values, needs and concerns can be built into nanotechnology R&I processes through co-creation, resulting in products that are judged as socially desirable, sustainable and acceptable. The objectives were to come up with concrete suggestions for new products and research avenues, develop policy recommendations and to contribute to community & capacity building in relation to the practice of co-creation and RRI. In order to achieve this, the project should develop a methodology for a co-creation approach and then use it to run different pilot co-creation processes within the respective themes of Health, Food and Energy. The two figures below respectively illustrate the overall project design of the GoNano project as a whole and the outline of the co-creation process.

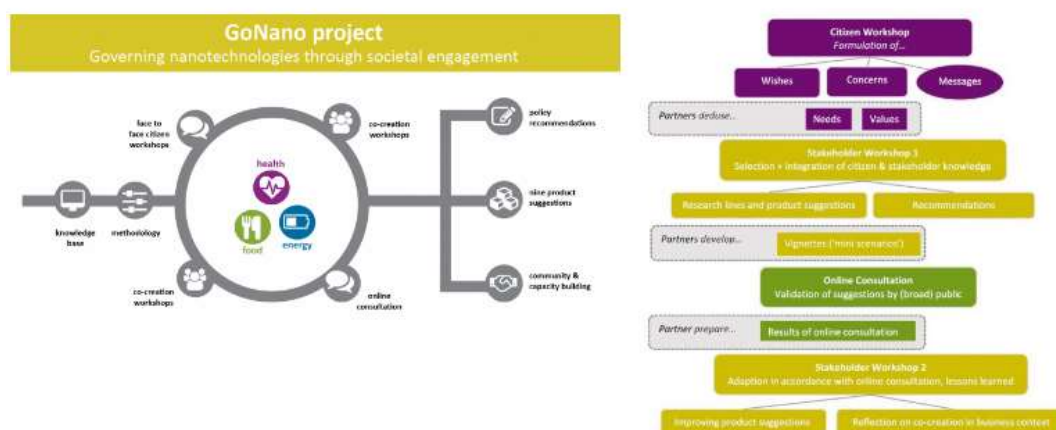


Figure 4: Screenshot of part of the fourth 'step' in the Road of Co-Creation.

As illustrated in Figure 3, The Road of Co-Creation consists of six steps. The first step “**Destination and Meaning**” introduces the concept of co-creation and provides examples of how it can benefit R&I projects in various ways. The first two videos from the GoNano webinar series are also included in the step, giving the visitors the opportunity to get a longer and more thorough

introduction to the concept of co-creation and its possibilities. The intention of the first step is to get the visitors to reflect on why and how they may want to integrate a co-creation approach to a current or future R&I, setting an or several initial goals. They are also encouraged to fill out the strategic canvas from the Co-Creation Toolkit as an exercise to kickstart the development of their project.

The second step “**Clarification of Scope**” is intended to support the visitors in determining the scope of their co-creation project. They are guided through making a preliminary inventory of their internal resources and context, as well as a preliminary mapping of their external context and immediate stakeholders. They are also encouraged to fill out the practical canvas from the Co-Creation Toolkit as an exercise to get the project development to take form.

The third step “**Finding and Engaging Participants**” is intended to support the visitors in identifying the concrete actors that they may want to involve in their co-creation process and consider how to effectively reach out to and engage them in doing so. It guides them through how to systematically break down various target groups and provides concrete examples of communication strategies for different stakeholders that were developed in the GoNano project.

The fourth step “**Methodological Considerations**” is intended to support the visitors in figuring out how the co-creation process and event(s) should be designed and which methods to use. To show the possibilities and inspire them, the design and methodology of the co-creation process in GoNano is presented as an example. The structures and methods for various types of co-creation events are explained (e.g. citizen workshops, stakeholder workshops, online citizen consultations) and they are presented with the information materials that were developed for the respective workshops in GoNano. Additionally, they are also encouraged to orient themselves in Deliverable 3.1 and 4.1 that respectively gives a thorough account of how the background information materials for the citizen workshops and stakeholder workshops were developed.

The fifth step “**Organising Your Co-Creation Event(s)**” is intended to support the visitors in organising and carrying out their actual co-creation event(s). They are provided with a table that showcases the many different tasks and other things to keep track of during the preparation and facilitation of events. Additionally, they are provided with checklists and descriptions of both the human resources/roles and practical resources that are usually required to carry out a co-creation events like a workshop, as well as examples of detailed programmes and a template they can use to develop their own detailed manual for their co-creation event. Lastly, the step guide them in developing a recruitment strategy for involving citizens in their co-creation events.

The sixth and final step “**Making Use of Your Results**” is intended to support the visitors in reflecting on the (incoming) results of their co-creation event(s) and how to make use of them. The GoNano project is used as an example to showcase how the outcomes and data gathered from the different co-creation events were used as input for other events and activities. They are also encouraged to orient themselves in the briefing reports on the GoNano co-creation events if they are interested in more elaborate descriptions of the gathered results. The step also provides recommendations and examples on how they can evaluate their co-creation event(s) and process, which can help them in adjusting and improving their approach and activities in future co-creation endeavours.

See **Annex C** to view ‘The Road of Co-Creation’ in its entirety with all the step descriptions and the training materials.

2.3. SUBTASK 3: DEVELOPING A CO-CREATION TOOLKIT

A Co-Creation Toolkit was also developed based on the experiences and lessons learned from GoNano. The intention with the toolkit is to support researchers and engineers who are interested in and would like to engage with citizens and societal stakeholders as a source of creative thinking.

The toolkit offers a six-step approach to help researchers and engineers define their goal, identify the relevant stakeholders and design, implement, and reflect on the co-creation process. It consists of a variety of different tools that they can use to plan and carry out co-creation activities on their own:

- A **Brochure** with all information for a co-creation workshop
- **PowerPoint** presentation to support the process
- **Two posters (extended and simpel version)** to print for an event, showing the six-step approach to co-creation
- **Practical and strategic canvases** to support the planning
- **Toolkits from other projects and organizations** to support the organisation of a co-creation event
- **Questionnaire canvas** used by GoNano to support evaluation of and reflection on the process
- **YouTube clips** with an impression of the GoNano workshop to support the organisation of a co-creation event
- **Five audio-visual vignettes** capturing the development of the concrete product suggestions or research aims on food, energy and health in GoNano to exemplify processes and outcomes of co-creation.

See **Annex D** to view all the tools of the Co-Creation Toolkit.

The toolkit has been made available under the section ‘Toolkit for Researchers and Engineers’ on the project website. Figure 5 on the next page is a screenshot of the webpage with the toolkit.

Following a brief explanation of the GoNano project, the visitors get a presentation of the toolkit and the various tools, which they can download on the left sidebar.

TOOLKIT FOR RESEARCHERS AND ENGINEERS

Search ...

SEARCH

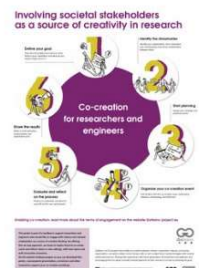
BROCHURE



POWER POINT PRESENTATION



POSTER SIMPLE VERSION



POSTER EXTENDED VERSION



STRATEGIC CANVAS



PRACTICAL CANVAS



TOOLKITS FOR CO-CREATION



The EU-funded GoNano project enables co-creation between citizens, researchers, industry, civil society organisations and policy makers across Europe to align future nanotechnologies with societal needs and concerns. Co-creation is a widely used, but loosely defined term that has been applied in different contexts. Co-creation can be understood as the collaborative development of new value. It is a form of collaborative innovation: ideas are shared and improved together.

GoNano has defined co-creation as the emergence of productive collaborations between researchers and societal stakeholders over longer timeframes, focusing on specific nanotechnology research lines, leading to tangible outcomes such as a new research avenue, proposal, product or prototype. GoNano developed pilot projects in the areas of food, health and energy to explore how researchers can work with publics and professional stakeholders to create novel suggestions for future nanotechnology products.

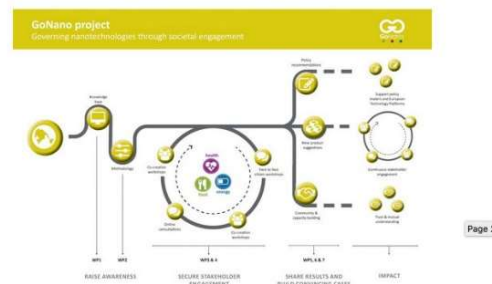
Toolkit: Involving societal stakeholders as a source of creativity in research

GoNano developed a **Co-creation toolkit** in which we would like to share our lessons learned. We hope it will support researchers and engineers who would like to engage with citizens and societal stakeholders as a source of creative thinking. The toolkit offers a six-step approach to help researchers and engineers define their goal, identify the relevant stakeholders and design, implement and reflect on the co-creation process. GoNano hopes to inspire researchers and engineers to continue this journey, working together with citizens and societal stakeholders to create value in new settings, with new topics and with creative outcomes.

You can download all the material in the left sidebar:

- **Brochure** with all information for a co-creation workshop.
- **PowerPoint** presentation to support the process
- Two posters (**extended** and **simple** version) to print for your event, showing the six-step approach to co-creation
- **Practical** and **strategic** canvases to support step 3: Start planning
- **Toolkits from other projects and organizations** to support step 4: Organize your co-creation event
- **YouTube clips** with an impression of the GoNano workshop to support step 4: Organizing your co-creation event
- **Questionnaire canvases** used by GoNano to support step 5: Evaluation and reflection on the process

The GoNano approach



GoNano believes that research and innovation can benefit from being more open to societal needs and concerns. Over the course of three years (2017-2020), GoNano enabled collaborative development (co-creation) in three nanotechnology application areas: food, energy and health. We first consulted citizens about their wishes, needs and concerns regarding future nanotechnology applications. This was used as input for the first and second stakeholder workshops, which aimed to stimulate citizens, civil society organisations, industry, researchers and policy makers across Europe to co-create research aims and think about concrete (product) suggestions for future nanotechnologies. [Read more about the GoNano approach and results.](#)

PROCESS AND OUTCOMES GONANO



GONANO WORKSHOPS - YOUTUBE CLIPS



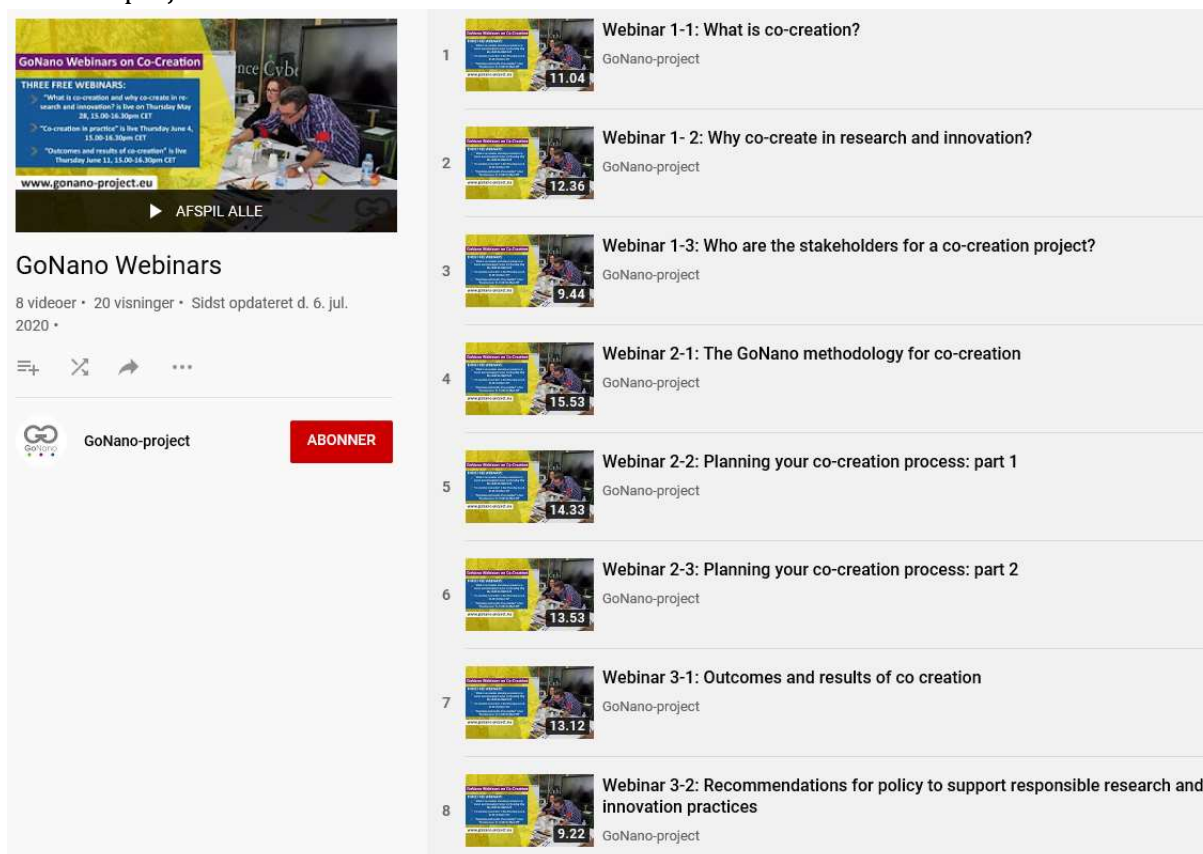
QUESTIONNAIRE WORKSHOPS



Figure 5 Screenshot of the toolkit section on the GoNano project website

ANNEX A – WEBINAR VIDEOS + TRANSCRIPTS OF Q&As

As shown in the screenshot below (Figure 2), all the eight videos that were produced for and presented during the live webinars have been uploaded on the project’s YouTube Channel ‘GoNano-project’³.



The screenshot shows the YouTube channel page for 'GoNano Webinars'. The channel has 8 videos, 20 viewers, and was last updated on July 6, 2020. A red 'ABONNER' (Subscribe) button is visible. The video list includes:

- 1 Webinar 1-1: What is co-creation? (11.04)
- 2 Webinar 1- 2: Why co-create in research and innovation? (12.36)
- 3 Webinar 1-3: Who are the stakeholders for a co-creation project? (9.44)
- 4 Webinar 2-1: The GoNano methodology for co-creation (15.53)
- 5 Webinar 2-2: Planning your co-creation process: part 1 (14.33)
- 6 Webinar 2-3: Planning your co-creation process: part 2 (13.53)
- 7 Webinar 3-1: Outcomes and results of co creation (13.12)
- 8 Webinar 3-2: Recommendations for policy to support responsible research and innovation practices (9.22)

The videos have also been made available on the project website in the section ‘GoNano Webinars on Co-Creation and Research: A series in three parts’⁴. It can be accessed via the following link: - <http://www.gonano-project.eu/gonano-webinars-on-co-creation-and-research-a-series-in-three-parts/>

The section has brief descriptions of each of the webinars and the individual session from each of them. In addition, the questions and answers that were posed and given during the three live webinars have been transcribed and are included on the section as well. You can see and read these texts in the remaining part of this Annex (A):

³ They can be accessed and watched via the following link: <https://www.youtube.com/playlist?list=PLI2-pUcV1b7N8LISkZIOxIbLtK-UCrA6g>

⁴ It can be accessed via the following link: <http://www.gonano-project.eu/gonano-webinars-on-co-creation-and-research-a-series-in-three-parts/>

GONANO WEBINARS ON CO-CREATION AND RESEARCH: A SERIES IN THREE PARTS

The GoNano project is committed to developing tools for researchers and engineers, who would like to work more co-creatively with citizens and other types of stakeholders.

The GoNano project has developed a webinar series in three parts:

- The first webinar titled “What is co-creation and why co-create in research and innovation? It was presented live on Thursday May 28, 3.00-4.30pm CET
- The second webinar titled “Co-creation in practice” was presented live Thursday June 4, 3.00-4.30pm CET
- The third webinar titled “Outcomes and results of co-creation” was presented live Thursday June 11, 3.00-4.30pm CET

THE FIRST WEBINAR: CO-CREATION IN RESEARCH AND INNOVATION

In the first webinar of the three-part series, we delve into co-creation, what is it, what you can achieve and how you can achieve it. Finally, we look at the types of stakeholders you can involve in a co-creation project.

The webinar consists of three individual sessions. The first session is more theoretical and explains the concept of co-creation, how co-creation is used by business, and in the public sectors, as well as how the GoNano project developed its own approach to co-creation in a research and innovation context.

The second session goes more in depth with the goals of co-creation for research. It explains the specific aims and outcomes that you can use a co-creation approach to achieve.

The third session of the first webinar looks at the many different types of stakeholders that you could involve in a co-creation process, and it gives examples of what it is that these stakeholder groups could contribute to your project.

QUESTIONS AND ANSWERS FROM THE FIRST WEBINAR

Following the three videos, a couple of questions were discussed with the live audience. They included:

Question (1): Is open innovation the same as co-creation?

Answer: Open innovation is a broader concept than co-creation. And if you look towards the HorizonEurope framework programme, Open Innovation is collaboration that includes any kind of partnership between public and private partners. So open innovation does not necessarily include elements from the framework of responsible research and innovation (rri), and so does not necessarily include an attempt to be more responsive to societal needs. Open innovation is simply about sharing information between different kinds of research and innovation actors through formats such as open access e.g.

Question (2): The idea of co creation sounds nice in theory. However, in practice, I considered the involvement of stakeholders extremely difficult. Could you give some real-life examples?

Answer: yes, it is difficult to engage stakeholders on research and innovation questions in the early stage of development. However, it is worthwhile to do it. One should just keep in mind that it requires resources. You need to have support and probably also specific funding available, as it is not something that you can do for free. Once you have the resources, you can overcome the challenges to do it.

Coca-Cola and Lego are real-life examples of companies that apply co-creation in their innovation and business development strategies. It is very important to keep in regular contact with the stakeholders you would like to engage with, and to find out how you can help them with a challenge they are facing with your project. In that way you create a common interest and motivation to engage with you.

Question (3): Is there any reward program for the stakeholders to join a co-creation process? Would they do it just for fun? If stakeholders do contribute to the product design. Will there be an IP issue?

Answer: We did not have a reward programme for stakeholders participating in our co-creation process. We were able to cover expenses for travel and accommodation. In relation to IP, the outcomes of the GoNano project are open for public use. If the products suggestions and ideas coming out of the co-creation pilots we ran, or our methodology for co-creation were taken up by others that would be a success for us.

Another aspect on IP, concerns the information that stakeholders are able to share in co-creation workshops themselves. However, we have not experienced IP as an issue since we are not discussing at a detailed level relevant for IP concerns.

Question (4): What do you think is the best starting point for a co-creation process, and especially for finding stakeholders in civil society, would it be Twitter or where else should you start looking for these types of stakeholders?

Answer: A good starting point is to carefully consider, what a desirable outcome of a co-creation project would be for your project or for your organisation. For finding civil society stakeholders, Twitter could be a starting point. Finding civil society organisations very much depends on your starting point. So, once you have defined your starting point and the interests and issues at stake, you can look for interest and civil society organisations that work on the same issues. E.g. consumer, environment, or patient organisations.

THE SECOND WEBINAR: CO-CREATION IN PRACTICE

In the second webinar of the three-parts series, we look into the practical aspects of organising a co-creation event. We give an example of how you can design, plan and invite participants for a co-creation project.

Like in the first webinar, the webinar consists of three sessions. In the first session, we give an example of how you can build up a stepwise process over a longer period. A longer timeframe for your co-creation process allows ideas to grow and relationships and networks to mature.

In the second session, we provide insight into the many items needing thought and planning before organising a co-creation event. For example, how does the ideal room look like, do you need to consider the furniture and tables, how could you prepare your participants for the event?

In the third session of the webinar, we look at citizens and a different groups of professional stakeholders, like policy-makers, researchers, business and civil society organisations. What are their interests and motivations for participating in your event? How can you make sure it is designed in a way that they also take a valuable outcome home from your event? Getting the 'what's in it for me' right for each stakeholder will increase your chance of their participation at your event, and will also increase the likelihood that their input to your project will be useful in a real-life setting.

QUESTION AND ANSWERS FROM THE SECOND WEBINAR

Question (1): What is the added value is of inviting citizens and societal interest organizations into a discussion on future applications of research?

Answer: It provides the opportunity to learn about societal needs and values, and inform experts working on nanotechnologies about these needs and values that they had not themselves thought of. Generally, citizens are interested in taking part in discussion on research plans, innovation ideas or business plans in certain research areas. Nanotechnologies can be hard to grasp, so it is important to illustrate the general and everyday issues related to the development of nanotechnologies.

Question (2): How do you deal with questions on justification of the use of nanotechnology in food production as earlier GM based foods were not much appreciated ethically?

Answer: We asked about citizens fears and needs in relation to a specific application of nanotechnologies. the area? Citizens also appreciated the possible benefits of in relation to reducing food waste and keeping food fresh and healthy. Plastics and the potential to reduce microplastics was discussed both by the citizens and experts as a potential area of benefit. But there were concerns raised that parallel discussions on GMOs.

Question (3): What has been the most significant concern or apprehension from citizens on nanotechnologies. Are a lot of them for example concerned about safety issues?

Answer: Indeed, in all situations where we discuss areas of enabling technologies, including nanotechnology, citizens are concerned about safety. It is one of their three main concerns. They are also not just concerned about safety for people, and users, but also for the environment. Questions are on how, and if a new nano-product would affect the environment. Additionally, there is the aspect of sustainability and hopefully we will talk more about options for recycling materials in the future.

Question (4): What are the essential planning elements that you need to consider in planning co-creation events?

Answer: Several items are important. One, is to take time to get your sample of participants right. You should plan a few months for this part. Another important item is thinking carefully about your topic. The kind of topic you choose to focus on will give direction to the stakeholders you need to have at your events. In addition, it is important to carefully phrase the approach to your topic. If your topic is one that the participants do not know much about, it will also be important to produce supporting information materials, and if you have participants with different levels of expertise or background, it is important to find a framing of your issue that unites their interests. For that you probably need to think generally and about the bigger societal issues at stake.

Question (6): What is the need of a very detailed manual for a workshop? Is it necessary to choreograph an event as if it was a play?

Answer: A detailed manual is very important as it makes organisation easier, more efficient and it makes your work accountable, as you can explain how you reached specific outcomes from your event. Having it written down also provides a steady guide for everyone helping to facilitate and organise your event as it unfolds. It is also very good to host a training day to prepare everyone who has agreed to help you facilitate and run your event.

Question (7): How diverse were the citizen participants? Did you also consider the roles of gender of culture in your co-creation process?

Answer: In terms of diversity, we worked with requirements for the composition of our citizen groups. These included requirements on diversity in relation to gender, age, socio-economic background, and geographic coverage of different regions. Gender and culture were considered as an important parameter in all levels of the project. Because gender and culture. Gender and culture are when it comes to innovation, in e.g. considering things from a different angle, and getting at possibly unexpected answers. These are effects of having a diverse population represented in your sample.

THE THIRD WEBINAR: OUTCOMES AND RESULTS OF CO-CREATION

In the third and final webinar of the three-part series, we look into the possible outcomes and results one can achieve from a co-creation process. We also share the challenges we experienced in running and developing a co-creating project.

The third webinar consists of two sessions. In the first session, we show how citizens' needs and values as we discovered them through our work. We give an example of how they inspired researchers to think about different aspect of their work in developing nanotechnologies for food, energy, and health.

In the second session, we focus on policy recommendations for how co-creative approaches for involving citizens, civil society, policy, and business could be increasingly supported and incentivised in at the level of individual researchers, and research and funding organisations. We also introduce perspectives on co-creation as elements of a business case to support trust-

building between companies and civil society – and lead to a closer alignment between social needs and values and commercial products.

QUESTION AND ANSWERS FROM THE THIRD WEBINAR

Question (1): How did the suggestions or ideas for nanotechnologies applications develop through the co-creation process?

Answers:

For the GoNano Health Pilot: One concrete idea we worked on was diabetes technology and a specific application called the artificial pancreas. Diabetes patients need constant monitoring of their insulin levels to make sure they can inject supplementary insulin before levels get dangerously low. The device we discussed during the co-creation process is one where that checks insulin levels automatically. The diabetes patient would therefore not need to measure his or her body indicators anymore. However, though the co-creation process we ran, we found out the patients would like to see what is happening in device. The iterative process allowed us to bring the point back to the developer for consideration in further development of the device.

For the GoNano Food Pilot: In our co-creation process, several ideas came up for discussion on the kind of food applications you could have. One of the main ideas, and the one that were the most popular between citizens, where nano filters, nano-packaging, and a kind of superfood containing nanoparticles. In the co-creation with experts, these ideas were developed further, and we ended up with two main outcomes. One, a smart food packaging, which would contain antimicrobial particles in the packaging itself., and with the outside of the packaging consisting of plastics or bio decomposable plastics or similar material. Two, a kind of system of analysing nanoparticles, particularly in foods, to address fears of eating nanoparticles.

For the GoNano Energy Pilot: Our outcome also developed over time, from rather broad and creative ideas coming out of the first citizen workshop, to more focused ideas. The broad idea of citizens, to have items that charge while you move, were interpreted by the experts first as energy saving devices, and finally by researchers in a nanotechnologies innovation project, who took the ideas and suggestions from the co-creation process into the considerations they were already having on developing devices similar to batteries.

Question (2): Do you think it is possible to develop a co-creation process that is simpler than what you did in GoNano and is less resource intensive?

Answer: The main issue is to be aware of what it is you would like to achieve with your co-creation process. The question of resources should not be the one that keeps you away from trying co-creation or from designing our own process. I just think that if you are aiming for procreation, you must be very aware of what you want to achieve. In terms of keeping costs down, there are maybe opportunities to rent low budget rooms, checking what resources are available in your network and institutions.

Question (3): What do you find most challenging to get a greater recognition of gender and diversity issues in research and innovation activities and settings, and what policy recommendations does especially think address this challenge?

Answer: One of the main obstacles you come up against is the question if it is necessary to consider gender and diversity in innovation contexts. The practices for addressing the issues have not become routine. Therefore, considerations on gender and diversity can seem like a lot of work, and the value is not already clear to the people asked to make the considerations. It is very important to communicate that including considerations on gender and diversity is not just something you should do because it is the right thing to do. No, it adds value to the innovation process and outcomes as well. The positive effects of mindfulness on backgrounds, experiences, ethnicity, and religious and cultural background have been proven in several studies. Going that extra mile can add much to your process, and it can be less difficult than you might initially think. Think e.g. of contacting advocacy or interest groups to reach a greater diversity in your co-creation events.

In terms of policy, the recommendation to decide on considering and including gender mainstreaming and diversity from the beginning of policy development to all aspect of the running and development of a research or innovation programme of organisation is essential.

Question (4): White paper 2 talks about conditions for working more co-creatively in research and innovation. What do you think it would take to change research funding and incentive structures for cocreation to become more attractive to do or other types of collaborative activities with citizens and civil society?

Answer: Possibly we would need to start with the recognition that a cultural change is needed in how organisations are controlled and developed. They need to be more inclusive. As it is now, researchers participate in co-creation events out of personal interest. Only rarely are their participation part of a strategic plan of their organisations. Possibly, action from the policy realm could change the situation. We also found very different awareness of co-creation across the sectors that work on the development of nanotechnologies. E.g. in the manufacturing sector co-creation might be a known concept, but co-creation activities are virtually non-existing Finally, there are no reward mechanisms for researchers wanting to co-create or engage with stakeholders or publics. That would need to change.

ANNEX B – RMIT MICRO-CREDENTIALS ON RRI AND CO-CREATION

Micro-credential name	Length	Key topics/concepts *
Understanding Responsible Research and Innovation	2-4 hours online + optional task	RRI as an ethical and sustainable approach Exploration Inclusivity Responsiveness
Incorporating Co-creation into Research and Innovation	2-4 hours online + optional task	Applying co-creation in RRI Co-creation: What it is and why it's important The Co-creation process Managing the co-creation process
Implementing Co-creation Activities in Research and Innovation	2-4 hours online + optional task and workshop	An iterative co-creation process Co-creation in action Designing, planning and running creative workshops with diverse stakeholders Collecting and interpreting data Feedback Evaluation



Understanding Responsible Research and Innovation

Upskill yourself in responsible research and innovation with our new micro-credential

RMIT UNIVERSITY

GoNano

Understanding Responsible Research And Innovation

About the badge



This micro-credential explores the concepts of Responsible Research & Innovation (RRI) and investigates ways they can be applied. Throughout the credential you will explore the value that inclusivity, diversity, and responsiveness have in collaborations and engagements with a variety of stakeholders.

Completing this micro-credential will provide you with the foundational knowledge to support an RRI journey.



Badges are a record of your achievements that are recognised and valued by employers. A digital portfolio of badges gives you an edge in the field of work and employment!

This badge demonstrates to future employers that you are able to:

- Demonstrate understanding of RRI theoretical concepts
- Explain the value of empathy for those from different backgrounds and viewpoints
- Explain the value of including diverse stakeholders in research and innovation
- Identify how RRI principles can be applied to research and innovation projects

Next ▶

Module 1: About RRI

Who's who in this credential



This micro-credential has been built around the EU-funded project, GoNano and features expert advice from GoNano partners and teachers from the project's winter school that was held in Barcelona in 2020.

The GoNano project aims to demonstrate how researchers can work with public and professional stakeholders to create novel suggestions for future nanotechnology products and to align future nanotechnologies with societal needs and concerns. You can explore the project in the links provided at the foot of the page.

Now watch this video to hear more about the experts you will meet as you make your way through the videos in each module. (1min 49sec)



Meet our experts



Inclusivity in the context of RRI is primarily about including people and groups of people in research and innovation activities.

The people and groups should be diverse, and the activities they are involved in should vary as well, from informal discussions and ideation through to involvement in research and innovation practice and decision-making.

Inclusivity in RRI can also refer to stages beyond the research and innovation activities themselves, to cover the outputs that these activities produce – by ensuring that outputs are also inclusive of, and relevant to, as wide an audience as possible.

Inclusivity can also be used to describe the language used in dialogues, where the use of technical jargon can lead to the exclusion of those who are not familiar with the terminology.

Gender and diversity are two important terms that often crop up when considering the inclusivity of a project action or output.



Ask an expert

Now watch Daan Schuurbijs describe how RRI practices can mitigate risks associated with new technical solutions offered through research and innovation. (1min 40sec)

As you watch, consider the following:

- Have you identified or anticipated any risks associated with your own research and innovation or professional activities?
- Which stakeholder groups could you engage with to mitigate some of these risks?





The organisers of this course, Craig Richmond and Paul Wright, heartfully thank all of the GoNano partners and teachers from the project's winter school for their contributions to this course.



GoNano is a Coordination and Support Action funded by the European Union under the NMBP Programme of Horizon 2020, Grant Agreement n° 768622.

The GoNano partners



ANNEX C – THE WRITTEN TRAINING MATERIALS

This Annex (C) contains all the written training materials that have been developed and made available on the GoNano project website in the section “The Road of Co-Creation: Training Materials for Researchers and Engineers⁵. However, it is recommended to view the training material on the website, as ‘The Road of Co-Creation’ and the training materials have been designed to be presented in this way.

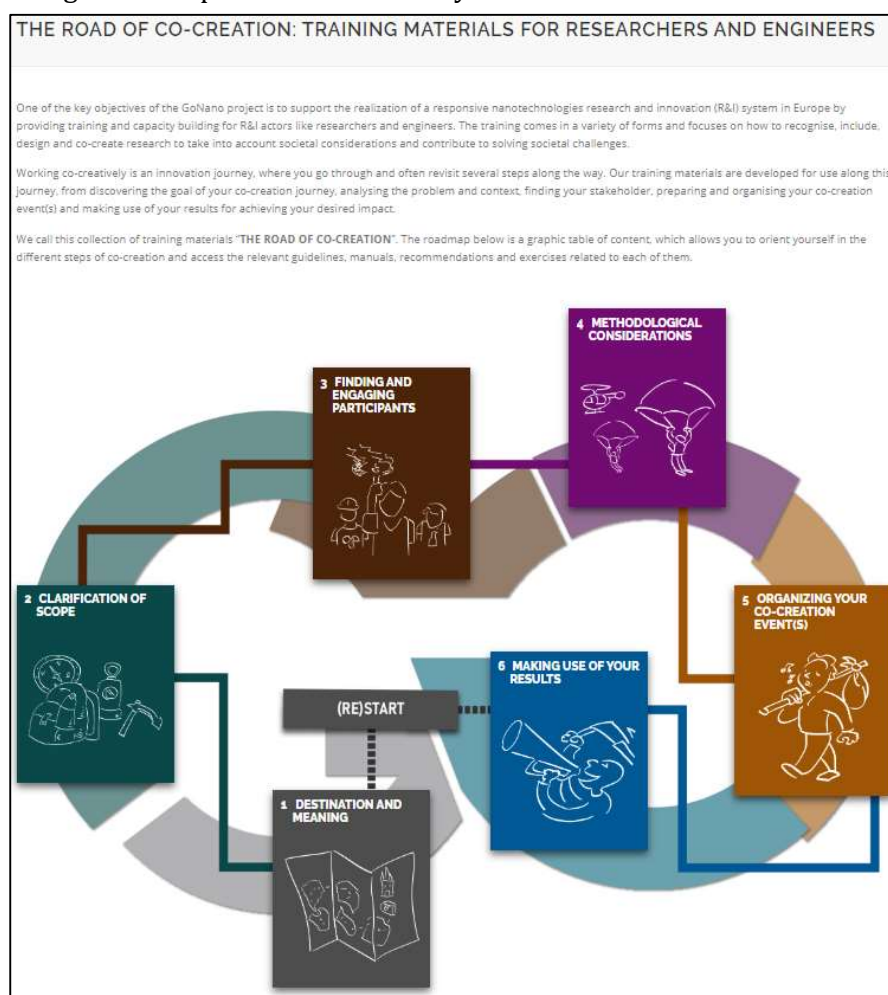


Figure 6: Screenshot of the top of ‘The Road of Co-Creation: Training materials for researchers and engineers’ section on the GoNano website.

The remaining part consists of the written training materials listed below in the same order:

- [‘The Road of Co-Creation’](#) [page 1-15]
- [Examples of Communication strategies for different stakeholders](#) [page 16-22]
- [Methods of the co-creation methodology: Citizen workshops](#) [page 23-24]
- [‘Human resources for co-creation events’](#) [page 25-26]
- [‘Practical resources for co-creation events’](#) [page 27-28]
- [Example of a detailed agendas/programmes for co-creation events’](#) [page 29-36]
- [‘Template for developing a detailed manual for your co-creation event\(s\)’](#) [page 37-41]
- [Example of citizen recruitment strategies and methods’](#) [page 42-44]
- [‘Overview of the co-creation process in GoNano: Input, outcomes and data gathered at each event’](#) [page 45-46]

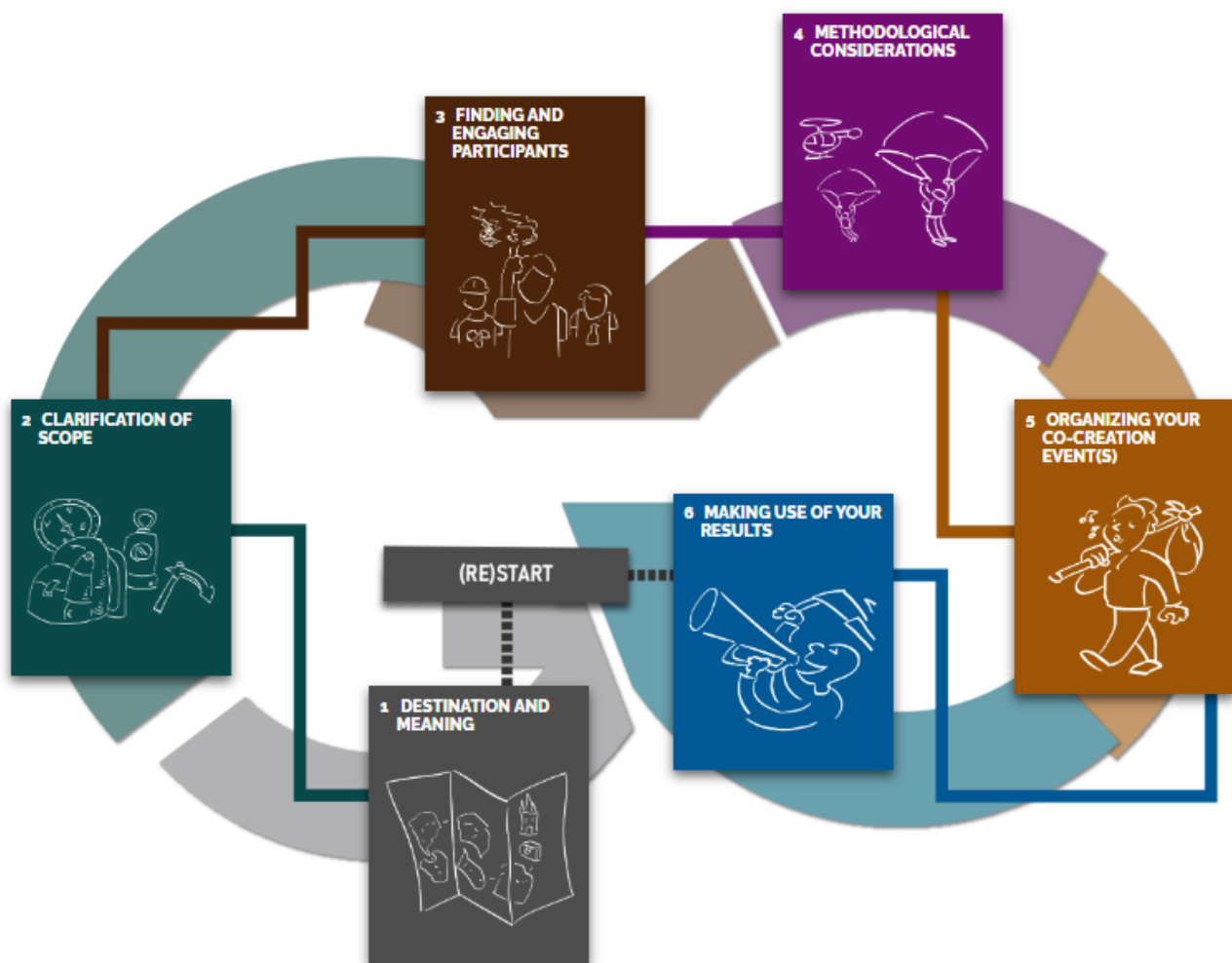
⁵ which can be accessed via the following link: www.gonano-project.eu/road-of-co-creation-training-materials-researchers-engineers/

The Road of Co-Creation: Training Materials for Researchers and Engineers

One of the key objectives of the GoNano project is to support the realization of a responsive nanotechnologies research and innovation (R&I) system in Europe by providing training and capacity building for R&I actors like researchers and engineers. The training comes in a variety of forms and focuses on how to recognise, include, design and co-create research to take into account societal considerations and contribute to solving societal challenges.

Working co-creatively is an innovation journey, where you go through and often revisit several steps along the way. Our training materials are developed for use along this journey, from discovering the goal of your co-creation journey, analysing the problem and context, finding your stakeholder, preparing and organising your co-creation event(s) and making use of your results for achieving your desired impact.

We call this collection of training materials “**THE ROAD OF CO-CREATION**”. The roadmap below is a graphic table of content, which allows you to orient yourself in the different steps of co-creation and access the relevant guidelines, manuals, recommendations and exercises related to each of them.





1 DESTINATION AND MEANING

The very first step is to consider and figure out why you may want to integrate co-creation in your current and/or future endeavours. What are your initial goals and expectations for working co-creatively with others?

The training material presented here is meant to help you reflect on and articulate how and why the co-creation approach could support you, your research project or your organization's current and future research projects and activities. It will give you a brief introduction to the concept of co-creation and explain why it should be of interest for researchers and engineers. Additionally, it will provide you with templates and an exercise to initiate reflection and goal setting.

What is co-creation? And why co-create in research and innovation?

Co-creation is a widely used, but loosely defined term, which has been applied in many different contexts. At its very core, it is about the involvement of others and their perspectives in an innovation process. However, the goal(s) of co-creation projects can be quite diverse, and that too is reflected in the various designs and applied methodologies of the innovation processes. For some, the involvement of others is simply an opportunity for gathering additional input and feedback in the research and innovation (R&I) that may help improve the product or application. For others, it is a form of a principle or mentality one can follow to help ensure that the researchers and engineers in R&I consider and are responsive to the needs and concerns of others.

In the GoNano project, we aimed to enable co-creation between citizens, civil society organisations, industry, researchers and policy makers across Europe, to align future nanotechnologies with societal needs and concerns. We therefore adopted the following definition of co-creation:

“CO-CREATION ACTIVITIES ENABLE PRODUCTIVE COLLABORATIONS BETWEEN RESEARCHERS AND SOCIETAL STAKEHOLDERS OVER LONGER TIMEFRAMES, FOCUSING ON SPECIFIC NANOTECHNOLOGY RESEARCH LINES, LEADING TO TANGIBLE OUTCOMES SUCH AS A NEW RESEARCH AVENUE, PROPOSAL, PRODUCT OR PROTOTYPE”

There are several things that potentially can be gained by incorporating a co-creative approach to R&I processes and projects:

- First off, a co-creation project can lead you to new insights and knowledge. Future stakeholders of your research or innovation project have insight and knowledge that could help you refine and tailor your activity to their needs and direct your efforts in directions valuable for your stakeholders.
- Second, co-creation builds your future network for sharing your work, and so it broadens the group that would potentially help you implement and further develop it.
- Third, co-creation creates ownership of solutions. Stakeholders that have been involved and allowed to influence your research and innovation process, are more likely to feel ownership and thereby responsibility for sharing your findings and working to implement or further develop your solutions.
- Fourth, co-creating helps you check that solutions you propose are rooted in and relevant to solving the problem you were planning to contribute a solution to with your project. Societal challenges are complex, and collaboration across disciplines and sectors is needed to reach robust solutions.
- Fifth, involving citizens and other stakeholders in co-creating on your project creates trust and an increased understanding among the participants in the process.

In the two videos below, you can see and hear more about what co-creation is and what can be achieved through co-creation. The videos are respective sessions from GoNano co-creation training webinar series.

[Video | Webinar 1-1: What is co-creation?]

[Video | Webinar 1-2: Why co-create in research and innovation?]

Discovering the goal(s) of your co-creation project

Now that you've been introduced to (or brushed up on) the concept of co-creation, you need to start figuring what your own goals or motivations for integrating the co-creation in your R&I projects may be. As we mentioned, various actors can have different reasons for and aims with working co-creatively. The GoNano project for instance had the multiple goals with developing a methodology for and running the co-creation process within:


- To showcase an early-stage state-of-the-art continuous citizen and stakeholder engagement process, which take into account gender and differences in culture and communication traditions across the EU
- To develop concrete research and product suggestions for future applications of nanotechnologies within the areas of food, energy and health
- To provide concrete policy recommendations for governing the development of conditions and actors responsive to societal needs, values and concerns in R&I

To help you reflect on, discover and articulate your goals with co-creation, try to reflect on the following questions: *Why do you want to embark on a co-creative innovation process? Where would you like to be at the end of your co-creation process? What is the problem you are trying to solve?*

As you continue through the next steps of our co-creation journey, we'll provide you with more videos, guidelines, manuals and templates to support you in developing your own co-creation process. However, before you continue, we recommend that you try this **exercise**:

Fill out the "[Strategic Planning Canvas](#)" – either on your own or together with colleagues.

Word of advice: Some of the questions may feel a bit overwhelming and difficult to answer meaningfully at this point, but don't worry(!). Arranging a co-creation project is an iterative process where steps and decisions will be revised along the way. What you fill out in the canvas will almost certainly have to be adjusted, but you must start somewhere, and that is what this exercise will help you do.



2 CLARIFICATION OF SCOPE

The second step is about working on clarifying the scope of your co-creation project. The training materials here will support you in taking stock of the internal resources at your disposal, as well as making an initial mapping of the external context that you will operate in and immediate stakeholders. The objective is to prepare you to find participants and engaging them in your co-creation projects.

Now that you've considered why you might be interested in working co-creatively with others and have set (an) initial goal(s) for your R&I project, it's time to work on making the project idea more tangible. You have to clarify the scope of your project.

Co-creation projects and activities can greatly vary in terms of their goal(s), timeframe and scale. In the GoNano project, we were tasked with showing how citizens and other stakeholders could work with researchers to make concrete suggestions for future nano-enabled applications within the respective areas of food, health and energy that would reflect societal needs and values. We designed the methodology for a co-creation process and ran three pilot projects that covered three countries and four iterations. However, we also had a timeframe of three years, a budget of nearly 2 million euro and a diverse consortium with a lot of experience in co-creation and Responsible Research and Innovation (RRI). Chances are that your time and resources are different to ours, but rest assured – it also is possible and valuable to do co-creation in shorter projects with a small budget.

The inventorying approach

There are different ways to determine the scope of your co-creation project. Assuming you've already thought about the problem you are trying to solve, we'll suggest that you use the inventorying approach. Through simple desk research and dialogue, you can try to take stock of your internal resources. It's beneficial to do a preliminary inventory because it can help you get a more realistic understanding of your possibilities. While the internal resources are an important factor, it is not the sole thing to consider. The external context of your project and your possible stakeholders are just as important. You should therefore also make a preliminary mapping of the external context and identify the immediate stakeholders.

To do a preliminary inventory of your internal resources and context, try to answer the following questions:

- What human resources do you have at your disposal?
– E.g. Are you own or do you have a team? A Communications Depart? Organizers?
- What competencies, knowledge, experience and network do you have at your availability?
– E.g. Colleagues that are familiar with facilitating engagement processes?
- What is your time frame?
– E.g. If you consider integrating the co-creation approach to an already ongoing R&I project, when and over how long a period will it be possible to fit it in with the current time frame of the project?
- What is your budget?
– E.g. Do you have usable working hours you can allocate to the activity? And to what extent are financial means available?
- What is your organisational context (policies, strategy, hierarchies) and how do they influence your desired destination (challenges and opportunities)?
– E.g. Does your organisation already have an SDG (Sustainable Development Goals)/CSR policy or strategy which you can argue that your co-creation project will align with? Or do you think your superior might be sceptical of integrating new elements like co-creation into the R&I?

Remember that nothing is necessarily set in stone. You may for instance not have immediate support through the corporate strategy or from your superior, but that could change if you develop a project proposal and present a compelling case for using a co-creative approach. That could result in you being allocated a bigger budget and allowed to pull on existing human resources and competencies within other different parts of your organisation – or perhaps hire help from the outside.

To make a preliminary mapping of the external context of your project and identify your immediate stakeholders, try to answer the following questions.

- What is the societal context of the problem you would like to address?
- What is the political and legal context of the problem you would like to address?
- Who are the stakeholders and key players, and what role could they play in your co-creation project?

While nano researchers and engineers work in a similar field on a conceptual level (manipulation of matter on an atomic, molecular, and supramolecular scale), the external context of their R&I projects can vary greatly depending on the concrete application, sector and geographical location they work in. This was clearly the case in the GoNano project, where the three pilot co-creation projects were centered around applications in respective sectors and each took place in different European countries.

Exercise: Try to fill out the “[Practical Planning Canvas](#)” – either on your own or together with colleagues.

Word of advice: Just like with the ‘Strategical Planning Canvas’ in the first step, some of the questions in this one may be difficult to answer at first, but try to give it a go. It will help bring you forward to the next steps, where you’ll learn more about the methods for co-creation and the practicalities related to organizing an event, which will prepare you for the more detailed planning.



3 FINDING AND ENGAGING PARTICIPANTS

The third step is about finding participants and engaging them in your project. Once you have clarified the goal and scope of your co-creation project, you have to identify the concrete actors that you want involve in your co-creation process and consider how to effectively reach out to them. The training materials will help you develop effective communication strategies by showing how to systematically break down various target groups.

Now that you’ve set initial goals for your co-creation project, taken stock of your internal resources, assessed the external context and identified immediate stakeholders, it is time to figure out which actors you would like to have participate and begin to consider how you may be able to engage them in the process.

You have a clear idea about the goal(s) of your co-creation project and what you’d like to get out of the participant, but some key questions for you are these: What is in it for those you wish to involve? Why would a stakeholder or a citizen want to engage and spend time on your activities? How will the process look and what will it require from them? In order to ensure a sustained and desirable level of engagement from participants, it is necessary to address one or more of participants’ motivations. It is therefore important that you consider the interests of the different stakeholders and their possible motivation(s) for participating, as well as how you can use this information and various tools to approach them.

You can reflect on this systematically by trying to answer the five questions below for each of the broader stakeholder categories or target groups that you may have identified in the mapping of the external context and stakeholder types:

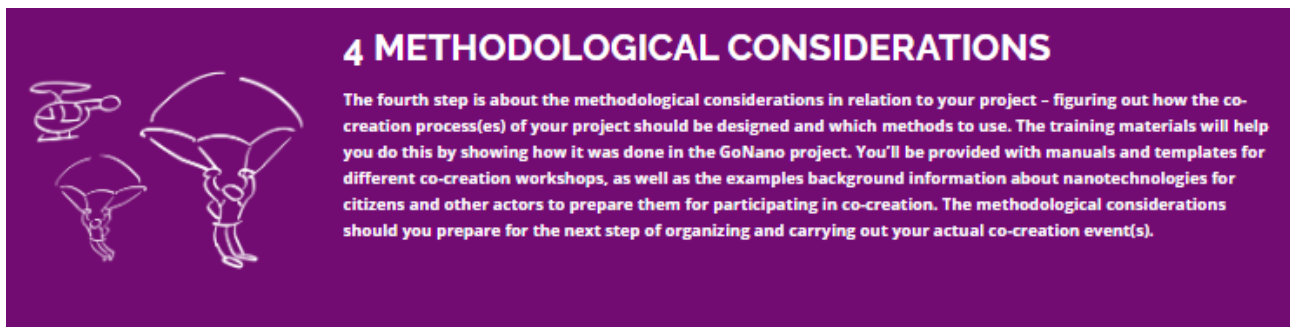
- Who are these actors?
- Why do you need them in the project?
- What is in it for them?
- How do you approach them?
- Which tools will you use?

To help you do this, you can orient yourself in the document below. It is an excerpt of the GoNano project's communication and branding plan, which specifically revolves around our communication strategy for different types of stakeholders. It showcases how we answered the question in relation to the project and the co-creation process within it. Additionally, it exemplifies how different the answers can be for each of the stakeholder types.

- [‘Examples of Communication strategies for different stakeholders’](#)

You can also watch the video below, which is one of the webinar sessions on the topic of stakeholders and their interests. It looks at the many different types of stakeholders that you could involve in a co-creation process, providing examples of what it is that these stakeholders groups could contribute with and what may motivate them to participate.

[Video | Webinar 1-3: Who are the stakeholders for a co-creation project?]



4 METHODOLOGICAL CONSIDERATIONS

The fourth step is about the methodological considerations in relation to your project - figuring out how the co-creation process(es) of your project should be designed and which methods to use. The training materials will help you do this by showing how it was done in the GoNano project. You'll be provided with manuals and templates for different co-creation workshops, as well as the examples background information about nanotechnologies for citizens and other actors to prepare them for participating in co-creation. The methodological considerations should you prepare for the next step of organizing and carrying out your actual co-creation event(s).

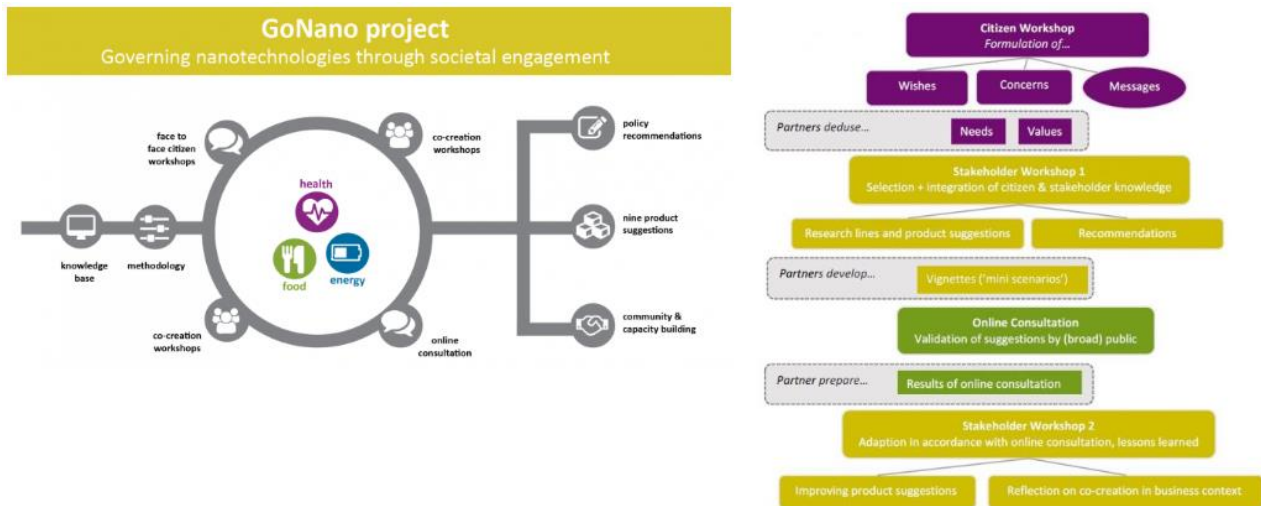
Now that you've set an initial goal (or several) for your co-creation project, worked on clarifying its scope and made some considerations with regards to which actors you want to participate in the co-creation and how to engage them, it's time to contemplate how the co-creation process(es) should be designed and which methods to use.

There are many different ways to do this, but to exemplify how it can be done, we'll give a brief survey of the co-creation design and methodology of the GoNano project. The GoNano methodology for co-creation is a facilitated continuous process aimed at aligning R&I projects and processes with societal needs and values. Through its co-creation process, lay participants learn about nanotechnology and the professional stakeholders learn about societal needs and values in order to allow for enhancing their responsiveness to them. The methodology is somewhat comprehensive and is not necessarily suitable to be used as a template for a methodology in another project. However, it can serve as inspiration for how such co-creation process(es) can be approached and which methods that can be applied.

The design and methodology of the co-creation process in GoNano

As mentioned in the first step, the overall goal of the GoNano project was to demonstrate how responsiveness to societal values, needs and concerns can be built into nanotechnology R&I processes through co-creation, resulting in products that are judged as socially desirable, sustainable and acceptable. The objectives were to come up with concrete suggestions for new products and research

avenues, develop policy recommendations and to contribute to community & capacity building in relation to the practice of co-creation and RRI. In order to achieve this, the project should develop a methodology for a co-creation approach and then use it to run different pilot co-creation processes within the respective themes of Health, Food and Energy. The two figures below respectively illustrate the overall project design of the GoNano project as a whole and the outline of the co-creation process.



The co-creation methodology was thought as a continuous and iterative process designed with several rounds of citizen and stakeholder involvement through workshops and consultations:

1. It began with a face-to-face citizen workshops aiming at collecting knowledge on the citizens' values, concerns and messages regarding the development and implementation of future nanotechnologies.
2. Second round of workshops were for stakeholders within businesses, policy, CSOs, and research institutes, and in some cases also citizens that participated in the previous workshop. Here the needs and value deduced from the first round of citizen workshops was used by the stakeholders as the basis to design responsive suggestions for applications of nanotechnologies.
3. The third round was an online consultation where citizens across Europe were to react to the design suggestions developed by the stakeholders in previous round.
4. In the finale round of workshops stakeholders were invited back to evaluate the results from the citizen consultation and explore product suggestions aligned with societal needs and values.

One of the sessions in the GoNano webinar series covered the methodology of this co-creation process. You can watch the session in the video below:

[Video | Webinar 2-1: The GoNano methodology for co-creation]

The structure and applied methods in the co-creation process

Now that you've gotten a brief overview of the project design and the logic behind the co-creation process as a whole, we can dive into the structure and explain of methods that were applied in the different rounds of co-creation workshops for citizens and stakeholders, respectively.

Citizen workshops

The citizen workshops were designed to get the citizens to come together to commonly reflect on nanotechnology and to provide their views about how to integrate them into the development of ideas for future application of nanotechnology that are aligned with citizens' needs and values. The approach builds on participatory integration of citizens to opine on pressing issues from projects such as WorldWideViews, PACITA and co-creative exercises as developed in NanoDiode. The citizen workshops were structured in the following way:

1. After a general introduction clarifying the roles of the participants and introducing the day, the workshop consisted of three repetitive rounds of reflection, where the citizens discussed a specific technology application setting which they might already know from the information material.
2. The discussions were free, but a facilitator helped to make sure the participants stayed on topic and also discussed a set of pre-prepared questions. The technology-oriented start provides an opportunity to investigate a stakeholder-coined technology setting and creatively dive into opportunities and concerns about nanotechnologies. Starting with a reflection on the application of nanotechnologies also serves to make sure that the citizens have enough time to get familiar with Nano-applications and their implications, and that their own thoughts relate to areas of interest of the stakeholders.
3. In the next step, the citizens were asked to again reflect on the same application of nanotechnology, and to identify wishes and concerns that are important to them in that context. They wrote down these wishes and concerns, and after a plenary presentation, the participants voted upon them individually. In doing so, they provide valuable information on how they perceive the acceptability and desirability of nanotechnology applications, for the next step of the co-creation process – the first workshop with the professional stakeholders.
4. In the final step of the citizen workshop, citizens were asked to think about what they would like decisions-makers, researchers and other professional stakeholders to do. The results are written messages with a clear addressee. Messages could be concrete proposals of a next generation of nanotechnology applications or products, a concrete instruction of what the decision makers should take care of, or what the researchers should consider in the future, when they elaborate on these technologies.

The document below is an excerpt from the method and manuals for the co-creation process in the GoNano project, which describes and illustrates the methodology of the citizen workshops in greater detail.

- **'Methods of the co-creation methodology: Citizen workshops'**

Seeing as many lay citizens may be unfamiliar with nanotechnology, the GoNano project also used different methods to prepare the participants for taking part in the deliberation during the workshop. The three documents below are the **information material** that were developed for the three respective citizen workshops. The role of the information materials was to educate the participating citizens about nanotechnology and possible future application areas, introduce them to societal, legal and ethical questions on the desirable, sustainable and acceptable development of nanotechnologies; to align their discussion with the research and application areas of interest to professional stakeholders; and to initiate their thinking on how they would want future nanotechnology to be part of their everyday lives.

- **'Basic information about nanotechnologies for health'**
- **'Basic information about nanotechnologies for food'**
- **'Basic information about nanotechnologies for energy'**

In addition to the information material, we also developed **scenarios of future visions** for use of nano-enabled technology within Food, Health and Energy in 2030. The scenarios take an everyday situation

as a starting point to illustrate how nanotechnologies could be implanted in the future. They were used as a method for introducing questions of desirability, sustainability and acceptability by letting the different scenarios play with how human, societal and cultural dynamics influence the way technologies become integrated in and part of people's lives. The document below is a collection of all the various scenarios that were developed in the GoNano project.

- [‘Future visions of nanotechnology in 2030’](#)

The scenario were also made into short videos. You can find them [here](#).

If you yourself are doing a co-creation project concerning nanotechnologies within one of these three sectors and want to involve lay citizens in the process, then you might be able to use the information materials and scenarios more or less as they. However, if your project is concerned with nanotechnologies within another sector, then it may be beneficial to adjust the information materials or develop new ones with more suitable examples. In that case, you can read an elaborate account on how and why the information materials and scenarios were developed in GoNano in [this report](#).

Stakeholder workshops:

The stakeholder workshops where designed to get a varied group of stakeholders to explore possibilities for new nano-enabled product designs, building on the social needs and values identified in earlier stages of the project/the citizen workshops and linking their different perspectives, knowledge and expertise. It is set up to following a design thinking format. The overall structure of the stakeholder workshops consisted of a general introduction followed by four interrelated co-creation sessions:

- Session A: **Exploration**, where participants get to know each other and their work, explore the needs and values expressed by the citizens in the previous workshop, and reflect on and articulate their own needs and interests.
- Session B: **Ideation**, where participants imagine and co-create responses to the needs and values expressed by the citizens by imagining revisions/adaptions of ongoing research and innovation trajectories, building on the varied expertise from the different stakeholders around the table.
- Session C: **Prototyping**, where participants generate storyboards that visualized how the resulting research lines and product suggestions could be designed to modified in relation to the needs and values expressed by the citizens, and suggest concrete actions to be taken by the participating stakeholders to realise the vision(s).
- Session D: **Reflection**, where the participants present and reframe their storyboards, and reflect on the ways in which the citizen's needs shaped the storyboard. Furthermore, they identify actions to be taken in preparation for the next stakeholder workshop and reflect on the overall workshop objectives.

The partners that facilitated the respective pilot co-creation projects integrated this overall structure, but while modifying the programme to fit their specific workshop topics (Health, Food and Energy) and cultural specificities (Dutch, Czech and Spanish).

The aim was to get around 30 stakeholders to participate in each of the stakeholder workshops that cover a diverse spectrum of expertise (researchers, producers (industry), professional users, policy makers and civil society organisations (CSO's)). Additionally, we also strived for an equal distribution of these actor groups.

In order to accommodate that the level of knowledge on nanotechnology, its application areas, and regulatory issues varied among the different type of stakeholders, information about these topics was included in the provided **background material** to ensure every participant would have a basic level of knowledge before participating in the workshop. In addition, the background material also included a brief overview of the outcomes of the citizen workshop. The documents below contain the English versions of the background material that was developed in relation to the respective stakeholder workshops.

- ['Background information material for the stakeholder workshop on future food and nanotechnologies'](#)
- ['Background information material for the stakeholder workshops on nanotechnologies and health'](#)
- ['Background information material for the stakeholder workshop on nanotechnology for energy'](#)

In case you also consider developing background material for the different types of stakeholders that will participate in your co-creation event(s) and would like to get inspired, you can read more about how we went about it in the GoNano project in [this report](#).

As illustrated in the overview, we had a **second round of stakeholder workshops** as the final step GoNano co-creation process. Although it had a slightly different purpose than the first round, seeing as the participating stakeholders were asked to reflect on the outcome of the online citizen consultation and to provide input for the development of business cases on concrete design suggestions, it was structured in the same way around **the four main pillars of co-creation: exploration, ideation, prototyping and reflection**. We will therefore not go more in depth with it here, but it shows how the same methods, structures and approaches can be used to achieve different outcomes in a co-creation process.

Online citizen consultations

The online citizen consultation format differs from the face-to-face citizen workshop, as it does not put as much emphasis on the exploration of alternative ideas and solutions. Rather the online consultation serves to test and evaluate the outcome of the previous events in the co-creation process (citizen workshops and stakeholder workshops), and to provide the opportunity for a broadening the engagement with publics. In GoNano, we developed an online survey to broadly evaluate these outcomes. The research lines and product suggestion formulated by stakeholders were broken down into concrete examples with regard to (potential) daily life contexts of citizens in a near future. The online consultation gave all citizens, including those that participated in the citizen workshop, the chance to see how their messages, wishes and concerns were taken up.

The target group of this event was the broad public. As the online consultation addressed lay people, it needed to be easily accessible to this target group. In order to avoid lengthy polls, the consultation was developed so that 10-15 minutes were sufficient to provide the answers.

The overall aim of the online consultation was to find out more about the wider perception of Nanotechnology in general, and to compare and prioritize the product suggestions from the first two steps in the co-creation process. The survey was set up to address three learning goals

- Firstly, a thematic analysis was used for the qualitative part of the study, consisting of the question *"What comes to your mind first when you hear the word "Nanotechnology"?"* with results visualized in word-clouds.

- Secondly, needs and values from the citizen workshops were again prioritized
- Thirdly, standardized “vignettes” (small contextualised stories) were used to provide participants with an easy-to-understand and quick overview of the suggestions and recommendations from the first stakeholder workshop

We hope this has inspired you to consider and develop a suitable methodology and design for the co-creation process in your R&I project. Once you have that in place, you should be ready for the next step of organizing and carrying out your co-creation event(s).



5 ORGANIZING YOUR CO-CREATION EVENT(S)

The fifth step is about organizing and carrying out your actual co-creation event(s). The description and training materials here will help you in ensuring that you are properly prepared to invite the participants over and carry out the co-creation activities. You'll be provided with a checklist of what to keep track of, templates for event manuals and examples from the GoNano project as inspiration.

Planning and preparing your co-creation event(s)

As you have decided on the design of and methodology for the co-creation process(es) in your project, you can the start the act of planning your actual co-creation event(s). It is important to ensure that you (and your team) is properly prepared to invite the participants in and facilitate the co-creation event(s). The table below is a checklist of the tasks and other things to keep track of during the preparation and facilitation of the event(s). Some of them may seem banal and obvious now that you go through them, but make no mistake(!): People tend to neglect or forget things, and this can affect activities of the event and ultimately jeopardize the outcome.

Preparation (early stage)	Preparation (final stage)	The final event
- Develop an overall and detailed planning for your process	- Finalise program	- Be in good time and check facilities beforehand
- Get the needed internal staff on board with the process	- Finalise background information material	- Follow your planning
- Describe your event, rationale, and draft a program (possibly consult with internal or external co-creation experts)	- Confirm participants	- Be flexible should anything unexpected happen
- Invite your participants	- Meet with your assistant staff, train them in their roles and go through the manual	- Make sure to enjoy your event!
- Secure room, catering, transport, reimbursement forms (if relevant)	- Develop materials needed for your meeting (signboard, overview list, consent forms, participants list(s) for signatures)	
- Develop draft of the background information material for the participants		
- Develop a draft manual for the day		

Some of the points on the checklist are fairly self-evident (e.g. describe your event, rationale, and draft a program) and others have already been covered in the previous steps (e.g. background information material). We will therefore focus on the remaining essential points that require an elaborate explanation and examples.

Regardless of how you structure your co-creation event(s), it's important that you and the others in your team have a clear understanding of everybody's roles and responsibilities throughout the day – who does what, when and how? And which practical resources needs to be in place?

A variety of roles will usually have to be filled in order to carry out co-creation events. The **list** below describes these roles and the tasks that go with them. It can help you get an overview and provide you with a basis for planning how to utilize your **human resources/staff**.

- [**'Human resources for co-creation events'**](#)

In addition to the human resources, you also need the practical resources for the co-creation event(s). The document below is a thorough list of the practical resources like the venue, technical equipment and different materials that are usually required to consider and arrange when organizing and conducting a co-creation event.

- [**'Practical resources for co-creation events'**](#)

Now that you have an overview of your human resources and practical resources, you can combine that with the decided methodology and structure of your co-creation process from the last step to develop a detailed manual for your co-creation event(s). The first document below showcases two examples of proposed detailed agendas/programmes for two co-creation events in the GoNano project. It shows how detailed you can (and properly should) be when you prepare for carrying out a co-creation event. The second document is a template that you and your team can use to develop a manual for your own co-creation event(s).

- [**'Example of a detailed agendas/programmes for co-creation events'**](#)
- [**'Template for developing a detailed manual for your co-creation event\(s\)'**](#) .

One of the sessions in the GoNano webinar series focused on planning a co-creation process. You can watch the session in the video below:

[Video | Webinar 2-2: Planning your co-creation process: Part 1]

Recruitment strategy for involving citizens in co-creation.

The detailed manual for your co-creation (event(s)) won't be very helpful if you haven't recruited or invited anybody to participate. We'll therefore also provide with examples of recruitment strategies with descriptions of various recruitment methods to help you develop your own recruitment strategy. All the documents specifically focus on the recruitment of lay citizens, as it is more difficult to recruit them in comparison to other stakeholders, which usually have contact information disclosed on their websites.

The document below is an excerpt of the Methods and manual for pilot studies in the GoNano project. It provides information about the recruitment strategies for the citizen workshops and the online consultation in the GoNano project, including descriptions of various methods for recruitment.

- ['Example of citizen recruitment strategies and methods'](#)

The video below is a session on recruiting citizens for co-creation events. It covers how to plan your 'sample' of citizens, different ways of recruiting them and special consideration for engaging them.

[Video | Webinar 2-2: Planning your co-creation process: Part 2]



6 MAKING USE OF YOUR RESULTS

The sixth and final step is about reflecting on the (incoming) results of your co-creation event(s) and how make use of them. To make you aware of the variety of ways that this can be, you'll be given several examples of the outcomes and results from the co-creation events and dissemination efforts in the GoNano project. Additionally, you'll also be provided with guidelines for how you can disseminate your results and evaluate your co-creation (events) and the process itself. This should both help your finalize your (current) co-creation project and assess its methodology and design, so that you'll improve your co-creation approach in your future R&I endeavors.

You've should have designed your co-creation event(s) with the objective of getting certain types of output (e.g. indications of unintended issues and consequences of product x) and considered how the output can be used to achieve your goals (e.g. being responsive to potential issues to make your R&I project more desirable). While you may also already have some assumptions about the possible concrete outcomes of the deliberation(s), you won't know for sure until the actual co-creation has taken place. But once you have carried out your co-creation event(s), it's time to reflect on the outcome of the co-creation and how to make use of the results. This can be done in a variety of ways, which we will showcase by using the GoNano project as an example.

The co-creation in the GoNano project was designed as a continuous and iterative process involving several different co-creation events, where citizens and stakeholders were guided to be more responsive to each other's needs and concerns and to facilitate mutual learning, increased understanding and trust among the different groups. The first co-creation event(s) were prepared on the back of key stakeholders, the purpose of which was to align the discussions at the citizen workshop with the interests and research areas of professional stakeholders. The outcome of this this event would then be used to provide input for the following event (stakeholder workshop I), which's outcome in turn would be the input for the next one and so forth, ultimately leading to/resulting in the development) of concrete "responsive" research lines and product suggestions that were aligned with societal values, needs and concerns.

The table in the document below gives an overview of the entire process in relation to the input, outcomes and data gathered for each of the co-creation event. It simultaneously exemplifies how the different individual co-creation events can bring certain outcomes and how they can be combined to refine the output(s) throughout the co-creation process.

- ['Overview of the co-creation process in GoNano: Input, outcomes and data gathered at each event'](#)

If you are interested in getting a more detailed account of one or more of the co-creation events in, then you can also read the briefing reports below. They include elaborate descriptions of each of the simple points in the overview table in the document above.

- ['Briefing report on the face-to-face citizen workshops'](#)
- ['Briefing report on the first round of face-to-face stakeholder workshops'](#)
- ['Briefing report on the online citizen consultation'](#)
- ['Briefing report on the second found of face-to-face stakeholder workshops'](#)

One of the sessions from the GoNano webinar series focused on the results and outcomes of co-creation. You can watch this session in the video below.

[Video | Webinar 3-1: Outcomes and results of co-creation]

Another aim of GoNano was gather and use the insights and lessons learned over the course of the project and the co-creation process to develop policy recommendations on how to support societal engagement, uptake and reflection on societal needs and values in nanotechnologies research and innovation (R&I). If you are interested in this, then you can watch the video below. It is last session of the webinar series that give an account of the three GoNano white papers and the policy recommendations in each of them.

[Video | Webinar 3-2: Recommendations for policy to support responsible research and innovation practices]

Evaluating your co-creation event(s) and process

As you have carried out your co-creation event(s), it is advantageous to evaluate the process. An evaluation will not only help you compare and assess to what extent the results of your co-creation event(s) match with what you expected from the process. If there is a discrepancy between the actual and expected results, then the evaluation can be used to uncover the different reasons for why this ended up being the case. In addition to providing you with possible explanations for your results, this very information may help you adjust and improve your co-creation methodology and design for the possible remaining co-creation events and/or future R&I projects. In order to make a thorough evaluation, we recommend that you both make an internal and an external one.

To make an **internal evaluation**, you and your team discuss your own interpretation of the co-creation event(s). Was the detailed manual followed? If it was not, how come? Were there any apparent issue(s) with the methodology and structure of the co-creation? If there were, how could these issues possibly have been resolved through adjustments?

The **external evaluation** is meant to be made by the people that participated in your co-creation event(s). It is useful to get their perspective and interpretation of the event they participated in, as you and your team may not have noticed everything. You should develop an evaluation form that the participants either fill out at the end of the event or at some point relatively shortly after.

You can for instance consider the following questions for your evaluation form:

1. What was your overall impression of the event?
2. Was it clear what the aim of the event was?

3. Was it clear how you would work together during the event to achieve the aim of it?
4. Did the agenda, exercises and purpose fit well with the goal of the event?
5. Do you feel you have a better understanding of the wishes and concerns of other [stakeholders and/or citizens]
6. May we contact you for participation in future events?

If you are interested in evaluation examples, then you can also find the evaluations of the co-creation events in the GoNano project in the aforementioned briefings reports above.

Last words

As mentioned in the very beginning, one of the key goals of the GoNano project is to utilize the gathered knowledge and experience to provide **training and capacity building** for nanotechnology researchers and engineers to support them in working more co-creatively with stakeholders and publics to align their R&I with societal needs and values. The training material that you've been provided with here on the Road of Co-Creation is one of the GoNano project's efforts to achieve this. We have also developed a co-creation toolkit, which you can [find here](#) if you haven't stumbled upon it already.

We hope the guidelines, manuals, videos, templates, and examples from the GoNano project have been or will be helpful to you on your journey to working co-creatively with citizens and stakeholders in your future R&I endeavours. Our mission is to foster a European Community of Practice among R&I actors, so do hesitate to share these training materials with fellow colleagues in your organisation or in your network.

Good luck!

Examples of communication strategies for different stakeholder types

This document is an excerpt from the “Communication and Branding Plan” that was developed in the GoNano project. We’ve added this to the training material because it exemplifies how actors and stakeholders can be viewed as various target groups, as well as how you can develop respective and suitable communication strategies for each of them.

It showcases how we considered and answered the following questions for each of them:

- Who are these actors?
- Why do you need them in the project?
- What is in it for them?
- How do you approach them?
- Which tools will you use?

Main target groups and stakeholder strategy

To create the greatest impact, it is vital to have a strong strategy on how to approach potential stakeholders. By making explicit choices on where we will focus our attention, we ensure most efficient use of our resources. To do this, the desired stakeholders in the project are divided into the following communication target groups:

- 1) Policy (policy makers, regulators, risk managers etc.)
- 2) Research (universities, research centres, scholars engaged in nanotech and RRI)
- 3) Industry (industry, industry-led research and innovation, technology transfer organizations and other business operators, industrial associations)
- 4) R&I networks and sponsors (innovation partnerships and networks (ETPs, high tech clusters, research funding organizations, crowd-funding organizations, investors, retailers etc.)
- 5) Civil society organizations (advocacy groups, consumer organizations, NGOs)
- 6) Citizens and the general public
- 7) Science communication (media, science exhibitions, researchers engaged in communication)

Communication strategies for different stakeholders

To get these stakeholders to engage, we need to identify for each of our audiences how we can relate to their specific interests. For some target groups it would make sense to target within each of the focus areas (food, health and energy).

The communication objectives differs depending on whether it is part of phase 1 (raising awareness of GoNano), phase 2 (securing stakeholder engagement), phase 3 (knowledge sharing to build convincing cases) or phase 4 (promoting GoNano, RRI and facilitating community building) and the stakeholder group that will be addressed. See more about the four phases in the introduction. The following lists a strategy for each target group.

Policy

Who are these actors?

Regulators from the European Union (the commission, the parliament etc)
Commission departments or advisory bodies (SwafS, Industrial Technologies Strategy Unit, Communication Unit, DG GROW, etc)
National politicians and regulators in the partner countries

Australian policy makers?

Why do we need them in the project?

Policy makers and regulators should be involved and addressed in order to:

- Increase the impact of the GoNano project results on legislation, future policies and research policies.
- Inform the GoNano co-creation process and political representatives.
- Ensure that the outcomes of GoNano come in a form which makes up useful and efficient input in the political system.

Message: "co-creation ensures societal engagement in technological development"

What is in it for them?

By getting involved in GoNano policymakers encourage holistic solutions where R&I actors , other professional stakeholders, CSOs and citizens work together to create novel suggestions for future nanotechnology products in the areas of 'food', 'health' and 'energy'.

They will gain knowledge of the needs and concerns of the actors of society and of citizens which will enable them to address these and develop policies with broad support.

Their participation will ensure that GoNano outcomes are relevant to their current political agendas and focus. Furthermore it is a perfect possibility to develop their network within this field and get involved directly with citizens.

How are we approaching them?

GoNano will develop policy recommendations and white papers based on the three pilot studies. These will be distributed to policy makers and policy institutions and disseminated on policy conferences and workshops.

Policy makers will be informed about the value of co-creation in nanotechnology R&I and about how they can support, develop and integrate co-creative processes and the development of infrastructure for such processes.

Which tools are we using?

- ✓ Policy brief, outlining vision, method and outcomes
- ✓ Presentations at policy conferences
- ✓ Policy workshops
- ✓ Personal meetings

Research

Who are these actors?

Universities and research centres
Research projects

SSH researchers and practitioners

RRI-scholars, public engagement practitioners

Nanotechnology researchers at GoNano partner organisations (TC CAS, UT, RMIT, HIOA)

Why do we need them in the project?

R&I actors working in nanotechnology development will be involved in the GoNano community in order to:

- Contribute with their scientific expertise and research area, especially in phase 2.
- Mediate the value of co-creation with citizens and stakeholders outside their field of research.
- Inspire and build capacity among R&I actors working in nanotechnology development on how to set up co-creation processes.
- Encourage them to promote RRI practices in research projects and -networks.

What is in it for them?

Participating researchers and research institutions get the possibility to join the GoNano community and network with industry, policy makers and the general public. The co-creation process will improve the impact of their research by adjusting their focus to societal needs and concerns. Finally, they will learn about co-creation processes - knowledge which they can use in their future research practice.

Message: "Participating in GoNano helps you to address your social responsibility, gives you a new perspective on your own work and provides new inroads to research"

How are we approaching them?

Researchers will be invited to join the co-creation processes in the three pilot studies.

Furthermore, the GoNano results and lessons learnt will be shared as a contribution to ongoing academic debates.

Which tools are we using?

- ✓ Reach out via academic networks
- ✓ Conference sessions / booths
- ✓ Academic publication?
- ✓ ResearchGate section?

Industry

Who are these actors?

Energy, food and health sector businesses using nanotechnology

Industry-led research and innovation

Technology transfer organizations

Companies outside nanoscience with interest in the potentials of the technology

Trade associations

Energy, food and health industrial associations

Why do we need them in the project?

The participation of industry dealing with nanotechnology in the project will contribute by:

- Sharing their perspectives and interests regarding nanotechnology.
- Contributing with their experience and knowledge about common practices, trends

and expectations within production, development and marketing of nanoscience products.

- Ensuring that the resulting product suggestions are of potential interest to the industry to put into production.
- Increasing the confidence of companies to invest in nanotechnology and encourage further adoption of co-creation methods in research and innovation.

The participation of industry organizations will add to the value of GoNano by:

- Encouraging further adoption of co-creation methods in research and innovation.
- Contributing with their long term perspective and visions on behalf of their member industries.
- Mediating project outcomes to industry and hence increasing industrial alignment with societal needs and concerns
- Enhancing - through increased acquaintance among nanotech industry and sponsors with future needs and societal concerns - the possibilities of safe investments in future nanotechnology development

What is in it for them?

Participating in the co-creation processes in the three pilot studies will provide industry actors with insights about the perspectives, needs and interests of citizens regarding nanotechnology - knowledge which will enable them better to adjust their innovation to market needs and navigate strategically in the field of potentially controversial technology. As the GoNano community will develop concrete product suggestions that align with societal needs, this will further provide them with very concrete ideas for their future innovation. Further, participation in GoNano is a chance to work closely with researchers and draw on their expertise. Finally, GoNano will enable industry to mediate their interests in the future development of nanotechnology to politicians and research networks.

Message: “co-creation adds value to your research / innovations”

How are we approaching them?

Through interviews, conferences, using the partner network.

Which tools are we using?

- ✓ Commentaries in nanotech-journal?
- ✓ Industry briefs: one-pager summarising process and added value for companies
- ✓ Sessions at tech conferences
- ✓ Company / university presentation?

R&I networks and sponsors

Who are these actors?

Innovation partnerships and networks (hereunder ETPs, high tech clusters)
 Research funding organizations
 Crowd-funding organizations
 Investors
 Retailers

Why do we need them in the project?

The participation of R&I networks will add to the value of GoNano by:

- Encouraging further adoption of co-creation methods in research and innovation.
- Contributing with their long term perspective and visions on behalf of their member R&I actors.
- Mediating project outcomes to R&I actors and sponsors and hence increasing nanotechnology R&I alignment with societal needs and concerns
- Enhancing - through increased acquaintance among nanotech industry and sponsors with future needs and societal concerns - the possibilities of safe investments in future nanotechnology R&I

What is in it for them?

By getting involved in GoNano sponsors and R&I networks will get important input on areas to invest in - areas of future societal importance and areas with interested potential customers. Further, they will have the chance to pose questions they would like the events to address. R&I networks will be introduced to practices of co-creation, networks to co-create with and learn about the potential value of co-creation. And they will get concrete product suggestions to get inspired by. Finally, their participation will provide them with opportunities to mediate their interests and perspectives to policy makers.

Message: “co-creation adds value to your research / innovations”

How are we approaching them?

Conferences, interviews, the GoNano partner network
Building personal relationships

Which tools are we using?

- ✓ Commentary’ in nanotech-journal?
- ✓ Industry briefs: one-pager summarising process and added value for companies
- ✓ Sessions at tech conferences
- ✓ Company / university presentation?

Science communication actors

Who are these actors?

Trade journals
News papers, TV, radio
Science communication media
Horizon Magazine, CORDIS etc
Science programmes / blogs
Science exhibitions
Researchers engaged in societal debate and popular communication of science

Why do we need them in the project?

Media and science communication actors should be addressed in order to:

- Promote the visibility of GoNano methods and outcomes throughout the project.
- Increase the confidence of companies to invest in nanotechnology R&I.
- Make science and technology relevant to the public.
- Ensure that the issues of interest and concern regarding nanofutures which are

identified during the project are subjected to public debate.

What is in it for them?

GoNano provides stories about nanotechnology which are interesting, accessible and engaging for non-expert readers. GoNano is an opportunity for science communication companies and platforms increase public understanding and interest in the important field of Science and Technology.

Message : “co-creation aligns research and innovation better to social needs and values”

How are we approaching them?

A conference open to EU-policy makers, nanotechnology and RRI practitioners as the wider public will move the accumulated results of GoNano centre-stage in the professional debate.

Which tools are we using?

- ✓ Press release (and follow-up with personal contacts)
- ✓ Brief overview of process and outcomes available on the project website
- ✓ Demonstrators / testimonials online
- ✓ Social media

Civil Society Organizations and Networks

Who are these actors?

NGO's
Civil Society Organisations (CSO's) (CIEL)
Consumer organisations
Advocacy groups

Why do we need them in the project?

The participation of NGO's and consumer organisations will:

- Contribute with a broader understanding of public needs and concerns about nanotechnology research and innovation.
- Make it easier to reach the general public and get them involved in the project.
- Inspire and build the capacity and network of these organisations to promote and engage in co-creative R&I processes and promote public participation in research and innovation.

What is in it for them?

GoNano opens up possibilities to bring societal concerns into nanotechnological development. Further, it is a chance for them to learn about co-creation and RRI and get equipped to engage in and promote future processes.

Message : “Co-creation is an effective means to direct research and innovation towards public interests and concerns”

How are we approaching them?

website
Social media
Personal relationships

Which tools are we using?

- ✓ Reach out via personal networks

✓ Press release

Citizens and the general public

Who are these actors?

Citizens, the general public. All ages, genders and ethnicities.

Why do we need them in the project?

The participation of citizens in the co-creation processes of GoNano will:

- Bring citizens' perspectives, needs and concerns to the process in order to align the outcomes with societal needs.
- Empower publics to get involved in co-creative R&I processes.
- To create good stories

What is in it for them?

By participating, citizens will have a chance to:

- Communicate their perspectives, needs and concerns to policy makers, researchers and industry.
- Engage in science and technology.
- Learn more about nanotechnology and form or refine their perspective on it.
- Get an interesting experience and a lunch.

Message : "GoNano gives you the opportunity to influence the development of nanotechnology products in 'Health', 'Energy' and 'Food', focusing innovation towards your needs."

How are we approaching them?

Getting citizens to engage in science and technology holds a number of challenges. First, it might be difficult to understand - or they might abstain from engaging because they think they don't understand it. Hence, it is important that they are introduced to nanotechnologies in an easily accessible way. Secondly, they might not think it is relevant to them to engage in. A way of addressing this could be to present them to examples of concrete current products (iPhone with nanotech, antibacterial socks with nano silver or water repellent raincoat with nano coating) but also potential future applications of nanotechnology which might either be of great interest or great concern. Finally, as they will not be using their work time, but their spare time, the timing of the physical events are important, and they should be organized to be a good experience.

In order to ensure proper representation, citizen groups like elderly, sick and families with children might require particular recruiting efforts.

Which tools are we using?

- ✓ Reach out via personal networks
- ✓ Demonstrators / testimonials online:
- ✓ Facebook/Youtube/LinkedIn?
- ✓ Project website, vision and infographic

Methods of the co-creation methodology: Citizen workshops

This document is an excerpt of the Methods and manuals for the pilot studies which was developed in the GoNano project. It describes the methodology of the citizen workshop in the co-creation process

Citizen workshops

The citizens come together to commonly reflect on nanotechnology and to provide their views about how to integrate them into the development of ideas for future applications of nanotechnology that are aligned with citizens needs and values, as illustrated in Figure 2. The approach builds on participatory integration of citizens to opine on pressing issues (e.g. WWViews, Pacita on sustainable Consumption) and co-creative exercises (e.g. NanoDiode).

After a general introduction that clarifies the role of citizens and introduces the whole day, the workshop consists of three repetitive rounds in which citizens discuss a specific technology application setting (based upon scenarios or application examples) which they might already know from the information material. The discussions are free, but the facilitator sees to it, that they are also covering a list of prepared questions. The technology-oriented start provides an opportunity to investigate a stakeholder-coined technology setting and creatively dive into opportunities and concerns about nanotechnologies. Although we might not be able to lead the participants away from their everyday routines and troubles (one might have been too late and hence really stressed in the morning of the event, another one might have had an annoying phone call just before entering the room) as easily as if we started with opening up for the future and lead them away from their everyday-life (as it is the case when visions are prepared), starting with technologies serves to make sure that the citizens have enough time to get familiar with Nano-applications and their implications and that their own thoughts relate to areas of interest of the stakeholders. Numerous experiences of participatory projects and their critical analyses (Rask, Worthington and Lammi, 2012; Gudowsky and Bechtold, 2013; Capari and Sothoudeh, 2014, Sotoudeh et al. 2014, Bechtold, Gudowsky and Capari, 2017, Rask et al. 2018) and reviewing engagement experiences (Shelley-Egan et al. 2018)¹⁰ show that such an approach serves well to provide a deliberative setting for citizens, which allows them to express their own views while also widening their own perspective, listening to each other, learning from each other and digesting the new information received. The initial deliberation part of the citizens was also inspired by focus groups (Krueger and Casey, 2000).

Thereafter the citizens have the opportunity to reflect upon those discussions and take these a step further: in respect to these technology application settings, they should think of wishes and concerns that are important to them. They write down these wishes and concerns and after a plenary presentation the participants vote upon them individually. In doing so, they provide valuable information on how they perceive they acceptability and desirability of nanotechnology applications, for the next step of the co-creation process in the first workshop with the professional stakeholders.

In the next step, citizens are asked to think about what they would like to make of their picture – in other words, what would they like decision-makers and researchers (and maybe other actors) to do. The result of

this final round of intensive work will be written messages with a clear addressee. They should explicitly refer to the round of wishes or concerns but these messages can still be diverse in their nature: it could be concrete proposals of a next generation of nanotechnology applications or products, a concrete instruction of what the decision makers should take care of, or what the researchers should consider in the future, when they elaborate on these technologies.

This format, which is reminiscent of recommendation writing, is well elaborated and was tested in numerous participatory TA-projects (e.g Rask, Worthington and Lammi, 2012). The messages display the second important outcome for the following stakeholder-workshop. The third pillar of input therefore will be prepared by the project team ex-post as they will look into the concerns and wishes and see what needs, preferences and values are inherent to them. Thus, the input we gain from the citizen workshops is threefold: a (ranked) list of wishes and concerns directly received from participants; clear ideas around the issue of nanotechnology development addressed to specific actor groups (also from participants) and results from analysis (done by partners) with regard to underlying needs, preferences and values.

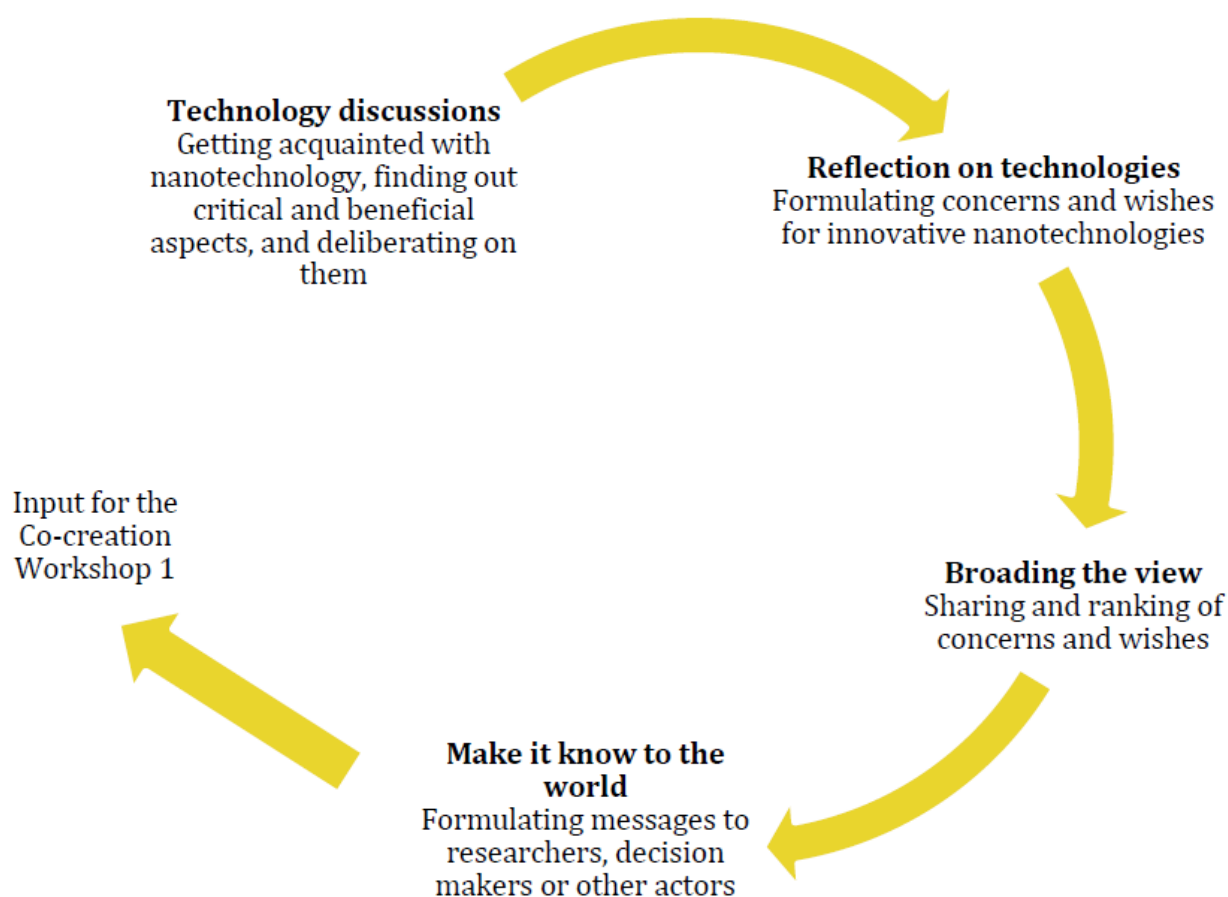


Figure 2: Illustration of different steps of the citizen workshop

Human Resources for co-creation event(s)

A variety of roles will usually have to be filled doing a co-creation event. The list below describes what each of them entails.

- **Project manager.** Her/his main responsibility is to make sure that the event(s) proceeds according to the method(s) described. She/he should have the overview of all tasks, and make sure that everything is executed as planned. It is very important that the project manager makes sure that all other staff knows what to do. This could be done at a training day where all staff runs through every procedure of the event(s).
- **Head facilitator,** who facilitates the events. Her/his main responsibility is to make sure that everybody in the room feels welcome and that all participants understand what to do and do it within the given time frame. The head facilitator will instruct everyone in the room about what exactly to do every time a new session begins. The head facilitator can be someone from the your own team/organization or a professional facilitator hired to do the job. It could also be the project manager, but this is not recommended, since the project manager needs to have the full overview, which can be difficult if you also have to facilitate.
- **Information person,** possibly an expert/researcher who knows the information material “by heart”, and can be called when a problem as to content arises.
- **Table facilitator(s),** one at each table. Their main role is to function as a neutral moderator of the deliberations at the table making sure that the participants focus on the assigned discussion theme and that all of them at the table have a say. They should also keep track of time. It is important that they understand and accept that they are not there to state their own opinions, but to help participants state theirs. Participants should be able to consider them as neutral. They can only answer factual questions from the participants if the answer can be found in the background information material, they take part in the discussions in any way. It is necessary to train the table facilitators before the citizen meetings. Go through the guidelines together with the table moderator before the event starts in order to develop a common understanding of the rules. Make sure to engage some extras in case of illness, etc.
- **Note-taker(s),** who will accompany the table facilitators at the tables. Their main role is to record main points that are discussed.
- **Technician.** This person makes sure that the technical equipment runs perfectly during the entire citizen workshop. The technician must prepare and make sure to test all equipment before the event starts. The technician should be familiar with the software and hardware that you choose to use.’
- **Media assistant.** This person is responsible for undertaking media-related tasks during the event, e.g. take pictures and/or make recordings to visually document the event.
- **Participants’ Assistant.** This person provides basic service to participants’ needs, make sure that they sign the relevant forms (e.g. attendance list, consent form), and deals with remuneration issues.
- **Catering staff,** responsible for serving food and drinks according to the event programme(s). Their role during the workshop is also to clear the tables from food, plates and cutlery during the day.

Note: Some staff members may have to be able to take care of multiple tasks, and some may even take multiple roles (e.g. project manager and head facilitator). In that case, you have to ensure a sufficient flexibility of the staff and compatibility of the performed tasks.

Practical resources for co-creation events

This is the thorough list of the variety of practical resources that is necessary for carrying out a physical co-creation event like a workshop

The venue

The venue for the co-creation workshops should feature:

- Large open space with enough room for facilitators and xx people seated at tables,
- Tables hosting participants - Numbers according to your planning and final number of participants. Six to seven participants at each table is the recommended maximum and four the minimum number of participants at the tables. Aim for round tables as they allow for better conversation among all the participants,
- A stage/space from where the lead facilitator can speak (should be visible to everybody),
- Comfortable chairs. Hard plastic chairs might be painful for some participants after several hours. Remember that some participants might be elderly and some might have physical disabilities. Therefore, consider padded chairs, check accessibility, e.g. for wheelchairs,
- Wardrobe facilities,
- A place to get food and drinks.
- Toilets. The location of the restrooms should be clearly indicated. In addition to lunchtime and other breaks, the participants should be informed that they can leave the table to go to the toilets at any time.
- Outdoor facilities for those wanting to smoke or in need of fresh air.

Technical equipment

Think about what you need from the following list:

- One computer for presentations and at least six notebooks for each table and two as back-up plus 6 USB sticks,
- Microphone and loudspeaker system, if required,
- Big screen or monitor visible to all participants,
- Projector (compatible with the computer),
- Good sources of light that can be dimmed during video presentations,
- Video recorder and a camera for documenting the event,
- Printer and copying machine,
- Pin boards and pins, Flipcharts with flip chart paper (one for each table) and markers.

Catering

Food and beverages are important for the well-being and motivation of your participants. The participants should have access to food and drink throughout the day, so that they have the necessary energy to discuss and be creative. Some participants may have personal food requirements. There may be people suffering from allergies (lacteous, gluten, etc.), vegetarians, and peoples with religious requirements. In order to meet special needs, participants are given the opportunity to declare these needs when they send in the application form for attending the event. The catering needs depend on the final program, but could consist of:

- Breakfast
- Lunch
- Fruits, snacks & sweets, coffee, tea, soft drinks, water available all day
- Take away food when the co-creation workshop ends

Dining facilities such as plates, glasses, cutlery, etc. should be in place. Water and glasses should be available at each table. The head facilitator should inform the participants on when the break are planning, and should explain the working lunch concept to the participants.

Materials

To be printed before:

- Table numbers to put on the round tables
- “Rules for good dialogue” to put on the round tables (See further on in the document)
- Copies of the background information material, in case some participants did not bring their own
- Name tags for participants (could be stickers they can write their name on)
- Name tags for group facilitators and all other staff: Make sure these either have a different colour, AND that you introduce all additional staff clearly at the beginning of the meeting.
- A sign for the plenary entrance (if necessary)
- A list of participants

Available at each round table:

- 2 sheets of “Rules for good dialogue”
- A paper describing the group facilitator role (see description of role further on in this document)
- 6-7 notepads + pencils/pens

For distribution at check in:

- Name tag with table number
- Folder with:
 - Programme for the day (SHORT version)
 - (Participant list (if this is the general practice in your country)) – can be left out.
 - Reimbursement forms (if you reimburse their transport expenses)
- Copy of the information material, in case the participants have forgotten their own

Rules for a good dialogue & deliberation

It is vital that the participants feel respected and are comfortable with engaging in the dialogue at the event(s). You should therefore encourage the deliberation process by making sure that participants are familiar with the rules for good dialogue. The rules are:

- If you’re there as a citizen, think as such/a member of the community and not solely on personal interest
- Treat everyone with respect
- Listen carefully to what others have to say, and ask into details
- Do not interrupt each other
- Take part in the discussion
- Focus on the subject
- Keep comments brief and to the point
- Take a break when you need to

The rules should be announced in plenary by the **head facilitator** and thereafter it is the responsibility of the **table facilitators (if you have them, otherwise the responsibility is the head facilitators all along)** to make sure the rules are followed at each table. It is important to make sure that the participants feel free to speak and express their views in the dialogue at the table. A print of the rules should be placed on each table to remind everybody to follow them.

Example of detailed agendas for co-creation events

This document provides two examples of proposed detailed agendas/programme for co-creation events – one for the **citizen workshops** and another the first round of **stakeholder workshops** in the GoNano co-creation process.

Proposed detailed agenda for the citizen workshops

INTRODUCTION: 20 min

Intro and welcome and trust building (in the process)

This part serves to familiarise participants with the event:

- What is the goal of the GoNano project, what is your role, how will the results be used (how can you stay involved)?
- How can you access the results in future (online consultations, rapporteurs for stakeholder workshops)?
- What are the three fields we are carrying out research in? What will you focus on?
- Informed consent, recording of the meetings, anonymizing data
- Get to know people at your table

TECHNOLOGY DISCUSSIONS IN SMALL GROUPS (A): 120 min

Getting acquainted with nanotechnology within the national area (food, health or energy) & finding out critical and beneficial aspects, and deliberating on them

Three technology-focused deliberation rounds of 40 minutes: They are based upon input from the information material (at best: scenarios or technology application examples).

The list of questions is not mandatory: Participants don't need to discuss all these questions in depth in each round. Rather, they serve as a kind of guideline for the facilitator to make sure that over the three rounds all aspects are touched upon.

Part 1: Information, stimulation from PPT and facilitator (10 min)

Part 2: Discussion and deliberation on pros and cons and future roles (30 min)

First proposals of questions as trigger:

- What do you think about this example? What are your first thoughts on this?
- What do you like about it? Why?
- What may turn out to be difficult? Why?
- For whom is it relevant or critical (gender, specially affected groups)?

During the process, the facilitator has the role to identify dilemmas, point them out and clarify them as soon as they appear in the discussion.

However, if he/she feels it is right for the group, he/she could also trigger this discussion:

- What kind of dilemmas do you see?
- Are there any trade-offs/ options to weigh?
- What do the dilemmas mean to you?
- Can you think of alternative areas or topics for research?

REFLECTING ON TECHNOLOGIES (B): 60 min (working lunch part)

Breaking it down to the most important aspects in relation to the three discussion rounds

Every table should at least formulate 1 to 2 concerns AND at least 1 to 2 wishes (8-16 wishes altogether) about these technology examples/applications or wishes in terms of a concrete innovative technology in written form. Please use the template provided for this. Please write (a) whole sentences so that the full meaning of your input may be grasped. Each template carries the table number and number of wish and/or concern for identification.

If participants wish, they can also formulate more general concerns and wishes or create their ideal nano product/application (as a wish).

Working lunch: During this session, working lunch will be provided. People are free to wander around and take a break or discuss at the table their take-away messages from part A. The end of this session should be indicated 15 minutes before to make sure that everyone has their templates finalised for the next part.

BROADENING THE VIEW (C): 45 min

What do the others think and how do I think about it?

In this session, the whole group works together. Here, concerns and wishes are presented and shared. Subsequently, people will have the chance to prioritize the most important wishes/concerns for them.

The sharing session can be done using EngageSuite or it can be done the “old-fashioned” way (sheets pinned on the wall and prioritization by voting via points: Participants will share their table’s concerns and wishes with everyone at the workshop (not only at their table) since they should be free to choose among the whole variety of input in the next step (“make it known to the world”).

So, using EngageSuite, each person will present his/her concerns and wishes to the rest of the group while a facilitator writes them directly into EngageSuite as voting options. The screen is being projected so everyone can see the list. Whenever similar wishes/concerns show, the facilitator asks if this is already covered by the existing voting option or whether the two can be grouped in some way to form one voting option. If this is not possible, the facilitator makes sure the difference between the two options is clear to everyone. The facilitators are well prepared and thoroughly trained for their tasks.

When the list completed, people vote individually at the tables (one computer per table - the table facilitator mentions one voting option at a time, counts the votes and enters the number in EngageSuite).

It needs to be clear, that one person cannot have more than five “votes” altogether. Given the number of possibly formulated options (either 8 or 16, see above), this seems a suitable number to allow for prioritizing – participants really have to decide which of these options they do value. Having five votes will allow people to weigh their priorities. However, we allow for people to have more than one vote per option, e.g. one person could vote three times for option A and twice for option B but, will then have to skip options C to G as a result.

MAKE IT KNOWN TO THE WORLD (D): 40 min

Who should act in what way?

Each table then considers the whole list of wishes/concerns presented before (their prioritization based on the voting is not important here). They formulate a concrete message in their own words based on one of the wishes or concerns. The messages can also be cross-cutting concerns and wishes and/or be based upon several wishes. When they choose the wish/concern, they are asked to also consider those not developed by their table so that they engage with opinions of other participants as well (see co-creation aspects below). Participants must indicate to which wish or concern their message relates (number), as well as to whom their message is addressed.

For example, the original concern “I am concerned about the environmental safety of nanomaterials from food packaging because it will end up in the ocean like microplastics” could contain one message to decision-makers (“Make sure that waste disposal regulation prevents this.”) and one message to researchers (“Work on nanomaterials in food packaging that are biodegradable”).

If is enough time left, opportunity should be given for participants that feel like working individually and more creatively (e.g. illustrating their idea of a prototype they have formulated in written form as a wish). Participants will find modelling material and paper at a table where they can help themselves. If participants choose this option, the organisers will ask to shortly describe their object in written form and in the end take pictures of it to make sure it is preserved for further analysis and communication.

PRESENTATION & FAREWELL: 35 min

- Presentation of messages to the group (20 min)
- Feedback and farewell (15 min)

Please make sure that there is a bit of time left for the evaluation procedure.

- After the final farewell:
- Please make sure that there is a bit of time left for the evaluation procedure.
- After the final farewell:

SELECTED PREPARATION OF CITIZENS

To ensure coherence between the citizens’ ideas and to provide a good basis for co-creation, 1 to 2 citizens per stakeholder table (self-selection on a voluntary basis) will participate in the stakeholder workshop. These citizens will be given access to all of the messages and outcomes of the citizen workshop to be able to represent the whole group.

Proposed overall structure of programme for the first round of stakeholder workshops

Overall structure

The programme is structured in five sessions: a general introduction, followed by four interrelated co-creation sessions:

- Session A: **Exploration**, where participants get to know each other and their work and explore the wishes, needs and values and messages expressed by the citizens as well as their own needs and interests.
- Session B: **Ideation**, where participants imagine and co-create responses to the wishes, needs and values and messages expressed by the citizens by imagining revisions/adaptations of ongoing research and innovation trajectories, building on the varied expertise around the table.
- Session C: **Prototyping**, where participants generate a storyboard that visualizes how the resulting research lines and product suggestions are modified in relation to the wishes, needs and values and messages expressed by the citizens and suggests concrete actions to be taken by the stakeholders present to realise this vision.
- Session D: **Reflection**, where participants present and reframe their storyboards, reflect on the ways in which the citizen's needs have shaped the storyboards, identify actions to be taken in preparation for the next workshop and reflect back on the overall workshop objectives.

Introduction

(plenary session, 30 min or so)

The purpose of this session is for participants to become familiar with each other and settle in, and to introduce the objectives of GoNano.

There are many ways to introduce participants: participants could form pairs and introduce themselves to their partner, and subsequently ask each of the participants to introduce their partner to the rest of the table (10 minutes or so). Partners could also respond to trigger questions like: "what do you think you might need from the people in the room today?", or "What would you like to know from your neighbour?"

The introduction to GoNano probably requires a brief plenary presentation (10 minutes or so), followed by Q&A. Importantly, by the end of the session participants should have an idea of what the GoNano project is about (aim of the workshop, where we are now, what went on before (including the citizen workshops), and what will happen next), and especially what *this workshop* is about: the main hypothesis of GoNano is that the productive integration of societal considerations can add value to research and innovation. We are here today to test that hypothesis: we will explore to what extent the incorporation of the wishes, needs and values and messages expressed by citizens might lead to new insights and ideas for your own work. Please note that this is an *experiment*: we don't know whether this is at all feasible or what will come out: we merely aim to test our hypothesis. We will revisit the hypothesis towards the end of the meeting.

Expected result for the next session:

- participants are settled in and familiar with each other's backgrounds
- participants know what to expect today
- informed consent forms signed by all participants

Expected output for the report:

- participants and their backgrounds should be documented for the report, as this will have a significant impact on the discussions and outcomes.
 - (details on group composition is also needed to reflect on the inclusivity dimension later on: to what extent might group composition (gender, but also age, socio-economic background, etc., have influenced the discussion?)
- It would be nice to document telling quotes from participants on their expectations from the day.

Session A: Exploration

(match-making session, 60 min or so)

In this session, participants first need to get to know each other and their work a bit better. Subsequently, they explore the wishes, needs and values and messages expressed by the citizens and combine it with their own needs and interests.

All participants are asked to write 1) their background and expertise and 2) a specific knowledge need or interest that requires the expertise of another type of stakeholder *[related to the objective of the day! For instance: "I am a chemist, and I need to talk to a policy maker on substance regulation"; or: "I am a producer, and I need a material scientist to talk about vapor deposition"]* on a post-it note. Brief pitches on the state-of-art of the technology could form part of this introductory session. Participants read the post-its on the wall, mingle first to discuss their background, expertise, needs and interests, and then form groups based on matching or complementary expertise (i.e. they feel that they have something useful to exchange). Subgroup size for example 4 or 5, depending on group size. Importantly subgroups have to be as diverse as possible (i.e. equal spread of expertise)! *(total 20 min or so to form groups)*

Subsequently, the subgroups are introduced to the messages from the citizens workshops. This could be done by presenting statements on a screen, handing out cards with the citizens messages or referring to the posters (as much supporting material from the citizen workshops as possible should be used: text, posters, videoclips, even the 'demonstrators' if possible).

[Remember that this step will require the 'translation' of the various wishes, needs and values and messages from citizens into coherent and concise messages that stakeholders can understand.]

Subgroups are asked to familiarize themselves with these ideas, and then to select one idea that (somehow) connects to the expertise of the subgroup members and the reasons for them forming a group. They will work on this idea in the following session *(total 30 min or so to learn about ideas and select one)*.

Expected result for the next session:

- subgroups of stakeholders with complementary expertise
- specific citizen message selected

Expected output for the report:

- Evidence of how the groups were formed (who matches who, and why? What sorts of needs/interests are expressed by stakeholders?) Photos of combined post-its or groups, telling quotes with reasons why.
- Capture initial responses to citizen messages and reasons for selecting 'their' (through quotes, post-its, etc). Do they see the relevance? Does it inspire? Does it match their interests? Or not?

Session B: Ideation

(subgroup work followed by a brief plenary, 60 min or so)

Purpose: In this section, participants imagine and co-create responses to the wishes, needs and values and messages expressed by the citizens by imagining revisions/adaptations of ongoing research and innovation trajectories, building on the varied expertise around the table.

First, one of the subgroup members tries to explain to the others how the message from the citizens might impact their own work (this can be as 'open' and creative as possible: ranging from "we should explain citizens better, because they haven't understood" (which is to be expected) to "I am going to create the product in my factory tomorrow" and everything in between) and adds a description of this 'impact' on a sheet of paper directly below the original citizens message (could be in words or in a drawing). What is important, though, is that the others still recognize the original citizens message somehow, and that the suggested action or recommendation is directly related to this participant's own work!

Then, another subgroup member does the same: explaining how the message might impact their own work. This could *either* be a completely different suggestion (related to this participants' own work!), *or* it could add to the earlier suggestion (building on the expertise-matching above). This 'impact' is again added to the sheet.

All subgroup members should have *the opportunity* to propose an impact on their own work. This means that the mind map (see template) may initially have several main branches (possibly with further branches for some ideas). At some point during the session however, participants should select one idea to work on in the next session (i.e. one main branch); they could consider things like popularity, originality, feasibility, and the available expertise within the group when deciding on the ideas they want to develop further. All subgroup members subsequently *have to* include a suggestion how their specific expertise might strengthen that particular impact (i.e. they each add a sub-branches to the main branch that was ultimately chosen).

This session concludes with a brief plenary session, where the subgroups pitch their ideas in one minute to the whole group, explaining why they think it is worth developing further.

Expected result for the next session:

- one main idea from each subgroup that describes a possible impact of the citizens message on the work of the stakeholder (the main branch of the mind map), along with how the expertise of the other subgroup members contributes to this impact (subbranches in the mind map).

Expected output for the report:

- A selection of ideas, demonstrating the possible impacts of the citizen messages on the work of the stakeholders (take pictures of the sheets);
- A sense of the atmosphere during subgroup discussions (pictures of the subgroups, of drawings, telling quotes you overheard); note down quotes from the plenary pitches at the end
 - *[Please note that these reporting tasks require skilled rapporteurs, who should be carefully instructed with respect to the expected outcomes!]*

Session C: Prototyping

(subgroup work followed by brief plenary session, 60 min or so)

In this session, participants generate a storyboard that visualizes the possible impact defined in the previous session. It should express how the work of the stakeholder is modified in relation to the wishes, needs and values and messages expressed by the citizens. The storyboards should show three perspectives on the impact: impact from the perspective of the researcher; from the perspective of the citizen; from the perspective of one of the other stakeholders. The storyboard should also show concrete actions to be taken by these stakeholders to realize this vision.

[Several copies of the first page of the template for session C can be printed out: subgroup members can work out specific elements of the storyboard, focusing on one of the perspectives, or perhaps one of the branches of the mindmap. Importantly however, the different pictures should combine to create a coherent storyboard (i.e. a single story, not 6 unconnected drawings); please see pages 2 of the template for some examples of how this might look]]

Expected result for the next session:

- Storyboards with one main idea for each subgroup, describing a possible impact of the citizens message on the work of the stakeholder, along with how the expertise of the other subgroup members contributes to achieving this impact.

Expected output for the report:

- Storyboards [combining expected outcomes #2: Concrete design suggestions which relate to the research and innovation at hand; and #3: Responsiveness of the design suggestions to societal needs and values]. Please note that these storyboards will play an essential role in further communication and dissemination in GoNano: in the ideal case, they immediately make it clear to all future viewers / readers that the workshops led to enhanced responsiveness of research and innovation trajectories to societal considerations, and explain how this is achieved (i.e. what concrete changes in practice will be / have been induced).
- To get as close to this ideal situation as possible, the storyboards should be visually attractive, intuitive, clear and compelling. This will require careful attention from both table facilitators and rapporteurs: is it clear what the storyboards intend to express? Are they concrete enough to inspire action? Is it clear what needs to happen? Is it clear how the original message is incorporated, and what effect it has had?

Session D: Reflection

(plenary session, 60 min or so)

In this closing session, subgroups present their storyboards in plenary, highlighting both the idea and the actions to be taken by the stakeholders, followed by reactions from the audience. This session could be used by the subgroup to reframe their storyboard and or actions.

Presentations are followed by a discussion of steps to be taken in the run-up to the next workshop:

- What do we want to do at the second workshop? Ideas for the programme?
- Who will do what in preparation for that meeting?
- Do you have specific questions related to your storyboard to ask citizens and other stakeholders and experts in the upcoming online consultation?

Towards the end of this session, we should also reflect back on the initial hypothesis with participants: *did* the incorporation of the wishes, needs and values and messages expressed by citizens lead to new insights and ideas for your own work? Was it feasible? Was it realistic to expect this? Too optimistic? Any other suggestions on how to encourage reflection on societal perspectives in nanotechnologies?

This discussion can give us some insights for expected outcome #1: *do stakeholders see the relevance of citizen perspectives and multi-stakeholder engagement?* and expected outcome #4: *willingness of stakeholders to continue* before and after the workshop.

The question of inclusivity could be revisited here as well: how did the group composition affect outcomes?

To wrap-up this session and the workshop, moderators can discuss next steps: what's next in the GoNano project? How will we stay in touch in the coming months: can we call you? Email you? Facilitate interactions between you? Can we help you realise the plans in your storyboards in the meantime? Share the results of the citizen consultation with you?

Expected output for the report:

- Overview of final presentations by the subgroups and responses from the audience (picture / quotes)
- Overview of participants' responses to the aims of the workshop / hypothesis of GoNano.
Insights in expected outcome #1: *Do stakeholders see the relevance of citizen perspectives and multi-stakeholder engagement?* before and after the workshop.
- Expected outcome #5: *Questions for the online consultation*
Reflections on inclusivity considerations.

Template | Creating a detailed manual for a co-creation event

A detailed manual for a co-creation event (e.g. a workshop) contains the planning of the day. It includes almost minute to minute instructions on **who does what when**, the **materials needed** for the event, the person/roles responsible for collecting and bringing them, details on who will welcome the participants, and how they will be guided through the event.

There are different ways to go about it, but an easy and manageable way is simply to make and fill out a table. Tables are good because they can provide a clear overview and are easy to navigate in.

In the table below, we have tried to fill the first parts of it out with some fairly generic agenda points for a co-creation event like a workshop. This is both because they will both likely be relevant for your event, and they function as examples that show how detailed the descriptions of the instructions should be. We have left room in the table for you to fill out the remaining parts of your actual agenda points.

Time	Point on agenda	Description
	Participants arrive	Facilitator (and if any assistants) <ul style="list-style-type: none"> - Receive the participants and help them find their place. Make sure they can make a name tag from materials you have ready. Before the meeting: <ul style="list-style-type: none"> - Make sure the technology works (PP) - Make sure refreshments are readily available - Make sure there are pens, paper and 'rules for good dialogue' distributed on the tables - Make sure everyone signs the attendance sheet - Make sure everyone signs the paper of agreement or non-agreement for pictures and use of data Consider if you have the opportunity to take pictures. Remember to ask for permission.
__: __ - __: __ (15 Min.)	Welcome	The facilitator welcome everyone, makes sure to tell everyone his/her name and role , and explains the background for the event, purpose of the day, the program, what will happen with the results and explains <ul style="list-style-type: none"> - How about the food? - Where are the bathrooms? - Can we take your picture? - What are rules for good dialogue? Allow time for practical questions – questions of content will have a place later

<p>__: __ - __: __ (10 min)</p>	<p>Introduction at tables</p>	<p>In order for the participants to feel comfortable, it is important to give them time to introduce themselves to each other.</p> <p>The facilitator should be the good example. The facilitator will therefore begin the introductions by repeating his/her name, telling what he/she finds interesting about the topic(s) of the event.</p> <p>Then the facilitator encourages the participants to do the same around the tables (not in the plenary). For this there is a 'talking stick' on the table (it can be a pen with a coloured Post-It). Whoever holds the talking stick is the one introducing him/herself, with name and a few words about the persons motivations to participate in the event. The participants can choose who they will pass the 'talking stick' to next, just as long as everyone gets to introduce themselves. on it the facilitator walks around to make sure everyone is doing the introductions.</p>

MATERIALS

It can be easier to remember to prepare and bring the materials needed for your co-creation event(s), if you make a checklist. The list below includes some common necessary materials for physical events. It also has space for you to add the additional materials you need to carry out your co-creation event.

To be printed before:

- Table numbers to put on the round tables
- “Rules for good dialogue” to put on the round tables
- Copies of the information material, in case some participants did not bring their own (if you have developed and provided the participants with some)
- Name tags for participants (could be stickers they can write their name on)
- Name tags for group facilitators and all other staff: Make sure these either have a different colour, AND that you introduce all additional staff clearly at the beginning of the meeting.
- A sign for the plenary entrance (if necessary)
- A list of participants
-
-
-
-

Available at each round table:

- 2 sheets of “Rules for good dialogue”
- A paper describing the group facilitator role (see description of role further on in this document)
- 6-7 notepads + pencils/pens
-
-
-

For distribution at check in:

- Name tag with table number
- Folder with:
 - Programme for the day (SHORT version)
 - (Participant list (if this is the general practice in your country)) – can be left out.
 - Reimbursement forms (if you reimburse their transport expenses)
- Copy of the information material, in case the participants have forgotten their own (if you have developed and provided the participants with some)
-
-
-
-

Other things:

-
-
-
-
-

Examples of citizen recruitment strategies and methods for co-creation events

This document is an excerpt from the GoNano Methods and manuals for the pilot studies. It describes the citizen recruitment strategies and the different used recruitment methods for the citizen workshop and the online consultation in the GoNano project. These examples are meant to inform you about some of the possibilities and inspire you to develop your own recruitment strategy for your co-creation event(s).

2.1. Recruitment strategies and methods for Citizen Workshops

Each pilot partner has developed individual recruitment strategies, through which it aims to recruit a sufficient number of citizens, with respective demographic and socio-economic characteristics ensuring a sufficient diversity of participants at the citizen deliberation and envisioning workshops.

The actual recruitment process should be initiated in a sufficient time before the workshop starts, depending on the selected approach to the recruitment and capabilities of an individual pilot partner. The Technology Centre CAS (TC) will recruit citizens through a specialised agency, RMIT University (RMIT) and University of Twente (UT) will apply a wide range of methods for recruitment (see Table 1).

Table 1 Provides an overview of the recruitment strategies of the GoNano pilot partners

	RMIT	TC	UT
In-house activity	X		X
Recruitment agency		X	
Recruitment methods			
Invitation letter/email	X		X
Buying addresses from a market research company			
Telephone recruitment	X		
Face-to-face recruitment	X		X
Snowball-sampling	X		X
Advertising (Posters/flyers/video)	X		X

As long as the criteria described in each recruitment strategy are followed, the selected methods of recruitment can acquire the following features:

2.1.1. INVITATION LETTERS/EMAIL

Next to in-house resources, addresses may be obtained from a national (or regional) central registration office. The office can draw out a large representative set of civil registration numbers and addresses. It is very important to ensure that the addresses are random since this will be key to obtaining a sample as diverse as possible. Furthermore, it is important to pay attention to the fact that only a small part of the invited citizens will actually agree to participate in the end.

Another option is to recruit via social networks (in combination with Advertising below), where online enrolment form is provided for a range of potential participants.

2.1.2. TELEPHONE RECRUITMENT

If it is not possible to obtain a random sample of addresses from the civil registration office, you could also contact citizens by telephone if a national telephone register is available. In order to obtain a good sample you should think carefully about which phone numbers you pick. An efficient solution would be to pick numbers at random – you could, for instance, pick 50 random pages in the phone book and then call 50 random citizens on each page. You should also think through what could. It is noteworthy to point out that this approach is very time-consuming (especially in case of calling random people): do you have enough staff, such as (inexpensive) student helpers, for this exercise?

2.1.3. FACE-TO-FACE RECRUITMENT

If you choose this method, you should again think very carefully about how you execute the recruitment process. It is very important that you ensure diversity in your sample. One example can be based on quotas in geographical clusters – i.e. you select different recruitment areas around your country/region – you could for instance pick 5 different geographical regions and within each region you pick e.g. 2 random schools, 2 random hospitals, and 2 random shopping malls. For each setting you aim at getting as many people as possible to sign up for the citizen consultation.

Instead of aiming at maximising the amount of citizens signing up for the consultation you could also aim more specifically for different “types”. You could, for instance, create different profiles of whom to invite, placing different “emphasis” on your recruitment criteria. This could be coordinated and calculated in advance so that when you undertake the recruitment in each geographical area you would then know that you are looking for e.g. a male in his 50s with low educational level, an elderly female with mid-educational level and working in the public sector, a female student etc.

Again, in order to obtain the right distribution of citizens (to ensure a variety of citizens) you will need a sufficient number of citizens to sign up for the citizen workshop in order to be able to confirm at least 40 % of citizens. Similarly to the telephone strategy, this recruitment strategy is also very time-consuming: do you have enough staff such as (inexpensive) student helpers for this exercise? If this is not the case it might be more economical to hire a private company to undertake this task.

2.1.4. SNOWBALL SAMPLING

This recruitment procedure could be used in a geographical area where you do not know how to get in touch with target group citizens needed for the citizen consultation. You invite three people and ask each person to make three copies of the invitation letter for them to give to three people they know, who will then do the same (make three copies, etc.). Using this method, the sample group appears to grow like a rolling snowball. The snowball strategy has the disadvantage that citizens might only invite the same kind of people, therefore, you need to stress the importance that your participants should invite citizens with backgrounds/characteristics different to their own.

2.1.5. ADVERTISING

Advertising in different media (newspapers, radio, social media etc.) is another way of recruiting. Citizens would be encouraged to send their applications to the national partner and selection could be made in line with the recruitment criteria. If choosing this recruitment strategy, pay special attention to the fact that advertising is often expensive but that you can reach different target groups by advertising in different kinds of media and media that covers different groups of the population.

2.2. Recruitment strategy for online consultation

Recruitment strategies for online consultations utilise the same tools as the face-to-face meetings. For the online consultations however, it can be harder to achieve a representative sample of participants. The pilot partners must therefore carefully consider the sample of participants they aim to reach and choose to develop their recruitment strategy accordingly.

For recruiting younger participants, social media like Facebook and YouTube are important tools. One strategy is to enlist a number of young ambassadors to help you spread your invitation to their followers. For Facebook pilots should consider using the apps feature for targeted advertising to reach the groups they would like to recruit for the online consultation. Table 2 provides a table for the pilot partners to reflect on the adaption of their recruitment strategies for the online consultation.

Table 2 provides an overview of the options for recruiting participants to the online consultation

	RMIT	TC	UT
In-house activity	X	X	X
Recruitment agency			
Recruitment methods			
Facebook			
YouTube			
Website or other social media			
Invitation letter/email			
Buying addresses from a market research company			
Telephone recruitment			
Face-to-face recruitment			
Snowball-sampling			
Advertising (Posters/flyers/video)			

Overview of process: Input, outcome and data gathered at each co-creation event

This table gives an overview of the co-creation process in the GoNano project, showcasing both how each of the co-creation events lead to various outcomes and data, and how the results are used as foundational input for other types of events in the co-creation process.

Event	Input	Important steps of method	Outcome	Data gathered
1 st event: Citizen Workshop (WS)	- Background material - Questions for deliberation	Three rounds of deliberation, each following a similar process: 1. Scenario is introduced (reminded from information material) 2. Discussion on likes, dislikes, future potential, affected groups 3. Formulation of wishes and concerns 4. Voting regarding prioritizing wishes and concerns 5. Formulation of messages to concrete addressees, e.g. researchers (creatively illustrated)	- Ranked list of wishes and concerns - Messages to concrete addressees	- Outcome (ranked list, messages, illustrations). - Further notes on the deliberations (either directly typed in on a computer or handwritten) + Post-Its - Results of before/after evaluation of the event
<p>To do by partners afterwards: 'Translating' the outcomes of the citizen workshops into needs and values (inherent to wishes, concerns and messages from the citizen workshop) is a task for project partners.</p> <p>Clustering, collecting and presenting input to stakeholders (No change of content, but offering opportunity for stakeholders to choose relevant aspects for their work and therefore for further proceeding in workshop)</p>				
2 nd event: Stakeholder WS I	- Ranked list of wishes and concerns - Messages to concrete addressees - Translated needs and value of citizens - Information material	After a general introduction, the stakeholders go through four interrelated co-creation sessions: 1. Exploration 2. Ideation 3. Prototyping 3. Reflection	- 9 (three in each field/sector) feasible and concrete research lines and suggestions - Illustrated "mini scenarios" - Recommendations on implementation for research the proposed research lines and respective product/application	- Outcome (research lines/product suggestions, illustrated mini scenarios, recommendations) - Notes on deliberation with regards to research lines about chances, risks, trade-offs, challenges etc. (either directly typed in on a computer or handwritten) + Post-Its - Results of before/after evaluation of the event

<p>To do by partners afterwards: preparing 9 research line suggestions for easily accessible online consultation with citizens.</p> <p>Suggestions: Short and easily accessible vignettes – addressing people on personal level with fictitious characters in short “mini scenarios” (check with information material)</p>				
<p>3rd event: Online Citizen Consultation</p>	<ul style="list-style-type: none"> - 9 (three in each field/sector) feasible and concrete research lines and suggestions - Recommendations as to their implementation 	<ul style="list-style-type: none"> - Online survey for evaluation and comments - Add important aspect which are underrepresented - General comments 	<ul style="list-style-type: none"> - Prioritization and validation of the suggestions from the previous event (Stakeholder WS I) - Comments and added information 	<ul style="list-style-type: none"> - Outcome - Quantitative data on the research lines and product/application suggestions (survey)
<p>To do by partners afterwards: preparing overview on whole co-creation process suitable for stakeholder discussions; develop business cases + results of online consultation as core part of this step</p>				
<p>4th event: Stakeholder WS II</p>	<ul style="list-style-type: none"> - Results of online consultation - Overview on the whole process - Product cases as business case outlines 	<ul style="list-style-type: none"> - Reactions to co-creation process - Adaptions (if necessary) of research lines and product/application suggestions - Discussion of whole process with regard to establishing business cases 	<ul style="list-style-type: none"> - Concrete “responsive” research lines and product/application suggestions that were aligned with societal values, needs and concerns. - General input on how co-creation process could be integrated in business, which aspects to be considered especially/potential pitfalls etc.) for industry and policy papers 	<p>Notes on deliberation</p>
<p>To do by partners: Wrap up & collect documentation</p>				

ANNEX D – CO-CREATION TOOLKIT

This Annex (D) contains all the various materials that have been developed as part of the GoNano Co-Creation Toolkit.

The entire toolkit is available on the section ‘Toolkit for Researchers and Engineers’ on the website of the GoNano project⁶.

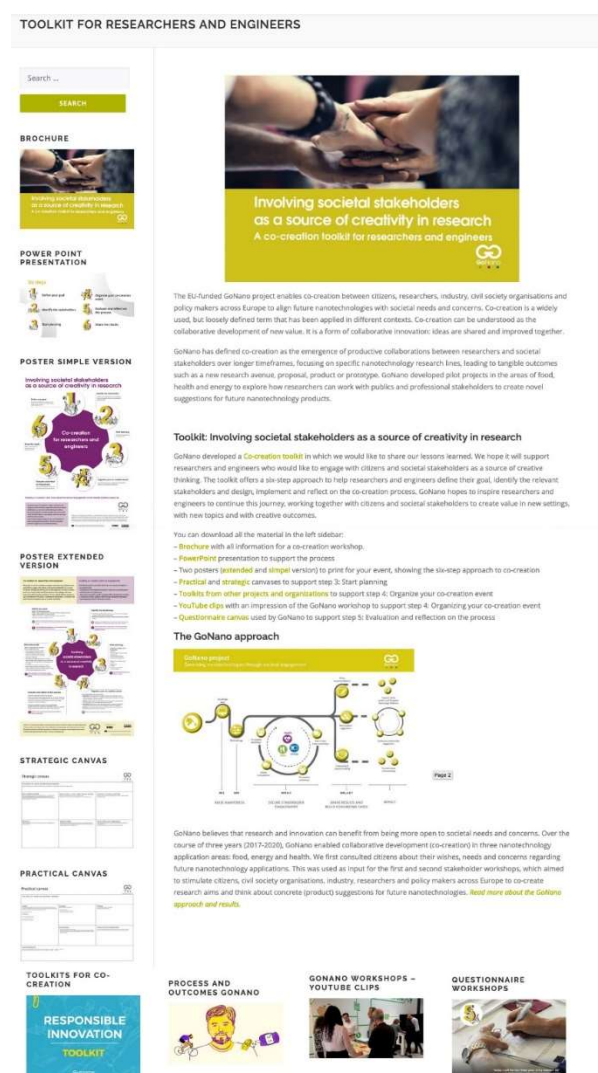


Figure 7 Screenshot of the toolkit section on the GoNano project website

The materials listed below are presented in the remaining part of this annex in the same order:

- The Brochure [page 1-10]
- Slides from the PowerPoint presentation [page 11-29]
- Poster (simple version) [page 30]
- Poster (extended version) [page 31]
- Strategic canvas [page 32]
- Practical canvas [page 33]
- Questionnaire canvas [page 34-41]
- Impression of the workshops [page 42]
- Process and Outcomes GoNano [page 43]

⁶ It can be accessed via the following link: <http://gonano-project.eu/toolkit-for-researchers-and-engineers/>



Involving societal stakeholders as a source of creativity in research

A co-creation toolkit for researchers and engineers



Introduction

Enabling co-creation

The EU-funded GoNano project enables co-creation between citizens, researchers, industry, civil society organisations and policy makers across Europe to align future nanotechnologies with societal needs and concerns. Co-creation is a widely used, but loosely defined term that has been applied in different contexts. Co-creation can be understood as the collaborative development of new value. It is a form of collaborative innovation: ideas are shared and improved together¹. GoNano has defined co-creation as the emergence of productive collaborations between researchers and societal stakeholders over longer timeframes, focusing on specific nanotechnology research lines, leading to tangible outcomes such as a new research avenue, proposal, product or prototype. GoNano developed pilot projects in the areas of food, health and energy to explore how researchers can work with publics and professional stakeholders to create novel suggestions for future nanotechnology products.

Why this toolkit?

With this toolkit we would like to share our lessons learned. We hope it will support researchers and engineers who would like to engage with citizens and societal stakeholders as a source of creative thinking. The toolkit offers a six-step approach to help researchers and engineers define their goal, identify the relevant stakeholders and design, implement and reflect on the co-creation process. By offering this six-step approach to co-creation, we hope to inspire researchers and engineers to continue this journey, working together with citizens and societal stakeholders to create value in new settings, with new topics and with creative outcomes.

1. Video clip of the Amsterdam based firm Fronteer, explaining the concept of co-creation https://www.youtube.com/watch?v=VID2EyW5W_k

Six steps

Based on our experiences in the GoNano project we have identified the following six steps to enable co-creation in your own work:

1. Define your goal
2. Identify the stakeholders
3. Start planning
4. Organise your co-creation event
5. Evaluate and reflect on the process
6. Share the results

Each step in this guide is illustrated by a brief summary of the step, followed by an example or exercise to help you visualize and guide you through the step. For each step we present a tip or provide advice based on the experience gained during the GoNano project, including links to background information, tools or inspiring ideas.

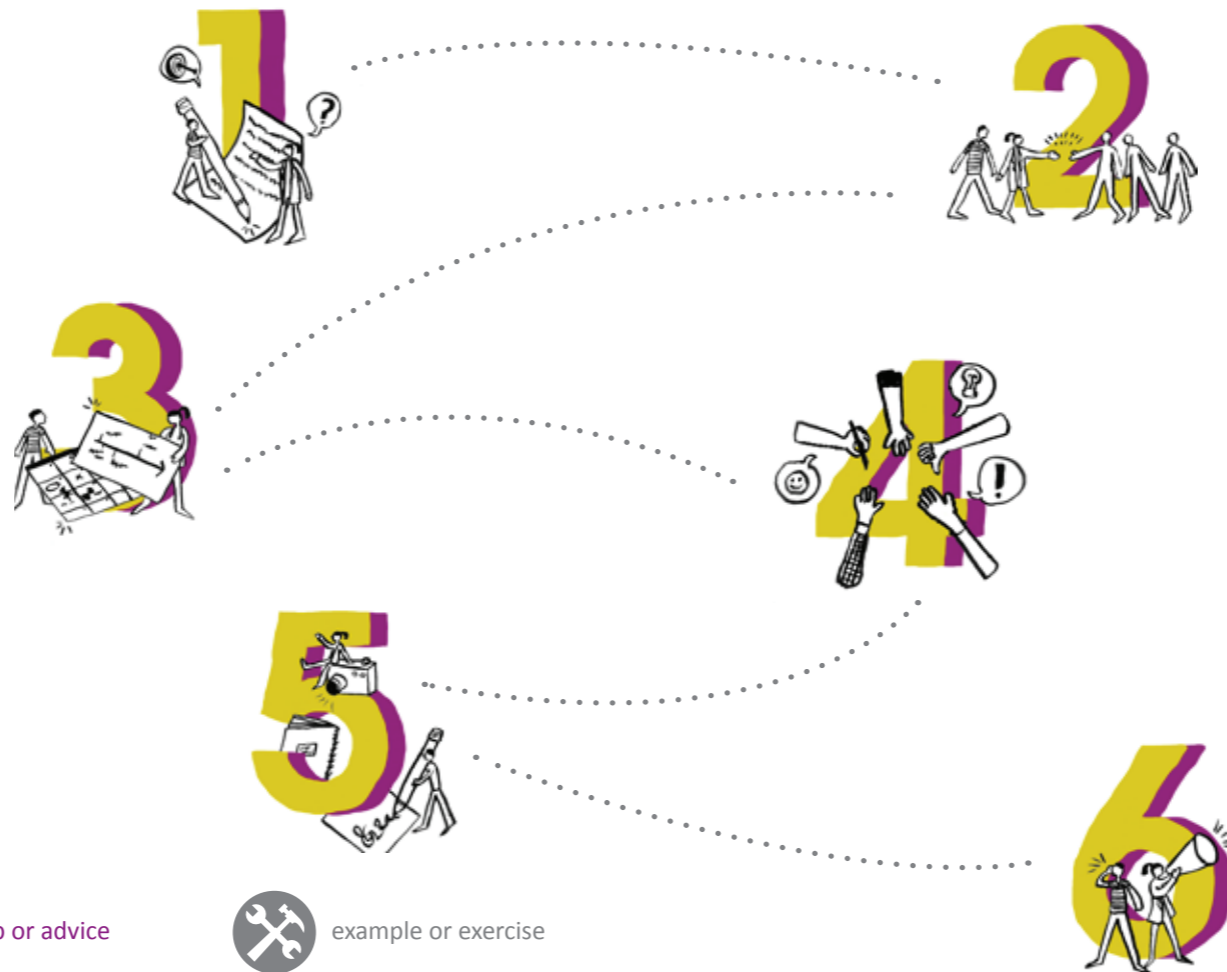
Co-creation is an iterative process: this means that you may need to move back and forth between each of the consecutive steps and cycle through the process several times. For instance, initial conversations with future stakeholders might help you to (re)define your purpose. And sharing your results may lead you to initiate another co-creation cycle.



tip or advice



example or exercise



Enabling co-creation: terms of engagement

Co-creation usually involves collaboration between individuals with very different backgrounds. To work together effectively, participants have to learn where the others are coming from and what they would like to achieve. The 'symmetry of ignorance' is a key principle here: this means that we are all expert in some fields, but laypersons in most others. In other words, all participants are equal and have something unique to bring to the table. The challenge is to build a shared language that allows each participant to meaningfully discuss the 'value' of their contribution with the other participants.

Building shared understanding between participants also implies that clear ground rules for discussion should be in place: everyone should be allowed to speak; participants should actively listen to what the others have to say; they treat each other as equals; they explore what new and crazy ideas might contribute to the overall aim, rather than simply dismissing them; differences in opinion are valued, not suppressed.

The following criteria should be taken into account when designing co-creation processes:

- The purpose of the initiative should be made clear to all participants;
- Defining what is at stake is key;
- Discussions should be specific enough to affect the decisions of actors;
- The process of what happens with the input should be transparent.



“We have one common goal, to help people with type 1 diabetes to have better health outcomes and higher quality of life”

Software developer and type 1 diabetes, participant in GoNano workshop

1. Define your goal

The first step is to define your own motivation and expectations: why would you want to engage stakeholders in your research? What do you expect to get out of it?

You might want to explore new research lines in consultation with product developers and producers further down the innovation chain. Or you might like work with consumers or professional stakeholders to envision possible applications of a research finding. Or you may want to find out how stakeholders respond to a prototype that you have been developing. In each of these cases, it makes sense to ask yourself what exactly you would like to know from your stakeholders, and what a satisfactory response to your questions would look like.

As a researcher or engineer, you are used to talking about your project in scientific terms. If you want to engage stakeholders in co-creation, you need to focus on the goal or problem that you aim to solve and present it in a way that non-experts can understand. What problem are we addressing? Who's affected by this problem? What makes this problem so complex? The goal should be as concrete as possible, so that discussions can be specific enough to affect the decisions of the actors and specific courses of action can be identified.



Prepare a 60-second pitch about your research topic
Describe your research in lay words (to a non-expert audience). Find a hook with a personal story to make your pitch memorable and unique. Try to avoid technical words. Why does your research matter? What problem does it aim to solve? And why do you need help from your audience to address this problem?



20-30 min



pen&paper



Specify your pitch with different stakeholders in mind: the funder for your research, the company that will produce the final product, the regulatory officer, the user of the final product. Experience how it changes the language and focus.



“Team chemistry is essential and diversity is key to produce the best results when bringing those great minds together”

Fronteer, an Amsterdam-based strategy consulting firm

2. Identify the stakeholders

Once you have defined your goal and know how to pitch your co-creation topic, you have to identify the right people to collaborate with.

First, you have to identify who your envisaged stakeholders are: are they customers, private actors, public actors, knowledge institutes or NGOs? You have to understand the stakeholders and their interests. Once you have established contact, it is essential to motivate the potential partners to collaborate on the topic of the suggested idea or problem. To convince your participants, they also need to see the added value of these interactions in relation to their own goals and objectives. The key is to identify a shared goal(s) that drives collaboration; there has to be a ‘matter of common concern’.

There can be different kinds of motivation for your collaborators to engage:

- Some people are interested in the technology: measuring and sensing, the technologies used, and the science behind it;
- Some people are interested in the environment: they want to act on their concern and expect that their involvement may lead to better environmental outcomes.

- Some people are motivated by participation: they wanted to become involved in the political or deliberative process, expand their network, or even just to get to know people in their city better.

Ideally, your offer simultaneously addresses different kinds of motivation.



Draft your ideal participant list

Start by making a list of key stakeholders to achieve your goal or solve your problem. Think of individuals that you know yourself or that you can reach through your network. Make sure you have at least one participant who is the basis around which you can build the other participants for your workshop. Select all participants on a combination of proven track record and expertise, creative and constructive thinking, communicative and connecting qualities and leadership.



60 - 120 min



pen&paper



When inviting citizens, they should be facilitated to have a genuine influence on something that is important to them rather than something on which they may have no influence or interest at all.



“We develop concepts and business models to create a win-win situation; to come up with a model that allows all stakeholders to profit and to integrate sustainability into the innovation process”

Elise Kissling, Director, Creator Space frontend innovation program at BASF

3. Start planning

Once you have defined your goals and have identified your stakeholders, the time has come to start planning your event. It needs to be designed in such a way that it addresses your strategic goals. This requires close attention to practical organisation.

Strategic canvas

- Stakeholder: map the stakeholders you want to invite
- Results: Define what you want to get out of the event (a direct effect, or wider benefit and long term impact?)
- Ethical, legal and social issues: define what issues you want to address
- Milestones: What are the due dates to accomplish major tasks?
- Critical success factors: what specific dynamics of stakeholder sectors should you be aware of?
- Risks and contingencies: What circumstances could stand in the way of the successful completion of the event? What are possible risk-mitigation measures?

Practical canvas

- Team: Build an organising team, including a workshop organiser, facilitators with experience in discussion techniques and a communications expert for internal and external communication.
- Resources: Your event will require financial, political and social resources. Make sure you have the support of institutes and build relationships with the communities you want to work with.
- Venue: Find the right place for your workshop. If at all possible, the event could be hosted in the place that is related to the problem you are trying to address (for instance, in a hospital, farm or production site) to bring the real-life context into view.
- Tools for co-creation: prepare tools and material
- Time schedule: Draft a plan from start to finish, including start dates, due dates for milestones and communication timelines.



Use the canvases to define your planning

This task consists of two phases. First download (<http://gonano-project.eu>) and print the canvases and describe all aspects that you can think of. Then prepare your team and refine the canvases together (phase two).



60-90 min
each phase



canvas
pen&paper



“The nice thing is that in conversation with others, your thinking about this issue is being sharpened; I go home with new insights”

Participant in GoNano citizen workshop

4. Organise your co-creation event

After planning your event strategically and practically, it's time to start organising the co-creation sessions.

There are many resources that can help design co-creation processes (see the link below for further information). In the GoNano project, we structured our collaborative workshops around the four main pillars of co-creation: **exploration**, **ideation**, **prototyping** and **reflection**.

In the exploration session, participants get to know each other and share their wishes, needs and values. In the ideation session, participants imagine and co-create responses to these wishes, needs and values, building on the varied expertise around the table. In the prototyping session, participants generate an action plan that visualizes in discrete steps how the wishes, needs and values will be integrated in product suggestions. The concluding reflection session aims to consider broader reflective questions about the feasibility of the action plan and the overall outcomes.

The whole co-creation process combines individual contributions, group discussion, presentation and hands-on work. It is essential to create an environment where people feel comfortable. A safe environment invites participants to act and discuss.

After the first co-creation event you can decide to design a follow-up event to zoom in on specific aspects of the problem, or to invite different groups of stakeholders.



GoNano co-creation sessions with citizens and stakeholders

Watch these video clips from the GoNano project and reflect on the process and quotes from the participants in the Netherlands (health), Czech Republic (food) and Spain (energy). What would you do differently?



20-30 min



Video clips online
<http://gonano-project.eu>



There is a wide range of toolkits that may help you to design creative work forms for you event. GoNano has created an overview of toolkits for co-creation and Responsible Research and Innovation.
<http://gonano-project.eu/toolkits-for-co-creation/>



“Today I built the next three years of my research life”
Researcher, University of Twente and participant in GoNano workshop

5. Evaluate and reflect on the process

After completing your co-creation event, it is helpful to evaluate and reflect on the outcomes of the overall process. Did you achieve your goal? Were you able to co-create solutions to the problems that you identified? Do the results match your initial assumptions? What went well? What could have been better? Analyse all successes and failures.

It is also essential to get feedback from your participants during and after the co-creation activities. Did their experiences meet their expectations? What have they learned? Carefully documenting and objectively analysing feedback from participants will help you (and possibly other organisers) to replicate and enhance the co-creation process.



Evaluation sheet

Prepare a questionnaire for your participants on a sheet of paper. Include questions like: Was this event worthwhile for you? To what extent did your experience meet your expectations? Which part of the process did you like most and why? Would you participate next time? Why (not)? Do you have any suggestions for the participants or organisers?



15-20 min



pencil & paper



In the GoNano project, we sent round short questionnaires after each co-creation activity and conducted follow-up interviews with different kinds of stakeholders after all co-creation activities were completed. (<http://gonano-project.eu>)



6. Share the results

Communication and dissemination are essential to keep your collaborators engaged, to invite others to join the co-creation process and to share the outcomes of the process with wider audiences.

The findings and results obtained during the entire process need to be translated into compelling narratives for specific or wider audiences. You can use different channels depending on the audience you want to reach: think of online tools such as websites, social media or newsletters, but also face-to-face meetings at conferences and networking events. It's even possible to make a brochure or book about the process and its outcomes.

Although this step comes last in the toolkit, it's important to collect images, quotes and insights all through the process. Sharing and communicating at all stages of the process is important to keep participants informed and to build a community of interested people. This also makes it easier to disseminate results after the project and to ensure that other people get to know about the project.

Download the [EU Helpdesk booklet](#) to learn more about sharing your results. They distinguish three levels to maximize the impact of your project: communication, dissemination and exploitation.



Create your own communication strategy

Identify the different steps of the project. For each step, describe what you want to communicate and for which target group. Then describe the mean(s) you can use for each action.

Also consider whether you need help from some third parties: a journalist, a videographer, an important player in your field. Make sure they know why you are inviting them and what you want from them.



30-40 min



pencil & paper



Use hashtags (#co-creation, #RRI), tag others and add visual content to increase your visibility on social media. Always comply with the General Data Protection Regulation (GDPR): make sure that you have the permission of all participants to use their personal information (names, photos, affiliation, etc.).

Involving societal stakeholders as a source of creativity in research

A co-creation toolkit for researchers and engineers

The EU-funded GoNano project has organised a series of co-creation workshops to explore how the needs and values of citizens and societal stakeholders could be taken into account in early stages of nanotechnology research and innovation.

This co-creation toolkit invites all researchers and engineers to engage with citizens and societal stakeholders as a source of creative thinking. The toolkit offers a six-step approach to help researchers and engineers define their goal, identify the relevant stakeholders and design, implement and reflect on the co-creation process. The aim is to encourage new forms of collaboration that helps to align technological innovation to social needs and interests, creating social value in a wide range of technological settings.



www.gonano-project.eu



GoNano is a Coordination and Support Action funded by the European Union under the NMBP Programme of Horizon 2020, Grant Agreement n° 768622.



Involving societal stakeholders as a source of creativity in research

A co-creation toolkit for researchers and engineers



GoNano is a Coordination and Support Action funded by the European Union under the NMBP Programme of Horizon 2020, Grant Agreement n° 768622.



Introduction

GoNano aimed to explore how researchers can work with publics and professional stakeholders across Europe to align future nanotechnologies with societal needs and concerns.

Co-creation can be understood as the collaborative development of new value. It is a form of collaborative innovation: ideas are shared and improved together.

Why use this toolkit?

- To share our lessons learned
- To support researchers and engineers who would like to co-create with citizens and societal stakeholders



By offering this six-step approach to co-creation, we hope to inspire researchers and engineers to continue this journey, working together with citizens and societal stakeholders to create value in new settings, with new topics and with creative outcomes.

Six steps



Define your goal



Organize your co-creation event



Identify the stakeholders



Evaluate and reflect on the process



Start planning

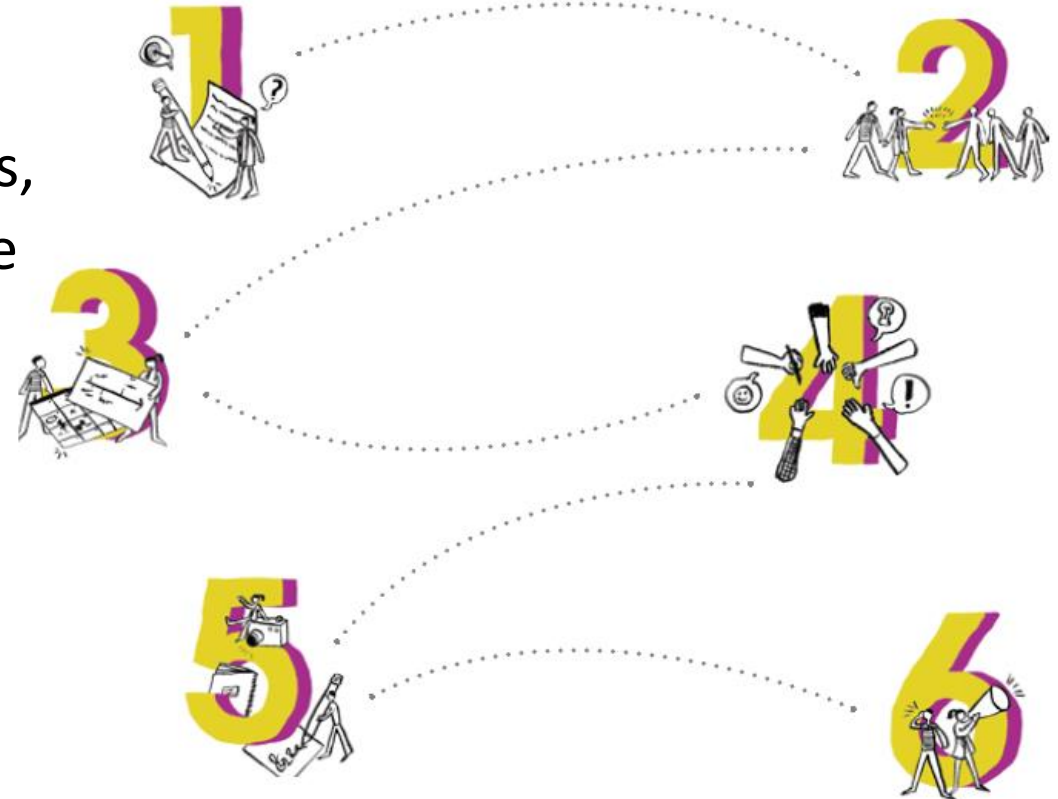
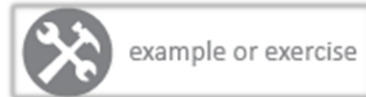



Share the results

Six steps

Each step is supported by:

- Tip or advice based GoNano experiences,
- Example or exercise to help you visualize and guide you through the step.



 *Co-creation is an iterative process: this means that you may need to move back and forth between each of the consecutive steps and cycle through the process several times*

Enabling co-creation: terms of engagement

The following criteria should be taken into account when designing a co-creation event:

- The purpose of the initiative should be made clear to all participants
- Defining what is at stake is key
- Discussions should be specific enough to affect the decisions of actors
- The process of what happens with the input should be transparent

Get the ground rules for discussion in place



Symmetry of ignorance: we are all expert in some fields, but laypersons in most others. In other words, all participants are equal and have something unique to bring to the table.

Define your goal



Define your goal



Answer the following questions:

- What is your motivation and expectation of the co-creation process?
- What is the problem you want to solve?
- Why do you want to engage stakeholders in your research?
- What do you expect to get out of it?



Prepare a 60-second pitch about your research topic. Describe your research in lay words to a non-expert audience. Try to avoid technical words. Why does your research matter? What problem does it aim to solve? And why do you need help from your audience to address this problem?



Pitch with different stakeholders in mind. Experience how it changes the language and focus.

Identify the stakeholders



Identify the stakeholders



Identify your stakeholders (customers, private actors, knowledge institutes, NGOs) and their motivation

Identify shared goal that drives collaboration between the stakeholders



Draft your ideal participant list. Start by making a list of key stakeholders to achieve your goal or solve your problem.



When inviting citizens, to give them a voice, they should be facilitated to have a genuine influence on something that is important to them.

Start planning



Start planning



Design your strategic canvas

- **Stakeholder:** map the stakeholders you want to invite
- **Results:** define what you want to get out of the event
- **Ethical, legal and social issues:** define what issues you want to address
- **Milestones:** what are the due dates to accomplish major tasks?
- **Critical success factors:** what specific dynamics of stakeholder sectors should you be aware of?
- **Risks and contingencies:** what circumstances could stand in the way of the successful completion of the event? What are possible risk-mitigation measures?

Design your practical canvas

- **Team:** build and organising team
- **Resources:** think about financial, political and social resources
- **Venue:** find the right place for your event
- **Tools for co-creation:** prepare tools and material
- **Time schedule:** start a planning from start to finish

Organise your co-creation event



Organise your co-creation event



Get familiar with the co-creation steps

- **Exploration:** Participants get to know each other and share their wishes, needs and values. The key is to together understand the problem and open up and empathize with the problem
- **Ideation:** Imagine and co-create responses to these wishes, needs and values, building on the varied expertise around the table.
- **Prototyping:** Generate an action plan that visualizes in discrete steps how the wishes, needs and values will be integrated in product suggestions
- **Reflection:** Consider broader reflective questions about the feasibility of the action plan and the overall outcomes.

Select and prepare tools to support these steps



GoNano insights: co-creation sessions with citizens and stakeholders. Watch these [video clips](#) from GoNano experiences. What would you do differently?

Evaluate and reflect on the process



Evaluate and reflect on the process



Prepare an evaluation moment for yourself

- Did you achieve your goal? Were you able to co-create solutions to the problems that you identified? Do the results match your initial assumptions? What went well? What could have been better? Analyse all successes and failures.

Prepare an evaluation moment for your participants

- Did their experiences match their expectations (process, content)? What have they learned? Do they want to stay informed?



GoNano used an online questionnaire and conducted follow-up interviews

Share the results



Share the results



Make a communication, dissemination and exploitation plan

- It is essential to keep your collaborators engaged, to invite others to join the co-creation process and to share the process and its outcomes with wider audiences.
- Think about the target groups you're trying to reach, through which channels you can reach them and how you can interest them in the project and its results.
- Use different channels to share your results; websites, social media or newsletters, but also face-to-face meetings at conferences and networking events.
- Collect images, quotes and insights in each co-creation phase and share and communicate results continuously throughout the process.



When sharing your results always comply with the General Data Protection Regulation (GDPR): make sure that you have the permission of all participants to use their personal information (names, photos, affiliation, etc.).



Use hashtags (#co-creation, #RRI), tag others and add visual content to increase your visibility on social media.



www.gonano-project.eu

Find us on



Good luck

and don't forget keep on trying

Also check our website for

- Brochure with more information
- Poster with highlights to show your colleagues
- GoNano website with tools, examples, video clips ...



GoNano is a Coordination and Support Action funded by the European Union under the NMBP Programme of Horizon 2020, Grant Agreement n° 768622.

Involving societal stakeholders as a source of creativity in research

Define your goal

Describe the problem you want to solve. What is your motivation and what do you expect to get out of it?



Identify the stakeholder

Identify your stakeholders, their motivation and shared goal(s) that drives collaboration between them.



Start planning

Design your strategic and practical canvas.



Co-creation for researchers and engineers

Share the results

Make a communication, dissemination and exploitation plan.



Evaluate and reflect on the process

Prepare an evaluation moment for yourself and for your participants.



Organize your co-creation event

Get familiar with the co-creation steps: exploration, ideation, prototyping, and reflection.



Enabling co-creation: read more about the terms of engagement on the website GoNano-project.eu

This poster is part of a toolbox to support researchers and engineers who would like to engage with citizens and societal stakeholders as a source of creative thinking. By offering this six-step approach, we hope to inspire them to co-create social and ethical values in new settings, with new topics and with innovative outcomes.

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 Select and prepare tools to support these steps.

Start planning

Design your strategic canvas

- Stakeholder
- Results
- Ethical, legal and social issues
- Milestones
- Critical success factors
- Risks and contingencies

Design your practical canvas

- Team
- Resources
- Venue
- Tools for co-creation
- Time schedule

 Download templates from the GoNano website

Involving societal stakeholders as a source of creativity in research

Strategic canvas

THE GOAL OF YOUR CO-CREATION PROCESS

What is the problem you are trying to solve? What do you want to achieve? Can the problem be solved in a co-creation process?

KEY STAKEHOLDERS

Map the stakeholders you want to invite to participate in your co-creation process. Who are the key stakeholders of your innovation eco-system? Who will use or benefit from the process? Who needs to be kept informed? Who can influence the further development of your goals?

KEY ETHICAL, LEGAL AND SOCIAL ISSUES

What are the key issues/impacts of your co-creation process?
What issues do you want to address with stakeholders in the co-creation process?

CRITICAL SUCCESS FACTORS

What will it take to make this co-creation process a success? What will make the stakeholders happy?

RESULTS

Define what you want to get out of the event (a direct effect, or wider benefit and long term impact?)

MILESTONES

What will this co-creation process produce? What are the main components to be created? What are the due dates for accomplishments of crucial decisions? Consider physical outputs as well as intangible ones

RISKS AND CONTINGENCIES

Who is likely to support the co-creation process? Who is likely to inhibit the co-creation process?
Are there any limitations or constraints? How to get around them?

Practical canvas

THE GOAL OF YOUR CO-CREATION PROCESS

TEAM

Which competences/people are needed for the event(s)? Think about facilitators with experiences in discussion techniques, organiser for the workshop, communication expert for internal and external communication and dissemination

Who is a member of the
- core team
- extended team

Who is managing the event(s)?

How much time is needed?
(for each person in the team)

BUDGET

How much money do you need?

Think of costs for the
- team (internal and external staff)
- resources (tools, materials, venue)

VENUE

What is the best place for the event(s)?
(think about a real-life context)

RESOURCES

- Financial: Direct funding or sponsorship
- Non-financial resources: in kind, political (make sure you have the support of institutes you want to work with), and social (build relationships with the communities you work with) contributions.

TOOLS FOR CO-CREATION

Select the right tools (activities and materials) for various steps in the co-creation process. e.g. individual work , group work, plenary sessions, online activities, etc.

TIME SCHEDULE

What are the starting dates and times? When is the event due to be ... accepted ... prepared ... kicked off?
What are the end dates? When is the event due to be ... completed ... delivered ... reported?

Questionnaire Citizen Workshop

Thank you for participating today. As a final request, we ask you to fill in this short questionnaire. We are interested in your thoughts about this workshop as well as your views towards nanotechnology.

Firstly, for analysis purposes, we want to ask some background information.

1. What is your gender?*

- male
- female
- other

2. What is your age? I'm between:

- 18-24
- 25-34
- 35-49
- 50-59
- 60+

3. What is your highest level of education?*

- Low
- Middle
- High

*Partners can add categories that are relevant for their country.

Secondly, what are your thoughts about today's workshop? What would you suggest us to do?

4. What do you think about the quality of the group discussions you had today?

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
I felt sufficiently comfortable to voice my opinions during the process.	0	0	0	0	0
All participants were respectful towards one another.	0	0	0	0	0
The moderators did a good job in ensuring a constructive process during the discussions	0	0	0	0	0

5. What do you think about the **quality of the output** of the citizen workshop?

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
I am satisfied with the overall quality of the output of the citizen workshop.	0	0	0	0	0
Despite different opinions we were able to formulate main needs and benefits.	0	0	0	0	0
I am convinced that the needs and benefits formulated today will serve as input for the upcoming stakeholder workshops.	0	0	0	0	0

6. What do you think about the **organization** of the citizen workshop?

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
The purpose of the citizen workshop was well communicated today.	0	0	0	0	0
The information material I received beforehand was easy to understand.	0	0	0	0	0
It is clear to me what will be done with the results of the discussions today.	0	0	0	0	0
The moderators did a good job in explaining the structure of the workshop	0	0	0	0	0

7. Are there any further suggestions regarding the organization of this workshop?

Thirdly, we would also like to hear your views on the following topics related to nanotechnology.

8. Before you participated in this workshop, did you ever...

	Never	Only once or twice	Sometimes	Regularly	Often
...read, hear or watch information about nanotechnology?	0	0	0	0	0
... search for information about nanotechnology?	0	0	0	0	0
... participate in meetings about nanotechnology?	0	0	0	0	0

9. How well would you say you were informed about nanotechnology?

	Not informed at all	Little informed	Moderately informed	Well-informed	Very informed
<u>Prior to</u> this workshop	0	0	0	0	0
<u>After</u> this workshop	0	0	0	0	0

10. After today...

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
... I will search for more information about nanotechnology	0	0	0	0	0
... I will keep an eye on information about nanotechnology	0	0	0	0	0
... I will search for the latest news about nanotechnology	0	0	0	0	0

11. How do you see risks and benefits of nanotechnology?

I perceive risks and benefits about nanotechnology in general as follows:

	Mainly risks	More risks than benefits	Neutral	More benefits than risks	Mostly benefits
For myself	0	0	0	0	0
For the average Dutch	0	0	0	0	0
For society as a whole	0	0	0	0	0
For future generations	0	0	0	0	0

12. To what extent do you feel you are able to act when something happens related to nanotechnology?

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
I consider myself able to search for relevant information	0	0	0	0	0
I am able to anticipate possible risks	0	0	0	0	0
I am able to react adequate when something goes wrong	0	0	0	0	0
I am able to help others if needed	0	0	0	0	0

13. How do you see developments of nanotechnology?

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
I feel attracted to developments of nanotechnology	0	0	0	0	0
I believe that developments of nanotechnology are important	0	0	0	0	0
I feel involved with developments of nanotechnology	0	0	0	0	0
I am personally interested in developments of nanotechnology	0	0	0	0	0

14. How did the workshop contribute to your understanding of nanotechnology?

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
This workshop helped in improving my understanding of nanotechnology in general	0	0	0	0	0
This workshop helped in improving my understanding of nanotechnology for health applications*	0	0	0	0	0

*change for food and energy

15. I **trust** that the following actors deal with developments of nanotechnology in a responsible way

	Not at all	A little	To some extent	Considerable	A lot
Researchers	0	0	0	0	0
Policy makers	0	0	0	0	0
Industry / companies	0	0	0	0	0
Civil Society Organizations (e.g. Greenpeace, patient organizations)	0	0	0	0	0
Consumer organizations	0	0	0	0	0

16. I **expect** that the following actors **will use outcomes of this workshop in the future:**

	Not at all	A little	To some extent	Considerably	A lot
Researchers	0	0	0	0	0
Policy makers	0	0	0	0	0
Industry / companies	0	0	0	0	0
Civil Society Organizations (e.g. Greenpeace, patient organizations)	0	0	0	0	0
Consumer organizations	0	0	0	0	0

Finally, in February 2019 a group of experts from various backgrounds will discuss the outcomes of this citizen workshop and formulate specific product suggestions. These suggestions will be shared and, in an online consultation, we will ask citizens in Europe to contribute. All participants of today will be given more information about it. If you have not given your contact details, and you are interested, you may provide them separately to us.

Do you have any other remarks you want to make?

END OF THE QUESTIONNAIRE

EVALUATION OF THE STAKEHOLDER WORKSHOP

Thank you for participating in this workshop today. As a final step, we ask you to fill in a few questions. We are highly interested in your thoughts about this workshop and appreciate your contributions. The questions will take about five minutes to answer.

1. What type of organization are you working for?

- Civil society organization
- Industry or business
- Policy making or policy advising
- Research institute or university
- I attended the citizen workshop
- Other, please specify

2. Please indicate your agreement with the following statements regarding the quality of the group discussions you had today:

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
I felt comfortable and at ease to voice my opinions during the process.	0	0	0	0	0
All participants were respectful towards one another.	0	0	0	0	0
The moderators did a good job in ensuring a constructive and fair process during the discussions	0	0	0	0	0

3. Please indicate your agreement with the following statements regarding the quality of the output of the workshop you had today:

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
I am satisfied with the overall quality of the workshop.	0	0	0	0	0
Despite different opinions we were able to reach consensus.	0	0	0	0	0
I am convinced that the suggestions formulated today will serve as relevant input for the upcoming workshops.	0	0	0	0	0

4. How can you use the suggestions of today's workshop in your area of expertise?

5. How would you evaluate the (product) suggestions that were formulated as output of this workshop?

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Relevant	0	0	0	0	0
Novel	0	0	0	0	0
Feasible	0	0	0	0	0

Can you explain in a few words why?

6. Based on your experience during this workshop, to what extent would you now consider that the early consideration of the needs and values of citizens and societal stakeholders can add value to innovation in nanotechnologies?

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
It makes sense to consider values and concerns of other stakeholders, such as citizens, at early stages of nanotechnology research	0	0	0	0	0
It could inspire new or unexpected developments	0	0	0	0	0
It is an informative exercise, but with little impact on the products that will reach the market	0	0	0	0	0



Can you explain in a few words why?

7. What is your opinion about the citizens' messages?

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
The citizens' messages make sense to me	0	0	0	0	0
I can relate these messages to my own work	0	0	0	0	0
Today's discussions will help me to consider these messages in the future	0	0	0	0	0

Can you explain in a few words why?

8. Which of the stakeholders (researchers, industry/companies, CSO, policy makers, citizens) do you believe are essential to include in the co-creation process in order to achieve the desired outcome, and can you explain why?

9. The outcomes of this stakeholder workshop will be shared publicly in the next step of our co-creation process, an online consultation, where we will ask citizens in Europe to give their opinion on them.

Is there anything we should take into account during this online consultation?

After this online consultation we will organise a second round of stakeholder workshops for which you will automatically be invited as well.

WE THANK YOU AGAIN VERY MUCH FOR YOUR PARTICIPATION!

[Impression of the workshops](#)

These video impressions show the four-step co-creation process and the first comments of the participants. They are examples and inspiration for organizing and conducting a co-creation workshop.

Citizen workshops in Prague, Barcelona and Enschede

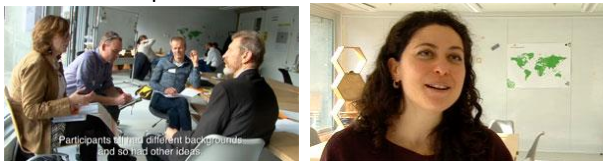


Stakeholder workshops in Prague and Enschede

First workshop in Prague



First workshop in Enschede



Second workshop in Enschede



Process and Outcomes GoNano

Five audio-visual vignettes capturing the development of the concrete product suggestions or research aims that came out from a collaboration between citizens (Citizen workshop), and stakeholders including citizen (Stakeholder workshop I) from each of the pilot countries – energy in Spain, food in the Czech Republic and health in the Netherlands. They show the expectations, process and outcomes of the GoNano approach from the point of view of different stakeholders.¹

Researcher on energy: identifying unforeseen implications for a sustainable energy future



Industry on food: broadening the scope of food packaging



Policymaker on food: setting targets for regulation and legislation



Researcher on health: bridging the gap between research and industry



Citizen on health: improving autonomy and well-being for diabetes patients



¹ [Del 7.6](#) provides an overview of all audiovisual material produced during the GoNano project. (to be released in October 2020)