Crowd4SDG
Citizen Science for the Sustainable Development Goals

Deliverable 3.2

Training Corpus

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Abstract:

This deliverable provides information on how to organize a CBI Workshop (CBIW), which constitutes the Accelerate phase of the GEAR cycle. This Training Corpus is meant to support organizers of satellite events, called CBIWx, occurring in parallel with the Accelerate phase. The document is based on the implementation of the first Accelerate phase, and anticipates changes that will be made to the CBIW in the second GEAR cycle.

For more information on Crowd4SDG, please check: http://www.crowd4sdg.eu/

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Project Partners

	Partner name	Acronym	Country
1 (COO)	Université de Genève	UNIGE	CH
2	European Organization for Nuclear Research	CERN	CH
3	Agencia Estatal Consejo Superior de Investigaciones Científicas	CSIC	ES
4	Politecnico di Milano	POLIMI	IT
5	United Nations Institute for Training and Research	UNITAR	CH
6	Université de Paris	UP	FR

Crowd4SDG in Brief

The 17 Sustainable Development Goals (SDGs), launched by the UN in 2015, are underpinned by over 160 concrete targets and over 230 measurable indicators. Some of these indicators initially had no established measurement methodology. For others, many countries do not have the data collection capacity. Measuring progress towards the SDGs is thus a challenge for most national statistical offices.

The goal of the Crowd4SDG project is to research the extent to which Citizen Science (CS) can provide an essential source of non-traditional data for tracking progress towards the SDGs, as well as the ability of CS to generate social innovations that enable such progress. Based on shared expertise in crowdsourcing for disaster response, the transdisciplinary Crowd4SDG consortium of six partners is focusing on SDG 13, Climate Action, to explore new ways of applying CS for monitoring the impacts of extreme climate events and strengthening the resilience of communities to climate related disasters.

To achieve this goal, Crowd4SDG is initiating research on the applications of artificial intelligence and machine learning to enhance CS and explore the use of social media and other non-traditional data sources for more effective monitoring of SDGs by citizens. Crowd4SDG is using direct channels through consortium partner UNITAR to provide National Statistical Offices (NSOs) with recommendations on best practices for generating and exploiting CS data for tracking the SDGs.

To this end, Crowd4SDG rigorously assesses the quality of the scientific knowledge and usefulness of practical innovations occurring when teams develop new CS projects focusing on climate action. This occurs through three annual challenge-based innovation events, involving online and in-person coaching. A wide range of stakeholders, from the UN, governments, the private sector, NGOs, academia, innovation incubators and maker spaces are involved in advising the project and exploiting the scientific knowledge and technical innovations that it generates.

Crowd4SDG has six work packages. Besides Project Management (UNIGE) and Dissemination & Outreach (CERN), the project features work packages on: Enhancing CS Tools (CSIC, POLIMI) with AI and social media analysis features, to improve data quality and deliberation processes in CS; New Metrics for CS (UP), to track and improve innovation in CS project coaching events; Impact Assessment of CS (UNITAR) with a focus on the requirements of NSOs as end-users of CS data for SDG monitoring. At the core of the project is Project Deployment (UNIGE) based on a novel innovation cycle called GEAR (Gather, Evaluate, Accelerate, Refine), which runs once a year.

The GEAR cycles involve online selection and coaching of citizen-generated ideas for climate action, using the UNIGE Open Seventeen Challenge (O17). The most promising projects are accelerated during a two-week in-person Challenge-Based Innovation (CBI) course. Top projects receive further support at annual SDG conferences hosted at partner sites. GEAR cycles focus on specific aspects of Climate Action connected with other SDGs like Gender Equality.

Grant Agreement description of the deliverable

For the Crowd4SDG project, as well as hosting CBI events at CERN, the knowledge and expertise gained over the last 5 years of running the CBI programmes will be leveraged to develop a tailor-made programme for CS projects based on a dedicated corpus of training material and methodologies. On the same basis as TEDx, a CBIx 'franchise' will be developed to ensure a qualitative and homogeneous experience to the teams selected in the second stage evaluation process of the GEAR methodology irrespective of whether they are coming to CERN or working at another design factory or makerspace for the CBIx programme. The CBIx programme will provide the framework for the design factories and makerspace which will have paired with the CS teams to support them in quickly prototyping their ideas. This is to ensure a fast implementation and subsequent uptake and outcomes to produce scientific knowledge. Through this programme, the CS teams will learn in a hands-on manner all what they need to make their project happen in the best conditions and how to advance its development to the next stage (e.g. application to a start-up incubator, integration in a policy debate, and other outcomes).

Purpose and scope of the deliverable

The purpose of this deliverable is to provide the reader with an easy-to-understand overview of the Accelerate phase, focusing on how to organize satellite events, called CBIWx. This document can be used as is by any potential institution which decides to undertake hosting a CBIWx.

The scope of this deliverable is to outline the Accelerate phase in a way that provides those who organise such an event the necessary structure and tools in order to ensure the coherence in content and quality with the CBIW. This includes the planning process, the execution, and the considerations for organizing such an event.

1. Background: overview of the GEAR Cycle

The GEAR cycle of the Crowd4SDG project consists of four phases. The first, Gather, is to attract and select citizen participants who have an idea for a citizen science project related to the theme of the cycle, either as individuals or as teams. The theme changes for each cycle but is always tied to Sustainable Development Goal (SDG) 13, Climate Action, and a second selected SDG (GEAR Cycle 1: SDG 11 Sustainable Cities, GEAR Cycle 2: SDG 5 Gender Equality, GEAR Cycle 3: SDG 16 Human Rights).

The goal of the GEAR cycle is to have the participants create citizen science projects that address the SDG climate action and the second selected SDG for that cycle. Citizen science projects are defined as projects that has two out of the following three characteristics: involving citizens, using the citizen science tools supported by the Crowd4SDG consortium, and producing data. The deliverables of the teams in both Evaluate and Accelerate phases include answering surveys provided by the consortium and a one pager that outlines the project. In addition, participants should use Slack for communicating between teams and organisers, and SDG in progress for documenting their projects. This is to enable gathering data. For registering for the call for participants, applicants should use Goodwall.

After the first part, Gather, during which the participants are selected, comes Evaluate. This is a 5-week long online workshop during which the citizens selected form teams, unless they applied as a full team, learn about citizen science, learn about the tools proposed by the Crowd4SDG consortium, and start to work on their projects. The end result is a compelling pitch about a project with potential for impact, and a mock-up level prototype of their solution. The teams give their pitches to a jury, who together with team mentors and Crowd4SDG consortium members involved in the Evaluate phase select the teams with highest perceived potential to move to the next phase.

Those teams that move forward to the Accelerate phase participate in a Challenge-Based Innovation Workshop (CBIW) organized by CERN IdeaSquare. During the workshop the participants learn how to prototype, engage with stakeholders, practice pitching, and create a path forward. At the end of the Accelerate phase each team should have been in contact with the community they wish to engage, a prototype that clearly showcases the potential of the solution for data generation or measurement ready to be tested with the intended target group, a one-minute video pitch, and a compelling pitch to convince a jury of the feasibility and potential impact of the project.

In the first GEAR cycle, the workshop happening during the Accelerate phase was sometimes called the CERN workshop, and in the Grant Agreement it is called the CBI workshop. In order to avoid confusion with the term CBI, which is used by CERN IdeaSquare and its partners to refer to other types of events, the event organized by CERN as part of the GEAR cycle is now consistently referred to by the abbreviation CBIW, and satellite events based on the CBIW that are organized by third parties are called CBIWx. This, rather than the abbreviation CBIx as used in the Grant Agreement.

In the final phase, Refine, the selected two teams will get to present their projects at an SDG related event.

2. Overview of the CBIW

The philosophy of IdeaSquare at CERN is to give a license to dream: to encourage and to push participants to dream up a world worth fighting for, and to strengthen their belief in their own capability to make a difference. The CBIW was built following this philosophy and the accumulated experience of the challenge-based innovation (CBI) courses run by IdeaSquare and its university partners.

The CBIW is part of a robust innovation cycle, aiming at creating citizen science projects that have the potential to produce data for National Statistical Offices (NSOs), international organizations (IOs), and other affected communities. The projects are encouraged to use the citizen science tools provided by the consortium, and each team receives support in using these tools when needed. The challenges tackled in each cycle are related to SDGs, and when possible, the challenges are provided by the intended beneficiaries of the projects (NSOs, IOs, affected communities).

As the CBIW is the third part of the GEAR cycle, at the starting point the participating teams already have a project they want to work on including a defined challenge and suggested solution, a pitch, and a mock-up of their solution, for example a non-functional visual representation of a user interface. For satellite events, CBIWx, the teams might come from outside the GEAR cycle. In this case, it should be ensured that the teams entering are at a comparable level. On top of the abovementioned aspects, each team should familiarize themselves with the citizen science tools supported by the consortium before the beginning of the workshop.

In the CBIW, as well as in the phases leading up to it, the teams are encouraged to focus on a specific context, such as a specific geographical area, to support them to be able to come up with a concrete and implementable solution. At the end of the CBIW, the teams are encouraged to start thinking about how their solution might be implemented in different contexts as well, to increase their potential impact. This is following the principle of thinking global but acting local.

During the event the teams work on moving their projects further in order to convince a jury and potential investors or other stakeholders, that their project is feasible and impactful. The work is divided into four categories:

- **Create a prototype**: the teams work on a prototype that allows to tangibly illustrate their envisioned solution for an audience (for example end users, funders) whose buy-in the team needs in order to succeed with their project. This does not need to be a fully functioning prototype, but a way to communicate the project's capability to produce data by involving citizens.
- **Engage with stakeholders**: the teams create stakeholder maps, interview stakeholders, create a plan on how to engage their intended target group, and interact with their intended beneficiary. (Here project stakeholders are defined as anyone who is affected by or affects the project, for example users, end customers, suppliers, advisors, and potential investors.)
- **Practice pitching**: the teams practice pitching their projects.
- **Create a path forward**: the teams create a timeline with set steps on how to move forward after the GEAR cycle, and have a clear understanding of the effort required to implement their project.

The CBIW programme includes lectures, workshops, time for teamwork, mentor feedback, and pitching. In addition, support from the organising team is readily available, and the teams are encouraged to communicate with each other as well as with their project stakeholders. The schedule from the first CBIW (01/2021) is presented in Figure 1.

Week 1					
GMT+1	**Monday 18.1: Setting the scene**	**Tuesday 19.1: Our impact**	**Wednesday 20.1: Impact and prototyping**	**Thursday 21.1: Pitching**	**Friday 22.1: Pitching and teamwork**
12:00	Introduction to IdeaSquare, CERN, (MN) and the agenda LW	Presenting prototyping plans, 2' per team.	Stakeholder mapping. Start to prepare for the interviews: contact people. TU	Icebreaker: your ideal cafe. LW	
12:15					Pitch, feedback. WEC.
12:30		Sustainable development goals and systems thinking, Kali Taylor.			
12:45	Getting to know each other: who you are and want to be as a citizen scientist? LW				
13:00				Intro to pitching. WEC	
13:15					
13:30		Net impact. Upright project, Oula Antere.	Introduction to prototyping. Team based support. OL.		
13:45	~~Each team pitches, followed by feedback~~ from other teams and assessment of prototyping capacity of the teams. LW, OL, PGT, RM, WEC				
14:00					
14:15		Scope and impact. Who is your proposed solution affecting? Can you quantify the impact? LW			Facilitated feedback sessions. One to two hours per team. Rest of time reserved for prototyping.
14:30					
14:45					
15:00					
15:15					
15:30					
15:45					
Homework	Create a prototyping plan	Fill in impact canvas.	Prototyping, finalize stakeholder map.	Work on pitch.	Prototyping.
Optional	Work on the feedback given.	Work on problem solution fit.	Work on scope and impact.	Prototyping.	

Week 2					
GMT+1	**Monday 25.1: Stakeholders**	**Tuesday 26.1: Our projects**	**Wednesday 27.1: Moving forward**	**Thursday 28.1: Last preparations**	**Friday 29.1: Final pitches**
12:00	CERN e-visit to Antimatter Factory				
12:15		Present your prototype and results from interviews. LW, OL, RM.	Translation: other contexts. MN.		Final pitches and prototypes.
12:30	Interconnections: the deployment context and possible "side effects" RM, LW, TU				
12:45			Share your solution to other teams challenge. LW.		
13:00		Sharing team challenges with other teams		~~Pitching practice, teamwork, support from~~ IdeaSquare team. LW, RM, PGT, MN, TU, OL.	
13:15					I like, I wish, I learned, all togerher. LW, RM.
13:30	Interviews. TU, OL				
13:45					
14:00			The next steps. TBC.		
14:15		Meeting point with mentors			Closing words.
14:30					
14:45					
15:00					
15:15					
15:30					
15:45					
Homework	Interviews.	Work on other team's probeln.	Work on pitch, include next steps.	Finalise pitch and prototype.	
Optional	Prototyping.	Continue interviews.	Work on next steps.		

Figure 1: The agenda of the first CBIW that was organized in January 2021 (first GEAR cycle).

In the second GEAR cycle, based on lessons learned from the first, a similar agenda of activities will be spread over five weeks, at two days per week and4 hours of training per day. This, in order to give participants more time between coaching sessions to work on their prototypes and reach out to potential stakeholders in their projects.

The detailed programme of the first CBIW and the learnings from that are presented in Annex 1. This Annex also explains the rationale for the changes made to the workshop for the second CBIW, primarily a spacing out of the coaching sessions over a five-week period. Note that at the time of writing of this document, the detailed planning of the second CBIW is still underway and consequently, plans for CBIWx satellite events are still under development.

2.1. Objectives and Learning Outcomes

The key objectives of CBIW should be to coach teams to produce functional prototypes based on digital tools from the Crowd4SDG Citizen Science Solution Kit, connect with communities likely to use these prototypes for gathering data that is relevant to the SDGs, and help teams explore options for sustaining their projects, for example in social innovation incubators. In this way, participants apply relevant crowdsourcing tools to SDG challenges and teams become capable of taking their projects into implementation once they exit the GEAR cycle.

The learning outcomes of the CBIW are: learn how to develop crowdsourcing projects that address the SDGs, learn how to involve citizens in such projects, learn how to use the citizen science tools supported by the Crowd4SDG consortium, learn how to produce data relevant to organizations monitoring the SDGs, such as NSOs. In line with this, the participants should gain experience with four aspects of generating a successful citizen science project, summarized in Figure 2. This figure is based on the experience from the IdeaSquare team running CBI student programmes, and substitutes the topic of a general challenge-based innovation project brief with citizen science as a key criterion for success.

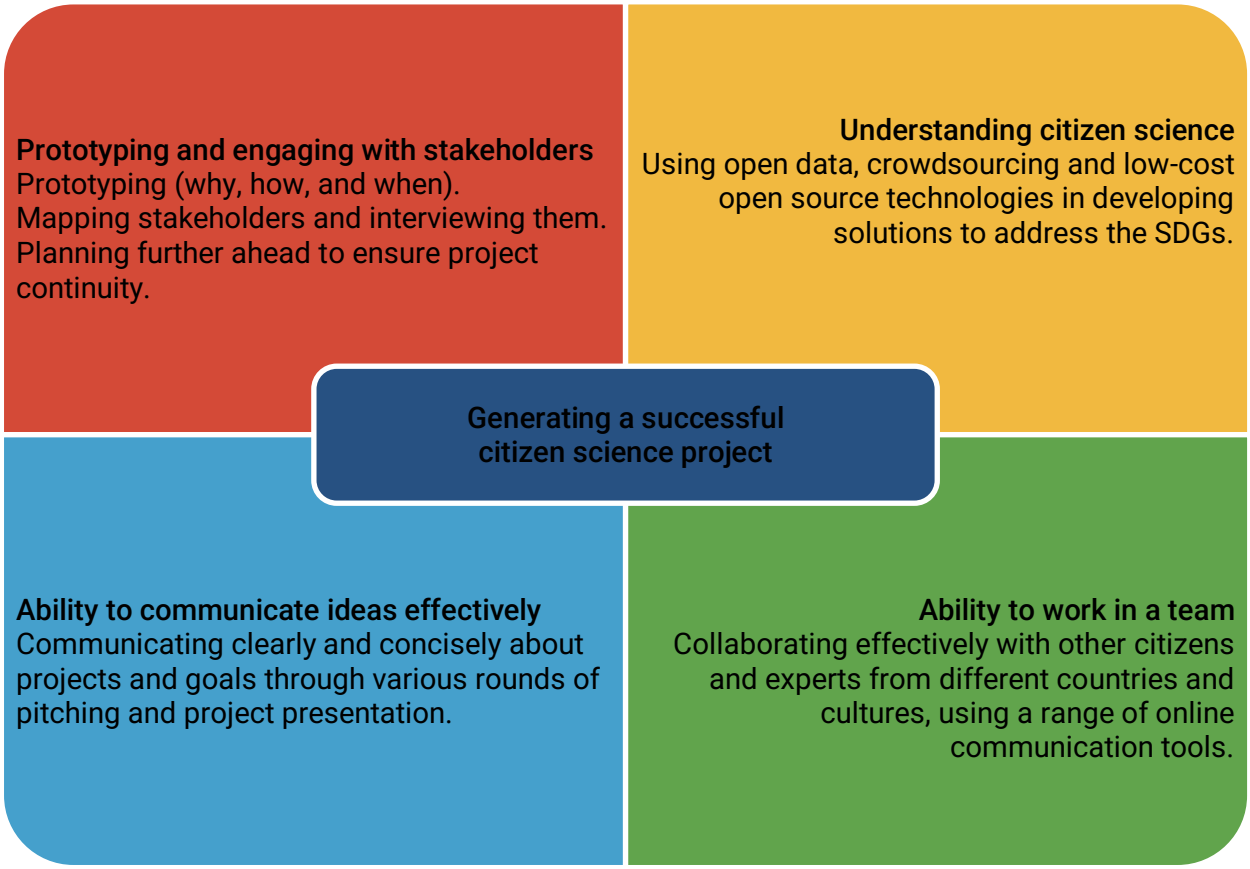

Figure 2: The CBIW learning outcomes represent four different aspects of a successful citizen science project

As mentioned, one of the objectives of the GEAR cycle, and thus also of the CBIW, is to apply one or more of the CS tools being developed by the Crowd4SDG consortium. The CS tools supported by the Crowd4SDG partners for the second GEAR cycle are Citizen Science Project Builder, CSLogger, Decidim4CS and VisualCit. In addition, a number of collaboration tools are introduced during the GEAR cycle, such as the project documentation tool SDG in Progress. More information about the tools can be found in the Tools section of the Crowd4SDG website.

The CS tools being developed by Crowd4SDG are themselves being enhanced with AI features, which should progressively improve the tool performance over the course of the Crowd4SDG project. All of the projects entering CBIW should have a CS or crowdsourcing perspective, and involve one or more of the CS tools.

2.2. Participants of CBIW and CBIWx

The CBIW participants come from the Evaluate phase of the GEAR cycle, in other words, they are the teams selected at the end of the Open Seventeen Challenge. The participants to CBIWx satellite events could in principle come either from the Evaluate phase or another source agreed upon by the Crowd4SDG consortium and the CBIWx organizer. In the latter case, the selection criteria should be similar to that used in the Evaluate phase. At the time of writing, discussions with potential CBIw organizers are still at an early stage, so no decisions have been made about how this will work best in practice.

At the end of the Evaluate phase, the pitches of the teams are evaluated by a jury and by their mentors. The jury members and mentors evaluate the teams based on the following criteria, on a scale from 1 to 10 (strongly disagree, strongly agree):

- Novelty: Is the pitch based on a new idea or concept or using existing concepts in a new context?
- Relevance: Is the solution proposed relevant to the challenge or potentially impactful?
- Feasibility: Is the project implementable with reasonable time and effort from the team?
- Crowdsourcing: Is there an effective crowdsourcing component?
- Presentation: How would you rate this team's overall presentation skills during this pitch?

From the teams participating in the Evaluate phase, a maximum of 20 participants in total, corresponding to 4 or 5 teams, move forward to CBIW. This selection is based on their total jury score as well as a score based on the team's activity and output during the entire five-week coaching process.

For CBIWx events, should the participants come from a different source than the Evaluate phase, additional requirements that have already been placed on the Evaluate participants at an earlier stage should be applied, including that:

- They are able to speak conversational level English (if the CBIWx event is in English)
- They have access to a reliable internet connection or access to a physical space where the event is organized (CBIWx events may be online or in person)
- They are willing to commit the minimum time required for the phase.
- They are minimum 16 years old with no upper age limit.
- Gender balance and minorities should be targeted.
- They have at least two members in each team.
- Their project is a citizen science project, aiming at producing data relevant to the SDGs, engaging with citizens, and using the tools supported by the consortium.
- They have produced a mock-up of their solution.
- They have a pitch and a slide deck or similar simple form of presenting their project.

2.3. Mode of participation

Due to the Covid pandemic, the first CBIW was organized virtually, and it is planned to be so for the second and third GEAR cycles, too. That said, the original plan was for the CBIW to be an in person event in Geneva. CBIWx events could be organized either virtually or in person, or possibly even in a hybrid mode. If organized in person, the organizing party should be able to provide a space with suitable prototyping facilities for the participants.

2.4. Evaluation of the CBIW and CBIWx

Data on the CBIW is gathered through three questionnaires, as well as through following the amount of interaction on Slack, through asking for feedback on Slack, and through manually marking down attendance in Zoom sessions. In the first CBIW three questionnaires were used (Annex 2), one before, one after the first week to evaluate sessions, and one after to evaluate the second week of sessions and the programme in general. The evaluation of the CBIW and CBIWx events is expected to evolve for each GEAR cycle, as one of the work packages (WP4) of Crowd4SDG is specifically tasked with defining metrics and descriptors for the CS innovation process occurring during the workshops, including CBIWx. Partly to help ensure that all surveys are answered, participants are awarded certificates of completion, based on both workshop attendance and submission of surveys.

3. Organising a CBIWx

This chapter outlines the process for organizing a CBIWx from selection of organisers to evaluation of results, including the expected commitments from organisers and the support they will receive.

3.1. Who can organize a CBIWx

The target group for organizing a CBIWx, and at the same time the target audience for this training corpus, are staff in maker spaces and other innovation spaces, which may either be associated with universities or run independently.

An institution that wishes to organize a CBIWx has to fulfill the following criteria:

- Previous experience in running programmes utilising Design Thinking methods or similar design methodologies.
- Ability to speak conversational English
- Commitment to organising the event and enough of human resources for organizing it
- If wishing to run the event online, then previous experience in running educational programmes online
- If wishing to run the event in person, then having a space or access to a space with prototyping facilities.

Previous experience from working with citizens is considered as a plus when selecting the organisers.

3.2. Timeline for organizing a CBIWx

The organisers of CBIWx will be selected in the beginning of September each year. The virtual train the trainers programme will be held at the end of September. To align with the CBIW event that CERN will organize, the CBIWx event should take place from the beginning of December to the end of February of the following year, in other words aligned with the period between the Evaluate phase and the Refine phase of the GEAR cycle. This alignment enables teams from the Evaluate phase to join a CBIWx and also enables participants from CBIWx to take part in certain coaching sessions of the CBIW, if there is capacity. Finally, it means that teams that do well in CBIWx could be selected to join the Refine phase.

3.3. Support for organizing CBIWx

The train the trainers course is a two days long virtual event (roughly four hours each day). During this time, the learning outcomes and the flow of the CBIW will be examined in detail. The citizens science tools proposed by the consortium are presented. The participants will have the chance to ask questions, and time is reserved for co-designing the CBIWx. Support for designing the CBIWx will be available also after the Train the Trainers event, upon request.

3.4. Resources required

The main resource is personnel to organize the event. If the event is held in person, a suitable maker space is required. Online tools, such as Zoom, are crucial, when the event is held online. The need for external speakers depends on the internal expertise. For CERN IdeaSquare the programme required four external speakers, out of whom only one was paid, others were pro bono. The mentors and jury members worked pro bono.

To the extent that it is feasible in practice, mentors and jury members from CBOW will also provide mentorship and evaluated final pitches for teams from CBIWx events. The exact terms of collaboration between CBIW and CBIWx are still under discussion at the time of writing.

On top of this, facilitators are needed for the facilitated feedback sessions from outside the organizing team, and the maximum number needed is the number of teams participating. One facilitator may also facilitate several teams, if the sessions are not held parallel.

During the first CBIW, there were two principal people working on the CBIW from IdeaSquare. The most significant time was spent on planning. With the help of this training corpus, that time should be greatly reduced. On top of that, the estimates of time spent are as follows:

- Getting team mentors and supporting them: 5h
- Creating letter of agreement and the photography rights form: 5h
- Getting jury members and supporting them: 10h
- Getting and supporting external speakers: 25h
- Communicating with teams ahead of the workshop, including creating material to be shared: 20h
- Running the workshop: 200h. This includes running all the sessions, supporting the teams outside of the sessions, and sharing information and materials

3.5. Before CBIWx

Share with the participants the citizen science tools supported by the Crowd4SDG consortium.

3.6. During CBIWx

The CBIWx programme is divided into five blocks. Each block is planned to take two days. After each day, homework is given to the teams.

As noted earlier, the current plan is for the second CBIW to be held over five weeks, two days per week, and maximum four hours of common sessions per day. The weeks would not be consecutive – a first week is planned before the Christmas and New Year holiday period, with four more weeks in January in early February. However, the CBIWx organizer may choose to condense the entire programme in a shorter period if necessary. For example, the CBIWx could be condensed into two weeks, and in this case, at least eight hours per day is required from the participants for the common sessions and working on their projects.

Other configurations are possible as well. Should the event be held within a shorter time period, organizers should ensure that teams still have the required time to work on their projects and interact with stakeholders. The organizing team should be available for support through Slack also outside of the sessions and even outside the dates of the blocks.

Below we outline a tentative description of the programme for CBIW or a CBIWx, noting that this is still under development at the time of writing. It is possible to make changes to the content, but any significant changes in content should ideally be discussed with the CERN IdeaSquare team, along with the rationale for the change. Afterwards, the different approaches and their results should be compared in order to maximize learning.

Especially for online events, it is advisable to have breaks at the very least every two hours, and no talk should be longer than one hour. The sessions should be interactive, even when they are a talk, to keep the audience engages.

The CBIW and CBIWx start with a day of familiarizing with each other, the projects, and the agenda. The teams get as homework to write simple answers to short questions on their projects, the most important one being “I will help (x) to do (y) by doing (z).” or similar configuration of the sentence. This is followed with an introduction to prototyping to give the teams as much time as possible to procure materials they might need and to get them thinking about the prototypes throughout the CBIW(x), as they are one of the most important outcomes. Stakeholder mapping is also introduced early, as teams need to have enough time to contact

people they might have to talk with and should look at their projects from the perspective of all that they affect. Citizen science tools are the next topic, as their use is strongly encouraged, and they need to be an integral part of the projects instead of an "add-on" that is thought of later.

In the second two-day block, the progress with prototypes is checked. Then, the teams start working on how they will reach their intended target group, first learning about the theory and then taking it to practice. Then they practice pitching, and learn about interviewing, to be able to get important insights on their projects from their stakeholders.

The third block is focused on the teams working together. They share with each other their learnings from their stakeholder interviews, they work in teams supported by the organizers, share a challenge they are stuck on with another team to get new perspectives, practice pitching, and have dedicated sessions working on team dynamics supported by a facilitator for each team.

In the fourth block, it is time to start looking at the future. Teams learn about data management and financial sustainability, and work on their long-term vision and the steps on how to get there. In the fifth and final block, teams practice pitching, get last feedback from the organizers, and give their final pitches in front of a jury, that should ideally include people who are well positioned to support the teams moving forward.

In the table below, each session is presented in more detail, and they will be clarified further during the train the trainers' event.

Block	Day	Session name, duration	Purpose and description
1. Introduction to prototyping and stakeholder mapping	Day 1	Talk: Introduction to the organizing institution and the agenda, 30min.	Providing the participants with a context and overview.
		Interaction: Getting to know each other: who are you and if you were a superhero, what would you be fighting for? 60min.	Creating an informal atmosphere and providing all participants the chance to get to know something of each other.
		Interaction: Pitches from each team, feedback from other teams and organizers. 90min.	Understanding where the teams are at, giving all teams the chance to know about each other's projects.
		Homework: Fill in the impact canvas and work on the feedback given.	Helping the teams to explain their project in a simple way. Canvas provided during train the trainers, first cycle's canvas Annex 6.
	Day 2	Talk + time to work: Introduction to prototyping. 120min.	Discussing when, how and why to prototype so teams get an idea how to do it and understand why it is necessary.
		Workshop: Stakeholder mapping. 60min.	Creating a stakeholder map (Annex 1) so teams understand who their stakeholders are. Experience from the first cycle showed that this task

			might require the organizing team to support the teams in creating the map.
		Time to work: Q&A on citizen science tools and how to use them in the projects. 60min.	By the time teams come to CBIW they should have an idea what tool they want to use. During this session teams work on their own and get to ask for the experts in those tools to come give them support. For CBIWx this is an opportunity to join the session.
		Homework: Work on prototype. Create stakeholder map.	Stakeholder map to be sent to organizers for feedback before next Block.
2. Engaging with stakeholders and pitching	Day 1	Interaction: Present prototype, feedback. 60min.	The teams show what they have created so far and get to ask questions they might have.
		Talk and Workshop: How to engage with citizens. 120min.	A talk and time to work on how the team plans to reach their intended target group and to get the target group to interact with their solution.
		Homework: create a plan on how you get citizens to engage with your solution. Work on the pitch for the next day's practice.	Share the plan created for feedback.
	Day 2	Icebreaker, movement workshop. 30min.	Can be any icebreaker that gets the participants to a good mindset for pitching, which can be intimidating.
		Introduction to pitching. 120min.	Talk on what good pitching is. First rounds of pitching, everyone pitches, feedback. A good pitching coach is advisable.
		Talk: how to listen and do interviews. 60min.	Continuation to stakeholder mapping session. Explaining how to contact people, who is good to contact, interview techniques, and mapping results.
		Homework: Interview stakeholders, work on pitch.	
3. Working together	Day 1	Present results from interviews, feedback. 60min.	Using one or several of the mapping techniques presented in previous session, sharing findings with other teams. Feedback.
		Time for teamwork. Organizers go from team to	Providing time for teams to interact with organizers and to ask questions.

		team giving feedback. 120min.	
		Problem swap: share your problem with another team. 30min.	Each team chooses a challenge they have in their project, that they would like help on. Has to be something that other teams can answer, for example “We don’t know how to reach our intended target group.” Each team shares their challenge with another team.
		Homework: Work on the other team’s problem. Work on pitch.	Prepare a solution for the next day to the challenge that was given to you by the other team.
	Day 2	Problem swap: Share your solution. 30min.	Each team shares their proposed solution.
		Pitching practice. 60min.	Working further on the pitches together with the coach.
		Facilitated feedback sessions. 120min.	Each team has their own virtual or physical room, and their own facilitator, who is not otherwise tied to the workshop. Instructions for the “I like I wish” method.
		Homework: work on the prototype. Test it with users, show it to stakeholders.	
4. Looking forward	Day 1	Talk on data management (ethics, storage, etc.) 50min.	An expert on data management gives a talk on GDPR compliance and other issues.
		Financial sustainability / social entrepreneurship. 50min.	A talk on financial sustainability and social entrepreneurship
		Vision: translation of the project to other contexts. 60min.	How to scale the project after its initial proof of concept in one context.
		Homework: work on translation.	
	Day 2	Time for teamwork. Organisers go from team to team giving feedback. 120min.	
		Workshop: the next steps. 120min.	A talk on creating a project plan and different tools to choose from, creating an agenda moving forward.
		Homework: Work on prototype, the feedback given, and the next steps.	

5. Final pitches	Day 1	Pitching practice one team at a time. Simultaneously teamwork, and organizing team going from team to team. 150min.	
		Homework: Prepare for final pitch.	
	Day 2	Final pitches. 90min.	Time needed depends on the number of teams. 5min pitch + 10min Q&A recommended.
		Jury deliberation and simultaneously participants sharing their likes and wishes in a separate room. 60min.	
		Announcing winners and next steps. 60min.	

Table 1: description of sessions in each block for CBIW or CBIWx

3.7. After CBIWx

At the time of writing, we are considering ways for the best CBIWx teams to move forward to the Refine phase, which is in practice an event called the Geneva Trialogue, happening in March 2022. In any case, all teams should be encouraged to seek ways to move forward with their projects independent of any support that the Crowd4SDG consortium may be able to provide.

Annex 1: CBIW in GEAR cycle 1

In this annex the first iteration of the CBIW is presented, starting from participants and mode of participation, then going through what happened before, during, and after the workshop, and finally approximating the resources needed for organizing such a workshop.

1. Participants

From the Evaluate phase, 5 teams were selected. To present the teams and their projects in more detail, the team one pagers can be found in Annex 3. In the first GEAR cycle the SDGs 13, climate action, and SDG 11, Sustainable cities, were the basis for the theme which was selecter to be Urban Water Resilience.

Team **Ecolution** had three members, two based in Cote d'Ivoire, and one in the US. Their idea was to increase public participation in water resource management.

Team **Potamoi** had four members, all based in France. Their idea was to provide a service that cleans data for flood forecast centres.

Team **Thousand Waters** had two members, both from Brazil. Their solution was to provide a water collection and sanitization system to be implemented in a poor neighbourhood in Brazil.

Team **To See To Care** consisted of two members in China, who wanted to make the effects of climate change more real and personal to people across the world, through visualising the effects of sea level rise and temperature changes on a map app. They were chosen to move on to Refine.

Team **Well Yes** had four members, two based in India, one in the Netherlands, and one in the US. Their idea revolved around well water quality monitoring in rural India, and during the workshop evolved to also include a part on improving the water quality. They were chosen to move on to Refine.

Regarding the citizen science component, in the first GEAR cycle participants were encouraged, but not required, to use one of the tools developed by the consortium. The teams ended up not using the tools to a greater extent, except for the mandatory Goodwall (applying and sharing pitches) and SDG in Progress (documenting project progress) platforms. For the upcoming cycles, more effort needs to be put into having the tools incorporated into the projects early on, so that they do not come as additional features of the projects, but rather as crucial elements. This can be done through modifying the call for participants to include clearer expectations of what kind of projects are desired, and by guiding the projects early on towards solutions that would require the use of the tools.

2. Mode of participation

The CBIW was originally planned to be in person, but due to the COVID-19 pandemic, was moved into a fully virtual format. The platform chosen was Zoom, and all of the sessions were organised at the same link. Zoom was chosen, as it was seen as having the best possible functionalities for enabling to see all of the participants at the same time (gallery view) and for organizing teamwork (break-out rooms).

In a virtual format, it is advisable to keep the sessions short and to a minimum. Each day consisted of between two and four hours of common sessions, and an estimated time for the homework was one to three hours per day per team member.

The pros of organising a virtual event are that there are no travel costs and participants have a better opportunity to continue with their other commitments also during that time. This enables a larger group of people to participate.

The pros of organising a physical event are that participants form deeper bonds, especially with other teams, that they are located in one time zone, teamwork is easier, and necessary tools and materials for prototyping are readily available. A physical event also enables more informal communication between the participants and the organisers.

Lessons learned

Even with having shorter days than if the event would have been physical, the strain of following so many sessions online and then working online within a team, was deemed tiring. This was mentioned in individual comments on the feedback questionnaires and on the Slack channel discussion but could also be seen in the energy that the participants showed up with to the online sessions.

A decision has been taken to continue hosting the CBIW as virtual for the next GEAR cycles. To avoid fatigue caused by too much screen time, the duration of the CBIW will be extended. This will also allow for more time to work in teams between the different sessions to fully exploit the learnings from and feedback given during those sessions. The decision to extend the duration of the workshop is supported by the experience of several others, notably members of the Design Factory Global Network (DFGN), who have turned their educational programmes to a virtual format.

3. Before CBIW

Most of the work the organising team put into the workshop was done in the time leading up to it. First, a curriculum for the two weeks was created in collaboration between the IdeaSquare team members and receiving feedback from two members of the DFGN. After the sessions were outlined it was clear where the organising team needed external speakers, and people with the right profiles were identified and contacted. An excellent pitching coach was crucial for helping the teams to be able to communicate complex ideas clearly and concisely. The external speakers were supported through having a discussion with each of them on the type of session they would give, and the goals of the session.

On top of the external speakers, also jury members and mentors were needed. The jury members were selected on the basis of their potential for supporting the teams further, either through their networks, place of work, or experience, while aiming for a diverse jury. They were supported through a clear briefing document (Annex 4). The mentors were contacted well ahead of selecting the teams to move forward from Evaluate phase and were given the choice of which team they wanted to mentor. They were asked to have at least two meetings with the teams, one before and one during the CBIW.

After the teams had been selected, the initial contact with the selected teams was handled through e-mail, after which each participant was required to join a dedicated Slack channel. Each team member had to sign a Letter of Commitment (Annex 5) to signal their willingness to fully take part in the CBIW. After these were received the organisers assigned a mentor to each of the teams. Then the teams got to move forward with the pre-tasks:

- Filling in a starting questionnaire to give a better understanding of the participants wishes and concerns, and to get a baseline evaluation of their skills (Annex 2)

- Doing team contracts within teams to facilitate their teamwork, through agreeing on topics like who will be the project manager and how much time each team member is willing to put in, for the benefit of the team.
- Identifying on their own at least three expert profiles, such as SDG or citizen science expertise, the team would need to reach and organising a discussion with at least one of them already ahead of the CBIW.
- Organising a meeting point with the team mentor before the CBIW.
- Preparing to pitch the projects on the first day of the CBIW, along with identifying prototyping needs, such as missing skills or material that is not readily available.
- Continuing project documentation on SDGinProgress or another tool selected by CBIW organiser

Lessons learned

As some contributors were not active on Slack, the communications got dispersed over e-mail and Slack. To avoid misunderstandings, all of the written communication will happen on Slack during the next cycles.

4. During CBIW

The chapter on what happened during the CBIW is divided into two. First, the flow of the two weeks and the sessions are presented. Second, the supporting structures, meaning the evaluation criteria, communications, and support for teams, are presented.

4.1 Flow of the two weeks and sessions

The different sessions and homework of the CBIW was planned so that all the different sessions came at the right time of the design process the teams were going through.

Day 1. First on the agenda was giving the context by presenting the host institution and the premises, the ways of working, and the agenda of the two weeks. The participants were given a chance to introduce themselves, and their projects. The goal was to ensure an easy workflow for the coming weeks, and to facilitate the teams interacting with each other.

Day 2. The work continued with understanding and assessing impact, not only the positives but also the negatives, in a systemic context. This was crucial to be done in an early phase of the two weeks, in order to give the projects time to re-adjust accordingly.

Day 3. The day spent on impact was followed by stakeholder mapping and prototyping. Stakeholder mapping (Figure 3) was started before starting the actual prototyping, as the participants should know who they are building their prototypes for.

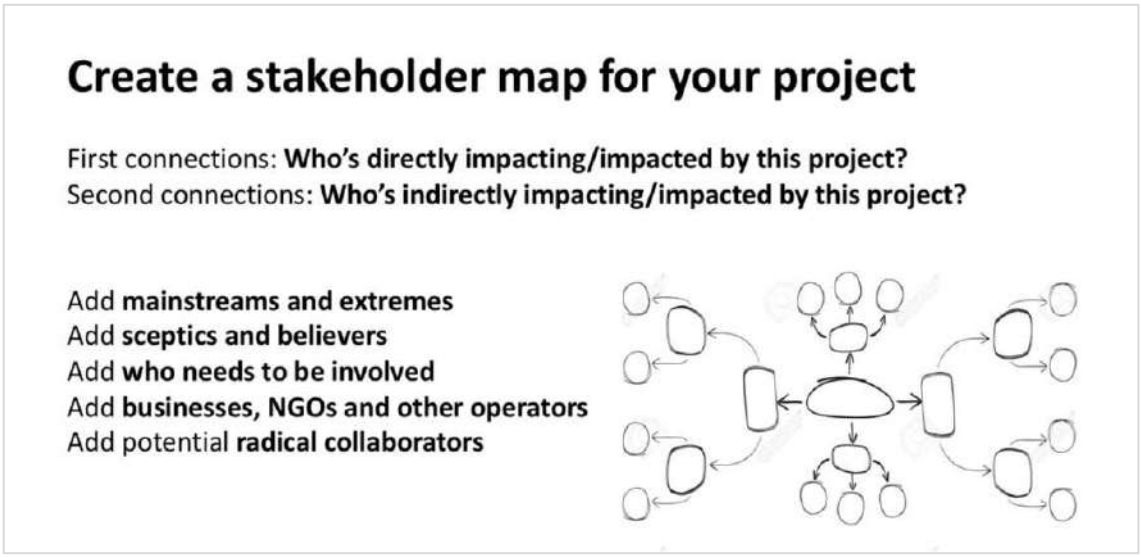

Figure 3 Instructions for stakeholder mapping

Day 4. After having an idea of what the teams want to ask, from whom, and with the help of what kind of prototype, they moved to learning to pitch their project. The day started with an exercise, a movement workshop, that helped the participants to relax before practicing pitching. According to the pitching coach, Walid O El. Cheikh, people often have a fear of pitching, and creating an open atmosphere were participants feel safe can help them overcome that fear.

Day 5. The first week ended with facilitated feedback sessions to help the participants work as a team. The I like I wish methodology was used. Each I like I wish session was for one team only, facilitated by someone who is not involved in the organisation of the CBIW in other ways, as this created an atmosphere in which the participants were freer to speak openly. In each session, the facilitator began with setting the scene, after which the team members were given time to write their "likes" and "wishes" on each of the other team members, as well as the team as a whole. After everyone was ready, each team member received the likes and wishes from the others, and the team level likes and wishes were shared. The likes and wishes could include for example "I wish we would always be on time to meetings" and "I like that you are always encouraging everyone to state their opinions", but should not include feedback on the projects themselves or on the organization of the workshop, or non-constructive criticism.

Day 6. The second week started with a workshop on the deployment context, during which the teams worked further on their stakeholder maps. This was followed by practical tips for interviewing stakeholders. The first prototypes were expected to be ready by this time.

Day 7. On the second day of the second week, the teams presented their prototypes and the results of their interviews to the other teams, and the floor was opened for questions and feedback. At this point, a challenge swap was done between teams: each team shared a specific challenge in their project to another team, which worked on it until the next day. Then, each team got to hear the other team's ideas and suggestions. The rest of the day was dedicated for sessions with team mentors.

Day 8. On the eighth day, the teams were challenged to look at how their solution might translate to other contexts, such as different geographical areas. They also started to plan their next steps through writing down milestones and a rough timeline.

Day 9. The day before the last was dedicated for pitching practice with the pitching coach and for teamwork. The pitching practice was done one team at a time. The whole team of CERN IdeaSquare was on call so the teams could easily join in to ask any questions.

Day 10. On the final day the teams pitched their projects to a jury. The members of the jury were selected on the basis of recommendations from the Crowd4SDG consortium members, while looking for diversity in their domain of expertise (corporate, university, accelerator, policymaker) and gender balance. The members, new for this phase except for one representative from UNIGE as the organizer of the next phase, are presented in Annex 4.

The pitches were followed by a jury deliberation, during which the jury members gave both numerical evaluation and discussed the potential of each project. The jury deliberation time was used to decide which two teams would move forward to the Refine phase. During the jury deliberation the participants answered the questions what you liked, what could have been different and how, and what did you learn, in a non-recorded session with only one organizer present. The programme ended with announcing the teams that would move to the next phase.

The sessions given during CBIW are detailed in Table 2 below, along with comments on the sessions. In the column “Evaluation by participants” the evaluation of activities based on the questions “Did you feel inspired by these activities?” and “How useful did you find these activities?” are given. The numbers are averages, and out of 15 participants 10 answered the questions on days 1-5 and 6 answered the questions on days 6-10, in anonymous questionnaires. Some sessions were grouped together under the same activity, and those are colour coded

Day	Session name, duration, and host	Purpose of the session	Session description	Comments	Evaluation by participants (scale 1-5)
1	Introduction to IdeaSquare, CERN, and the agenda. 30min. IdeaSquare	Giving participants an understanding of who the organisers are and what is going to happen during the workshop.	Short presentations of IdeaSquare and CERN as organisations, and to the flow of the next two weeks.	Necessary for giving an understanding of who the teams are working with.	Inspiration: 4.67 Usefulness: 4.67
	Getting to know each other. 1h. IdeaSquare.	Building team spirit and a relaxed atmosphere.	Each participant including organisers share something about themselves and who they would like to be as a citizen scientist.	Good for setting an open atmosphere. For that purpose, some other question could have helped the participants feel even more comfortable ⟶ Ask what superhero you would like to be.	Inspiration: 4.67 Usefulness: 4.67
	Break 15min				
	Pitches. 1,5h. IdeaSquare and pitching coach.	Getting an understanding of where the teams are at the moment.	Participants pitch their projects, followed by time for feedback and a discussion on prototyping needs.	Prototyping as a concept was not clear, resulting in confusion within the teams. We went overtime. ⟶ Introduction to prototyping before CERN workshop. Give a clear timing for pitches beforehand.	
	Homework and optional task.		Create a prototyping plan. Working on the feedback given.	The teams were not ready to make a prototyping plan, as they did not understand prototyping. ⟶ Introduction to prototyping before CERN workshop.	
2	Presenting prototyping plans. 15min. IdeaSquare.	Getting an understanding of how the organisers might support the teams with prototyping.	Each team shares what they might need for being able to prototype.	It was good to understand at this point, that computer scientists are needed.	

	Sustainable development goals and systems thinking. 1h. SDG Lab.	Getting the participants to understand the connected nature of societal issues.	Kali Taylor gave a presentation on the SDGs, with a focus on how they affect each other and how the pandemic has affected not only the obvious SDGs but also had less obvious effects. Time for discussion.	Based on the feedback, this session helped in understanding the connected nature of SDGs.	Inspiration: 4.44 Usefulness: 4.22
	Break 15min.				
	Net Impact. 30min. Upright Project.	Giving a new viewpoint on impact.	Oula Antere presented the Upright Project and how they assess Net Impact: the different dimensions to be taken into account and that there are always positive and negative effects. Neutral impact is not good, as creating it requires effort. Time for discussion.	Based on the feedback this session opened a new way to look at impact.	Inspiration: 4.44 Usefulness: 4.22
	Scope and impact. 1h. IdeaSquare.	Reflecting on what the learnings from the previous two sessions meant in terms of the team's project.	Short presentation on problem – solution fit, the scope (who is your solution affecting), impact, and costs. Writing down "I help x to do y by doing z." Time for working.	It was good to clarify the problem solution fit and to put in one canvas the different aspects of the project. Participants gained an overview of their project.	Inspiration: 4.44 Usefulness: 4.22
	Homework and optional task.		Fill in impact canvas. Working on problem solution fit.		

3	Stakeholder mapping. 45min. IdeaSquare.	Giving an understanding of what the different stakeholders are, so that the participants can start contacting people for interviews.	Presenting a story of why stakeholder engagement is important, examples of different stakeholders in different projects, time for working on stakeholder map.	The participants were given the choice to show their stakeholder map to the CERN team for comments. It seemed that for many of the participating teams, it remained a difficult task to freely map stakeholders and to look at them from different perspectives. ⟶ When doing stakeholder maps, have a coach available for each team.	Inspiration: 4.33 Usefulness: 4.33
	Break 15min.				
	Introduction to prototyping, time for teamwork. 1h45min. IdeaSquare.	Helping participants understand the different types of prototyping and what they can be used for. Why to prototype.	A presentation on prototyping (why, what, when) and time to prototype.	The participants were very happy with the session but wished they would have had it earlier.	Inspiration: 4.67 Usefulness: 4.67
	Homework and optional task.		Prototype and finalize stakeholder map. Working on scope and impact.		
4	Icebreaker. 30min. IdeaSquare.	Get the participants in a relaxed mood for the pitching exercises.	A movement workshop: exploring the space around you through movement and touch.	This worked well for getting the participants to relax for the pitching workshop that followed.	Inspiration: 4.67 Usefulness: 4.67
	Introduction to pitching and pitching workshop. 2h. Pitch.io	Providing an understanding on what good pitching is.	A presentation about pitching to provide a better understanding what all can be counted as pitching, and how to pitch well. Everybody practices pitching.	This session was very liked, and the key to that was that it was challenging, but at the same time fun, and the atmosphere was open and relaxed.	Inspiration: 5 Usefulness: 4.78

	Homework and optional task.		Work on pitch. Prototyping.		
5	Pitching workshop. 1h 30min. Pitch.io.	Practicing the lessons from the previous day.	Everybody pitched twice, a longer version and a shorter version. Feedback.		Inspiration: 5 Usefulness: 4.78
	Break 15min.				
	Facilitated Feedback sessions. IdeaSquare and outside facilitators.	Helping the participants to function better as a team and to identify their personal improvement areas and strengths in teamwork.	Following the I like I wish methodology, the participants gave their individual and team likes and wishes, supported by an outside facilitator.	Participants mentioned being nervous about the session beforehand, but that it was a good experience. This is quite normal with the I like I wish methodology.	
	Homework and optional task.		Finalize first version of prototype.		
6	Showing around IdeaSquare. 15min. IdeaSquare.	Starting the second week with something fun.	On Zoom, walking around IdeaSquare and explaining what there is. Sending an e-visit to the Antimatter Factory (3D) to be viewed at home.		Inspiration: 4.67 Usefulness: 4.50

	Interconnections. The deployment context and possible side effects. 1h. IdeaSquare.	Deepening the participants understanding of the field they are in and finding new connections.	The participants were asked to choose an animal from a jungle ecosystem that represents their project and draw a “stakeholder” map around that animal. Then, they mapped their own stakeholders against the jungle ecosystem they had created, so that they got a new view on their own stakeholder map.	This exercise was quite demanding, and it seemed the participants had some insights, but had trouble with incorporating their insights to the project afterwards. ⟶ Spend more time on the stakeholder mapping earlier and use this session for planning how to reach their target audience.	Inspiration: 4.67 Usefulness: 4.50
	Break 15min.				
	Interviews. 30min. IdeaSquare.	Preparing the participants for interviewing stakeholders.	What is need finding about, why do critical opinions count, and tools and tips for how to prepare for an interview. Presenting two tools for gathering the findings: a feedback capturing grid with likes, critical points, questions, and ideas, and a hot and cold curve to place interviewees on.		Inspiration: 4.67 Usefulness: 4.50
	Homework and optional task.		Do interviews. Prototyping.		

7	Share findings from interviews and present prototype. 1h. IdeaSquare.	Checking what the teams have been able to do.	The teams presented their interview findings in a simple format and showed what they had done as a prototype. They got feedback.	The teams seemed to have trouble with prototyping. This might be partly due to the physical nature of prototyping and the teams being mostly scattered across different countries, as well as the limitations on meeting people face to face. ⟶ Give more time for prototyping.	
	Challenge swap. Sharing team challenges with other teams. 30min. IdeaSquare.	Creating more interaction between the teams and providing the teams with a fresh perspective.	Each team presented a specific challenge within their project to another team, that then got to work on it until the next day, when they shared their findings. Each team had one challenge to work on and one challenge to share.	The teams liked the interaction between each other, but some wished they would have been able to benefit from it already earlier. ⟶ Include a challenge swap already in the first week.	Inspiration: 4.67 Usefulness: 4.50
	Break 30min.				
	Meeting point with mentors. 1h. Mentors.	Give the participants time to meet with their mentors.	Participants met with their mentors, in Zoom rooms of the normal call.	Most of the mentors could not make it at a specified time. ⟶ Give the rest of the day free from organized sessions so the teams can agree with their mentors when they meet.	Inspiration: 4.33 Usefulness: 4.5
	Homework and optional task.		Work on another team's problem. Continuing interviews.		

8	Translation: other contexts. 45min. IdeaSquare.	From an impact perspective it is good if a project can be scaled up and implemented in different contexts as well. The participants were told to focus on one context in order to make their project feasible and have a tangible starting point, but in this session the participants were encouraged to think of their project as the prototype or starting point of something larger.	The participants listened to a presentation about translating projects to other contexts and filled in the impact canvas they had made the previous week, but with the whole world or a large part of it as the context.	The inspiration and usefulness scores for this session are the lowest overall. ⟶ Make the session more relevant through already in the beginning of the CERN workshop framing the projects as the first test of the solution, for which the target group can then be enlarged.	Inspiration: 4 Usefulness: 3.5
	Share your solution to another team's challenge. 30min. IdeaSquare.	Same as problem swap.			Inspiration: 4.67 Usefulness: 4.50
	The next steps. 1h30min. UNIGE.	Giving participants new tools and time to plan ahead and make a concrete proposal on their next steps.	A presentation on project planning, including useful templates.	The participants stated in their qualitative feedback (n=6) that they learned a lot. However, the session could have been simplified even more, so that the participants would have had more time to work on the next steps.	Inspiration: 4.33 Usefulness: 4.17
	Homework and optional task.		Include next steps in your pitch. Working on the next steps.		
9	Pitching practice and teamwork. Pitch.io and IdeaSquare.	Preparing for the final pitches.	The pitching coach had individual sessions with each team. The rest of the time during the day was	The teams wished for more team-based interaction with the IdeaSquare team. ⟶ Include	Inspiration: 4.83 Usefulness: 4.5

			dedicated for teamwork, and the IdeaSquare team was on the Zoom call, so they could easily be asked questions.	individual mandatory sessions with the IdeaSquare team.	
	Homework and optional task.		Finalize pitch and prototype.		
10	Final pitches and prototypes. 1h15min.	Presenting to a jury what the teams have done.	Each team gave their final five-minute pitches, and there was ten minutes time for feedback.		Inspiration: 4.83 Usefulness: 4.5
	I like I wish participants all together on the programme. 1h. IdeaSquare. (jury deliberations at the same time)	An informal closing session of the workshop.	The participants were given the chance to reflect on what they liked, what they wished would have been different, and what they learned during the past two weeks.	This was a very positive session, and some good feedback for improvement areas was gathered.	
	Closing words. 30min. IdeaSquare and UNIGE.	Formal closing session of the workshop.	Presenting the next steps, meaning the Refine phase, and the teams selected to the Refine phase.		

Table 2: Sessions given in CBIW, in order of giving them.

Lessons learned

Sessions

There was no session on marketing. The organisers of the workshop noticed that some teams had not thought about how to get their message through, and at least two teams mentioned getting help on this topic, that they struggled with, from other teams during the "Challenge swap" session. A more marketing-oriented focus will be given to the session on the deployment context.

Regarding the scores for each session, it seems that the more practical the session was, the higher score it got. For the next GEAR cycles, the sessions that got lower scores will be modified so, that it is easier for the participants to see the immediate benefits of the sessions to their project.

Overall flow of the workshop

In terms of the overall flow of the workshop, some modifications will be made to ensure that each area can be worked on for enough of time. Normally a design process is iterative, going from interaction with stakeholders to product design, prototyping, and pitching, in non-linear circles. A longer duration of the CBIW will allow more time for iteration, and for the following GEAR cycles the timing of each session will be reflecting this.

The participants self-evaluated their skills in prototyping in the starting questionnaire. The average answer was 2.73 (n=15, scale 1-5). On top in the oral feedback two participants mentioned they would have liked to understand prototyping better earlier, in order to be able to do more. For the next GEAR cycle an introduction to prototyping session will be organized already before the CBIW. This will give the participants a better understanding of what prototyping is, and the ability to find the needed competences or procure the needed materials in advance. It cannot be expected that all participants understand what prototyping is, and thus without the introduction they will not be able to identify their needs. The participants will also be given instructions to do a preliminary stakeholder map as part of their pre-task on identifying three expert profiles, in order to ensure that they start interacting with the key stakeholders early on, as suggested by the Crowd4SDG advisory board.

4.2. Evaluating the projects, communication, and support

The evaluation criteria the jury used to evaluate the projects were:

- Novelty: Is the pitch based on a new idea or concept or using existing concepts in a new context?
- Relevance: Is the proposed solution relevant to the problem the team is aiming to solve?
- Impact: Does the potential impact of the solution justify the effort and costs that the project requires to be implemented?
- Feasibility: Based on the team and the plan forward, how convinced are you that the solution will be implemented?
- Crowdsourcing: Is there a meaningful crowdsourcing component?
- Communication: Was the team able to present their project in a convincing way?

The evaluation criteria remained essentially the same as for the Evaluate phase. The difference was that the wording of the criteria was changed, so that it would leave less space for interpretation.

In order to gather feedback, the teams were asked, after each day, to give their likes and wishes on a dedicated Slack channel. There were also separate Slack channels for each team, in which they could ask directly from the organisers, for general chat about the programme, for sharing materials, and for "watercooler chat". The different data and deliverables were gathered through e-mail and Slack. This included the Impact Canvases made (Annex 6), the communications materials detailed in the Deliverable 6.4, the final presentation slides, and pictures of prototypes. The material shared was the presentation slides and the tools given for homework, such as materials for the "I like I wish" sessions, impact canvas, videos for inspiration, and template for stakeholder mapping.

For the purpose of promoting the GEAR cycle and the CBIW, as well as for the benefit of the participants, several requests for communications material were made to the teams. The final communications materials were a one pager per team, videos of work done and the prototypes, and recordings of the final pitches. In order to create the one pagers and the videos, the teams were asked to provide:

- Portrait style pictures along with country and city of residence;
- One image or drawing representing the project best;
- Final name of the team;
- One tagline of the objective of the project starting with a verb;
- Three unedited videos, one of the solution, one of the prototype, and one on the experience of the programme.

Additional support was available for the teams in many ways. The teams were told that they can contact the organising team at any time. Most of the mentors ended up having more interaction than what was asked from them. The way to communicate with the mentors was left for the mentors and teams to decide. For prototyping, the teams needed the most help with their limited understanding of computer science. A team of computer scientists was gathered on the spot to support the teams. As the time was limited, no functional prototypes were made, but the focus was given on creating an understanding of the feasibility, methods, and costs of implementing the proposed solutions. For the citizen science tools, the most knowledgeable individuals from within the consortium were asked to have calls with the participants.

Lessons learned

Evaluation of teams

The downside with the selected learning outcomes was that they are hard to measure. For the next iterations, the evaluation questionnaires, shall ask the participants to self-evaluate their skills on each of the learning outcomes before and after, or to self-evaluate their progress in the final questionnaire.

Communications material

The time needed for creating the communications material needs to be taken into account in the planning of the CBIW. In the first edition, creating the videos proved difficult. The participants did not prioritise this task, and when they did deliver, the sound and image quality were often poor despite of the clear instructions on how to ensure quality.

Feedback

For the first week, having feedback on the Slack channel worked, but on the second week, it could be seen that the participants started to be under a too big workload, and the amount of written feedback drastically diminished. For the next GEAR cycle, ten minutes will be dedicated at the beginning of each day for feedback.

Interaction between organisers and the participating teams

Very few teams used the option to contact the organising team for challenging questions or more than three times. Dedicated sessions could have been made for discussions without a pre-defined topic with the teams, throughout the programme.

Gathering deliverables could have been done in a more concentrated way, for example through asking the teams to upload their deliverables to a dedicated folder in a cloud-based platform. The sharing of materials to the participants on Slack worked well but considering that also different communication materials created by the organising team were shared to the teams, this could have also been done on a cloud platform.

5. After CBIW

When the workshop ended, the participants were awarded diplomas, if they had participated in at least 80% of the common sessions (individual) and done all of the tasks given to them (team). The participants were also asked to fill in a final survey after the last session.

Lessons learned

In order to follow better the process that the teams went through, it would have been good to have specific deliverables tied to all of the homeworks given. The different deliverables were asked to be sent either on Slack or through e-mail, which resulted in difficulties with having everything in one place. For the next cycles, all deliverables will be asked to be uploaded to a specific folder for each deliverable by the teams themselves.

6. Discussion and evaluation of the CBIW

Having a virtual format created a situation in which potential participants had quite equal possibilities to participate. Instead of having to travel to Geneva, it was enough to have either a mobile phone, tablet, or computer, and an internet connection. However, there were also

downsides to the virtual format. Having participants from time-zones from the Americas to the East coast of China made it impossible to find a timeslot convenient to all. A time that was early in the morning for the Americas, and late in the evening for China, was chosen. Second challenge related to the virtual format was connection issues: some participants had continuous issues with their internet and how well Zoom, the platform used, worked. For some participants, it was not possible to gain access to better internet even with the offered monetary support. The issue of Zoom not working properly in all countries, China in this case, arose too close to the start date in order to learn to use a new platform effectively for the workshop. For the next iterations, there will be fewer common activities per day, leaving more options to find a suitable timeslot for teamwork. Due to the issues with Zoom, other platforms will be looked at in order to determine if there is a suitable one that would work across the globe.

In the first GEAR cycle, the participants were all students. In the upcoming ones, the target group will be enlarged. This brings an opportunity to have even more diverse teams in terms of age and background. Even though the participants were all students, they still had different levels of experience in using Zoom and Slack. They had also variable knowledge of the design thinking -based methods, which showed in some teams being able to understand the given directions easier than others, who needed additional support. It will be looked at, whether optional sessions on the use of tools or on the daily tasks should be organized.

Although diversity is good for innovation, it is likely to result in language barriers, due to different levels of English and different disciplines studied. A conversational level of English will be expected in order to participate in the next GEAR cycles. It would also be good to match the native language spoken by the teams with the native language spoken by their team mentor, when possible.

As the CBIW is a voluntary workshop and not a part of a participant's daily routine, spending the necessary time on the CBIW is a big commitment. Although the participants agreed to be available for at least 40 hours during the two weeks, and to participate in all common sessions, this did not in practice happen. This was reacted to through requiring each team to have at least one representative in each session. In the team contracts that each team wrote, they specified a project manager, who was then responsible for making sure that the learnings were relayed forward within the team. Those who were not present for at least 80% of the sessions did not receive a certificate of participation (two people).

For the upcoming cycles, especially as the participants are no longer only students who are often more flexible with their usage of time than other groups, the lengthened duration will help to spread out the workload, and thus to integrate it with other responsibilities participants might have. However, the total workload will not become less, quite possibly even more should the participants choose to spend more time on their projects between sessions, as there is more time available between the sessions.

Through the three questionnaires, the dedicated Slack channel, and oral feedback, it becomes clear that the participants appreciated the effort the organisers put in. The participants thanked the availability and the willingness to help the teams also outside the common sessions. The atmosphere of the sessions remained positive and informal, although towards the end some tiredness could be seen. The participants appreciated the direct and sometimes even harsh feedback they got. The pitching training was seen as excellent.

"I think I take a while getting comfortable speaking to people, and I managed to do because it was a really cool atmosphere." – Anonymized final questionnaire.

The participants enjoyed interacting with other teams. The participants wished for more time for in-depth conversation with the organisers. The participants felt like there was not enough

time for reflecting on what they learned and the feedback they got, and for incorporating it in their projects. Also, this will be helped by making the workshop duration longer.

Regarding the overall flow of the workshop, the participants stated they understood the flow and it worked well. However, many wished that some sessions would have been earlier: the introduction to prototyping could have been before the workshop started, the translation could have been opened up during the first week, and the teams would have benefitted from starting with interviewing people already before the CBIW. There was no feedback on any session being superfluous. There were, however, wishes that some sessions would be added, marketing and user retention were not given a dedicated session. These topics came up in the feedback the teams got, but there could have been more time dedicated for going through different ways to engage with the users once the project is launched.

As learnings, the participants mentioned having improved their self-efficacy, learning to think critically, and how to consistently work on a project.

"I have started thinking critically. I never cared about it much but now after the workshop and because we had to brainstorm about the idea and the project and its implementation, my brain now switches to the critical thinking mode automatically and that applies to anything that I read or watch or come across." – Anonymized final questionnaire

In the starting questionnaire, the participants were asked to rate their understanding of how they can contribute to SDGs, their ability to prototype, their ability to pitch, and their confidence in launching the project. The same questions were asked again, after the two weeks. The results are presented in Table 3 below. Based on them, the participants felt they had improved in all of the areas concerned. It can be said that especially the prototyping exercises helped the participants to learn.

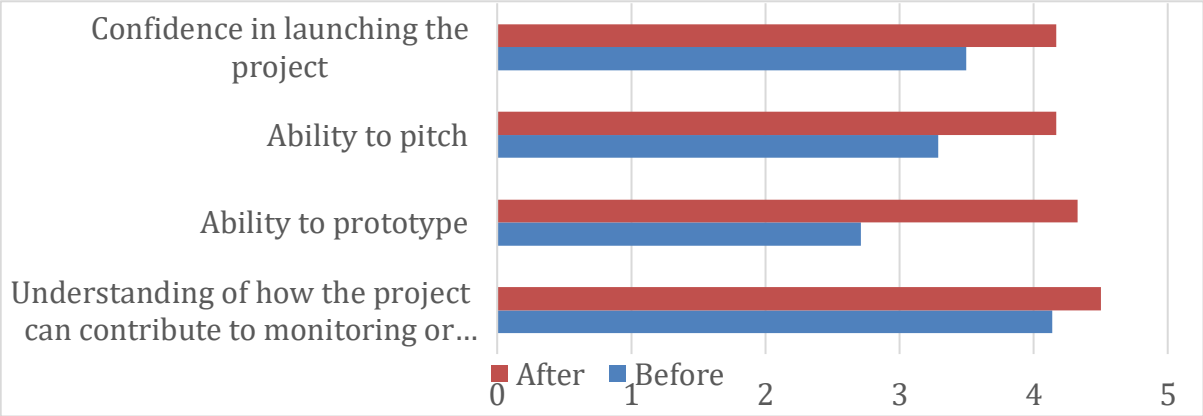

Table 3: Results of starting (n=14) and ending (n=6) questionnaires.

All in all, the different sessions can be seen as having been inspirational and useful for the participants. The evaluations, presented in Table 2, are with one exception between 4 and 5 for both inspiration and usefulness, on a scale 1-5, where one is not very inspiring / useful and five is very inspiring / useful. The qualitative feedback also suggested that the flow between different activities was rather clear, although some changes could be made.

7. Conclusion and Outlook

The first edition of the CBIW can be seen as a success: the feedback and evaluations given ranged from good to excellent. The time spent on each activity and the order of activities need to be revised, and the clarity of all instructions, given before and during, needs to be looked at. There is room for improvement for next GEAR cycles, but that is exactly the point of having three instead of one.

I am able to be more myself, also, the workshop pushed me to work and search harder, think outside the box. – Anonymized final questionnaire

Annex 2: Starting questionnaire, week 1 evaluation, week 2 evaluation, end questionnaire

A questionnaire to get us started.

This questionnaire is divided in two parts. The first is to help us set up the CERN workshop so that it best benefits you and your project. The second part is to help us evaluate afterwards how useful it was for you. None of this is to evaluate you, but rather to help us help you. The results will also be highly beneficial to the cohorts coming in the next years. In case you have any questions, feel free to contact me on Slack or at jane.doe@mail.com Thank you for taking your time to answer!

1. What's your first and last name? *
2. Which team are you a part of? *
3. Where will you be located during the CERN workshop? This is to know the time zones we should plan for. *
4. Are you going to be able to work with your teammates physically, or only virtually? This is to plan how we can support you best. *
5. During the time leading up to the CERN workshop, how much time are you planning to spend on your project per week? (23.11-15.1, not counting in the Christmas week) *
6. Multiple choice: 1-2 hours per week, 3-8 hours per week, more than 8 hours per week
7. Why did you decide to participate in the CERN workshop? *
8. Why did you decide to participate in the CERN workshop? *
9. Multiple choice, choose several: Personal learning, Curiosity, To work on my project, To do something fun, To meet new people, To have a better chance at creating real impact, or Other (What)
10. What would you personally like to achieve or learn through the CERN workshop? *
11. What kind of concerns do you have? For example, combining personal life / work with the programme, team dynamics, poor internet connection... *
12. How would you rank your understanding of how your project can contribute to monitoring or achieving the SDGs? (depending on the focus of your project) *
    a. Scale 1-5: Unsure – Very clear
13. What do you think CERN does, in one sentence?

Part 2: Baseline assessment

14. How good are you at prototyping?
    a. Scale 1-5: I don't know anything about prototyping – I know what prototyping is used for and know how to create prototypes
15. How good are you at pitching?
    a. Scale 1-5: Not good at all – Able to convince any audience
16. What is your personal definition of citizen science, and how, based on that definition, will citizen science be used in your project? Please don't Google and copypaste, but instead open your own view of citizen science.
17. How confident do you feel in launching your project?
    a. Scale 1-5: Not confident at all – Very confident

Crowd4SDG - CERN Workshop - 1st week evaluation

This evaluation form is dedicated to gather your feedback as participant to the 1st week of the CERN workshop as part of the Crowd4SDG project. Thank you in advance for taking the time to fill the questions. This will help us and those who will join us for the following editions of the workshop.

* Required

Activities related to supporting the dynamic in your team and in the overall group (intro session, getting to know each other, courage to speak)

1. Did you feel inspired by these activities? *

Mark only one oval.

	1	2	3	4	5	
not very inspired	◯	◯	◯	◯	◯	very inspired

2. How useful did you find these activities? *

Mark only one oval.

	1	2	3	4	5	
not very useful	◯	◯	◯	◯	◯	very useful

3. What are your I like/I wish/ I learned on these activities?

Stakeholder mapping activity

4. Did you feel inspired by these activities? *

Mark only one oval.

	1	2	3	4	5	
not very inspired	◯	◯	◯	◯	◯	very inspired

5. How useful did you find these activities? *

Mark only one oval.

	1	2	3	4	5	
not very useful	◯	◯	◯	◯	◯	very useful

6. What are your I like/I wish/ I learned on these activities?

Activities related to pitching

7. Did you feel inspired by these activities? *

Mark only one oval.

	1	2	3	4	5	
not very inspired	◯	◯	◯	◯	◯	very inspired

8. How useful did you find these activities? *

Mark only one oval.

	1	2	3	4	5	
not very useful	◯	◯	◯	◯	◯	very useful

9. What are your I like/I wish/ I learned on these activities?

Activities related to prototyping

10. Did you feel inspired by these activities? *

Mark only one oval.

	1	2	3	4	5	
not very inspired	◯	◯	◯	◯	◯	very inspired

11. How useful did you find these activities? *

Mark only one oval.

	1	2	3	4	5	
not very useful	◯	◯	◯	◯	◯	very useful

12. What are your I like/I wish/ I learned on these activities?

Activities related to building knowledge on SDGs and impacts

13. Did you feel inspired by these activities? *

Mark only one oval.

	1	2	3	4	5	
not very inspired	◯	◯	◯	◯	◯	very inspired

14. How useful did you find these activities? *

Mark only one oval.

	1	2	3	4	5	
not very useful	◯	◯	◯	◯	◯	very useful

15. What are your I like/I wish/ I learned on these activities?

Skip to question 16

How did the activities build up between each others?

In this section, we are interested to collect your feedback on how the different activities mentioned above built on each other.

16. I like / I wish / I learned...e.g. i) I like that the activity on xxx came early in the process ii) I wish that the activity on xxx was presented before activity on yyy iii) I understand the logic / I don't understand the logic

Crowd4SDG - CERN Workshop - 2nd week and final evaluation

This evaluation form is dedicated to gather your feedback as participant to the 2nd week of the CERN workshop as part of the Crowd4SDG project. We have combined it with the final evaluation for the entire 2 week programme. Thank you in advance for taking the time to fill the questions. This will help us and those who will join us for the following editions of the workshop.

* Required

Skip to question 1Skip to question 1

Activities related to supporting the dynamic in your team and in the overall group (sharing team challenges, virtual visit of IdeaSquare)

1. Did you feel inspired by these activities? *

Mark only one oval.

	1	2	3	4	5	
not very inspired	◯	◯	◯	◯	◯	very inspired

2. How useful did you find these activities? *

Mark only one oval.

	1	2	3	4	5	
not very useful	◯	◯	◯	◯	◯	very useful

3. What are your I like/I wish/ I learned on these activities?

Activities on interconnections and interviews with stakeholders

4. Did you feel inspired by these activities? *

Mark only one oval.

	1	2	3	4	5	
not very inspired	◯	◯	◯	◯	◯	very inspired

5. How useful did you find these activities? *

Mark only one oval

	1	2	3	4	5	
not very useful	◯	◯	◯	◯	◯	very useful

6. What are your I like/I wish/ I learned on these activities?

Activities related to pitching

7. Did you feel inspired by these activities? *

Mark only one oval.

	1	2	3	4	5	
not very inspired	◯	◯	◯	◯	◯	very inspired

8. How useful did you find these activities? *

Mark only one oval.

	1	2	3	4	5	
not very useful	◯	◯	◯	◯	◯	very useful

9. What are your I like/I wish/ I learned on these activities?

Activities related to translation

10. Did you feel inspired by these activities? *

Mark only one oval.

	1	2	3	4	5	
not very inspired	◯	◯	◯	◯	◯	very inspired

11. How useful did you find these activities? *

Mark only one oval.

	1	2	3	4	5	
not very useful	◯	◯	◯	◯	◯	very useful

12. What are your I like/I wish/ I learned on these activities?

Activities related to planning and next steps

13. Did you feel inspired by these activities? *

Mark only one oval.

	1	2	3	4	5	
not very inspired	◯	◯	◯	◯	◯	very inspired

14. How useful did you find these activities? *

Mark only one oval.

	1	2	3	4	5	
not very useful	◯	◯	◯	◯	◯	very useful

15. What are your I like/I wish/ I learned on these activities?

Activities related to mentoring

16. Did you feel inspired by these activities? *

Mark only one oval.

	1	2	3	4	5	
not very inspired	◯	◯	◯	◯	◯	very inspired

17. How useful did you find those activities? *

Mark only one oval.

	1	2	3	4	5	
not very useful	◯	◯	◯	◯	◯	very useful

18. What are your I like/I wish/ I learned on these activities?

Skip to question 19

How did the activities build up between each others during this 2nd week?

In this section, we are interested to collect your feedback on how the different activities mentioned above built on each other.

19. I like / I wish / I learned...e.g. i) I like that the activity on xxx came early in the process ii) I wish that the activity on xxx was presented before activity on yyy iii) I understand the logic / I don't understand the logic

This part is for checking with the baseline assessment you shared with us prior to the CERN workshop

20. What did you personally achieve or learn through the CERN workshop? *

21. What issues did you have during the programme? For example, combining personal life / work with the programme, team dynamics, poor internet connection... *

22. After the 2 week workshop, how would you rank your understanding of how your project can contribute to monitoring or achieving the SDGs? (depending on the focus of your project) *

Mark only one oval.

	1	2	3	4	5	
Unsure	◯	◯	◯	◯	◯	Very clear

23. How good are you at prototyping after the 2 week programme? *

Mark only one oval.

	1	2	3	4	5	
I don't know anything about prototyping	◯	◯	◯	◯	◯	I know what prototyping is used for and know how to create prototypes

24. How good are you at pitching after the 2 week programme? *

Mark only one oval.

	1	2	3	4	5	
Not good at all	◯	◯	◯	◯	◯	Able to convince any audience

25. How confident do you feel in launching your project, after the 2 week programme? *

Mark only one oval.

	1	2	3	4	5	
Not confident at all	◯	◯	◯	◯	◯	Very confident

26. Has your personal definition, now after the two week programme, changed? If yes, how?

Annex 3: Team one pagers

Crowd4SDG

Providing an easy to use and customisable data quality control service to flood forecasting centers

Objective of the project

Potamoi wants to optimize the process of cleaning hydrological data in order to allow the improvement of flood forecasts and, consequently, reducing the number of deaths from floods and damaged properties.

Problem addressed

Current flood forecasting systems are highly based on machine learning algorithms, consequently, the high quality and the large quantity of data available become indispensable for the proper execution of a flood forecast. However, the required cleaning process and data integration are costly and laborious, mainly for flood forecasting, where we have a real-time hydrological data collection system feeding the forecast models. The lack of infrastructure in poorly developed regions makes it impossible to access modern equipment necessary for data integration, stocking, and collection. Besides the lack of investments in personnel and the absence of dedicated permanent staff. There are few experts employed in the sector, and there's an even higher workload for rescue and post-disaster activities during major flood events. According to a survey led in 2020, 74% of the forecasting personnel confirm that their centers "do not have the experts and staff capable of integrating data, performing forecasts, and disseminating information." Unfortunately, these limitations delay the flow of data for forecasting and storage in historical databases. The results of this are detrimental, the accuracy of flood forecasts is reduced, the models are limited to short-range forecasts and the development of forecasting techniques is limited due to gaps in historical databases. In other words, more lives are at risk, and less time is available to prepare for a flood.

Solution proposed

Potamoi is a service that provides data quality control, it manages the data flow between data collectors and machine learning models. Our service focuses on providing an easy-to-use and highly customized data cleaning and data integration pipeline, it ensures data validity and completeness, statistical quality and missing values restoration. Potamoi wants to facilitate access and customization of data cleaning pipelines by outsourcing the data quality control process. In a way that the process is cheaper, because it does not require internal development, and fast, because it has an availability that supplies the collection and processing service of the forecast center in which the latter alone cannot handle. Potamoi also provides an interactive user interface that allows the user to customize their data cleaning pipeline according to their needs, without requiring a high level of knowledge on the subject. In addition to optimizing the data reporting cycle and analysis.

Expected impacts

The flood forecasting centers will not have to increase their staff, hire new specialists or relocate professionals who are working in other emergencies during the flood seasons. The use of an outsourced service will reduce costs related to employees, hours of work and infrastructure. The local system does not need to have the necessary infrastructure to maintain the flow without gaps, Potamoi's outsourced system will contribute with richer data and will not have gaps in sending clean and processed data. When improving data entry after adequate quality control, forecasting models are expected to perform better, therefore, more lives could be protected.

Current state of development and What is the project looking for?

We're currently working on Potamoi CS, as our prototype, which is an intuitive and easy-to-use data cleaning API for citizen scientists that wish to prepare their datasets for model training, exploratory analysis and research. This intends to be a service, where users can prepare their datasets for a range of different applications with the click of a button. Potamoi CS also allows the user to store the cleaned dataset at our databases, so that other users could have access to a catalogue of cleaned datasets for free, empowering the pillars of citizen science. Note: Fundamentally Potamoi CS is a simpler version with a few limitations of Potamoi, without the complexity and personalization that Potamoi provides for each forecast center contract service.

Contacts

We are a team of 4 students with experience in complementary areas, such as data science, econometrics, computer science and sustainable development. If you are interested in knowing more about the project, check our documentation (in progress) and our animation. - *Paris Morfo*
parismorfoochristofidis@gmail.com

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Crowd4SDG

An initiative to empower and provide safe water from rain

Objective of the project

Secure drinking water for vulnerable communities or people invisibilized by public policies through a simple, creative, and effective solutions.

Problem addressed

Brazil is one of the 15 richest countries in the world, yet, there are more than 35 million Brazilians without access to safe water for human consumption. One hundred million Brazilians lack access to sanitation and 233.000 people, 50% of which are less than 5 years old children, are hospitalized annually due to contaminated water.

The first implementation area of the project is the Jardim Gramacho, located in the municipality of Duque de Caxias, in the state of Rio de Janeiro State in the South-east region of Brazil. For three decades, this neighborhood was the largest dumping ground in Latin America. Currently, its households lack water plumbing, sanitation, and even bathrooms; a reality that has repercussions on the low income and education of its population, not to mention the violation of women's rights.

Solution proposed

The goal to change this reality motivated us to create the Thousand Waters project, a 1.000L rainwater harvesting and purification system designed for community use. The purification system consists of two main parts: first, pipes are used to harvest the rainwater, which are filtered by two hollow membrane filters in order to guarantee a safer water supply. As an alternative to the 1.000L tank, we have also foreseen a compact version of a 50L tank, which takes up less space and provides quality water in a smaller reservoir, ideal to more populous and denser communities.

Additionally to the tanks, the project plans to distribute an educational and disinfection kit along with an app to strengthen the communication with the families impacted by the solution. The system will allow monitoring and data collection, ensuring its sustainability on the quality of the water and meet the needs of its beneficiaries.

Expected impacts

We estimate that one full 1.000 L system can supply up to 10 people for 20 days without rain, considering that each person consumes, 5 L of water per day for drinking and cooking. Therefore, the 50 L version shall supply enough water for a family of 5 people for 10 days. With 50 systems in hand, we hope to impact 175 residents of Jardim Gramacho.

Through the Thousand Waters project we expect to reduce the rates of contamination by waterborne diseases, consequently improving the community health and well-being additionally to savings on water service costs. In the long term, we hope to increase children's schooling rates, house income, since mothers would not need to miss work due to children's health problems, in addition to promoting urban water resilience of communities.

Current state of development and What is the project looking for?

The proposal is currently in its ideation and prototyping phases. We are currently looking for partnerships and investors who can help us to test the protypes and develop a first social-environmental impact.

Contacts

Facebook: https://www.facebook.com/aresilientes
Twitter: https://twitter.com/AResilientes

Crowd4SDG

To See To Care

A platform to inform and form climate change action

OBJECTIVE OF THE PROJECT:

The project aims at raising awareness of climate change and at encouraging more climate actions. In its initial stage, it is targeting those already aware of climate issues with the ultimate objective of influencing the general public.

Problem addressed

Unprecedented emissions of greenhouse gas have triggered climate change, which poses a series of threats including sea level rising, compromised food security, increased inequality, etc. The estimated costs amount to trillions of dollars, and millions are to be affected. However, despite the severity, people are not keeping emissions in check, and failing the goal of the Paris Agreement.

Solution proposed

To See To Care is an app that aspires to be part of the solution to climate change by creating an informed and vibrant community through two main functions:

- First, it visualizes specific outcomes of climate change on a map. This shows exactly what will happen triggering reactions amongst those at risk.
- Second, it provides a platform for users to communicate and socialize. Users are able to share stories and ideas on climate change, initiate online and offline non-profit activities, compete on practicing daily climate actions, etc.

Expected impacts

In general, the project is expected to encourage more people to participate in climate actions more actively and push the governments to make responsible choices. In this way, climate change and its disastrous outcomes will be alleviated. These impacts can be partially quantified by monitoring user data flow and analyzing the scales and the effects of the activities it helps organising.

Current state of development and What is the project looking for?

A prototype has been created, and plans for getting funded have been laid in view of the launch of the project. At the current stage, the project requires i) experience in creating an advanced prototype with actual coding and ii) funders that are willing to support this project.

Contacts

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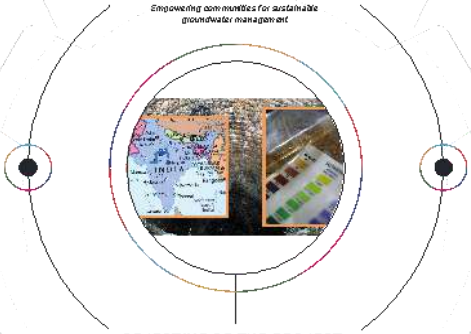
Crowd4SDG

Empowering communities for sustainable groundwater management



OBJECTIVE OF THE PROJECT:

The objective of our project is to further the principles of United Nations' SDG 6, by setting up a model for monitoring groundwater quality, to empower users, allow for potential policy change and better water infrastructure. Our target population includes rural communities in India that are heavily dependent on groundwater supplies.

Problem addressed

In a population of 1.39 billion in India, nearly 80% rely on groundwater for everyday use. Groundwater water quality assessments are carried out yearly in India. Illnesses associated with fecal contaminants, heavy metals and diffused pesticides are far more frequent, with remediation delayed by long. Very often, communities remain unaware and have generalized health concerns that are preventable. The current system of monitoring can do with some change, especially in terms of regularity. Our project aims to tackle this dearth of knowledge and data, through a model based on joint action.

Solution proposed

Our solution is envisioned to be carried out in two broad phases:
Phase 1 begins by initiating dialogue within the target community about the purpose of a groundwater quality monitoring system; followed by basic training workshops. An initial assessment of the area is performed in collaboration with the volunteers, identifying the most prevalent contaminants through the use of probes and testing kits. This, accompanied by relevant crowdsourced data would be analyzed, and parameters for long term monitoring determined. Phase 2 sees routine water quality tests conducted independently by the community, alongside systematic data reporting. Where feasible, remote sensing probes will also track water quality. A cloud-based setup enables sharing of the data generated on a public-platform. Users are notified of potentially dangerous readings via app/SMS alerts.
Once the system is established and functional, implementation of remedial measures, modes of augmenting existing water supplies through conservation techniques and reuse of greywater is considered, suited to resource availability.

Expected impacts

Prevention of health concerns (ideally both short and long term) through the consumption of contaminated groundwater, is our aim. In a country where approximately 27 million wells serve as sources of drinking water for 85% of the nation's population, an efficient system of monitoring is a necessity. We sincerely believe that conversations about water quality would eventually lead to better attempts at management of water reserves. We hope to widen our scope as we go and reach out to communities that can benefit from such a system in place.

Current state of development and What is the project looking for?

The first prototype and software proof of concept have been developed. We have also established connections with key contacts working in the field for support. Currently, we are looking for local NGOs/activists to pick pilot location, as well as mentor(s) to guide on-field implementation, besides capital.

Contacts

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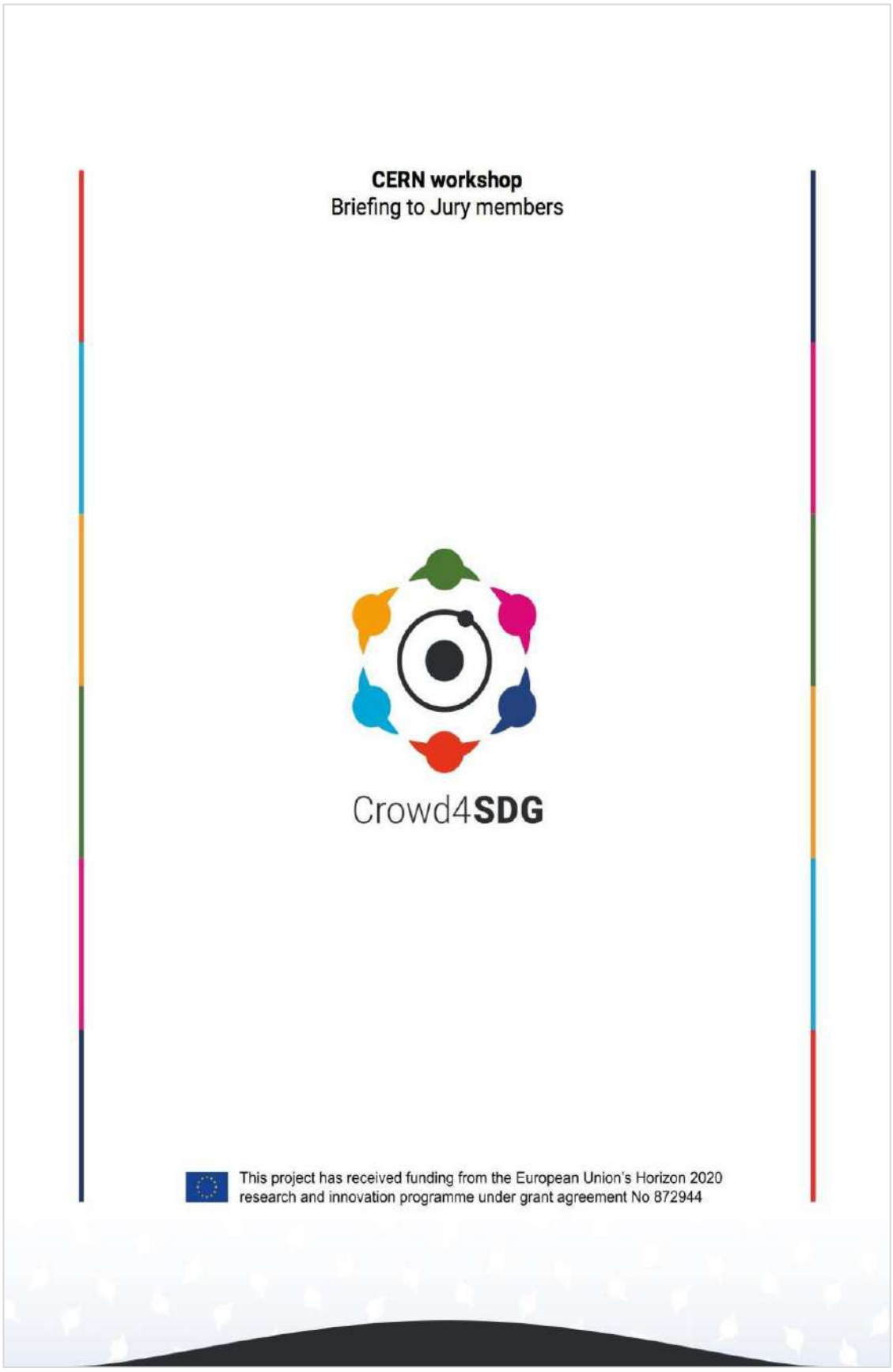
Arushi Malhotra (mymail97em@gmail.com) and
Ellie Rubinstein (ellie.rubinstein18@gmail.com)

Annex 4: Briefing to jury members, including bios of jury members



Crowd4SDG **CERN workshop** - Briefing to Jury members

Dear Jury Members,

Thanks for having accepted to join us for an online jury session scheduled from 13.00 to 16:00 Geneva (CET) time on Friday 29 January 2021.
Your role will be to select two teams to move forward out of five teams that will pitch in front of you on this day. This document is designed to give you the information you need to make the most of this experience.

Who are these teams?
There are teams of students aged between 18 and 26 from all over the world who submitted an idea to the challenge posed by the EU funded project Crowd4SDG. The focus is on Urban Water Resilience and how to address it in particular through crowdsourcing. You will see the five solutions are taking very different approaches with diverse level of development maturity and citizen involvement.

What is your role?
Your two main focuses will be:

- to assess the potential of those ideas which might still be at a quite early stage
- to give to the teams ideas on who to approach and what to do next on their implementation path to deliver impacts.

The objective of the Crowd4SDG project is to demonstrate that innovation processes are suited to grow crowdsourcing based ideas into viable solutions that can have a social impact. A particular area of focus is how these solutions can help monitoring or implementing the Sustainable Development Goals (SDGs).

The 2 teams that you will select on the 29 January should also be the best ambassadors of the Crowd4SDG project in this first round of challenge based innovation. Two more will be organised once per year in the next two years. For this, we are eager to also collect your feedback on how to improve our processes to enable even greater impact!

What are the selection criteria?
We will issue an evaluation form for you to fill in whilst listening to the pitches of the teams. The elements that we would like you to reflect upon are (please note that we might still refine the definition of these elements):

- **Novelty**: Is the pitch based on a new idea or concept or using existing concepts in a new context?
- **Relevance**: Is the proposed solution relevant to the problem the team is aiming to solve?
- **Impact**: Does the potential impact of the solution justify the effort and costs that the project requires to be implemented?
- **Feasibility**: Based on the team and the plan forward, how convinced are you that the solution will be implemented?
- **Crowdsourcing**: Is there a meaningful crowdsourcing component?
- **Communication**: Was the team able to present their project in a convincing way?
- **General Feedback**
  - Best advice(s) you can give to this team:
  - People that you are ready to put the team in contact with and why?

How will the evaluation take place?
Here is the draft schedule for the jury session. All times are in Geneva (CET) time. The sessions in red are for jury members only

- 13:00 – 13:15: Presentation of Crowd4SDG project, its objectives and how the jury members can help up to the Trialogue and beyond (François Grey, UNIGE, Crowd4SDG project coordinator)
- 13:15 - 13:30: Tour de table and presentation of the Jury Members
- 13:30 – 15:00: 15mn per team for pitching and Q&As from the jury and for the jury to submit their evaluation forms
- 15:00 – 15:45: Deliberation from the jury to select the two teams to move forward and identify potential resources to be leveraged for all the five teams on their journey from ideas to impact
- 15:45 – 16:00: Announcement of the two teams to move forward and next steps for all the teams

What will happen next?
For you:

- At a day and time to be agreed for each jury member on a bilateral basis (could be already right after the jury session), we would like to record a video interview with material that can be used as part of our project reporting (including your feedback on how we can best prepare the teams to move forward) and communication efforts. This can happen on the same day after the jury session or in the next days so that this exercise stays fresh in your head.
- You are invited on the 18 of March to the next milestone of the Crowd4SDG project, the Geneva trialogue (more information right below)

For the teams:
The two selected teams will be invited to present their ideas at this Geneva trialogue on 18 March. This even is organised to assess the potential of crowdsourding for the SDGs on a broadsense i.e. beyond the Crowd4SDG project. After the end of your jury session on 29 January, the coaching of the teams will consist of finding resources/ support/funding/incubators programmes so that they can develop further their ideas before and after the Geneva trialogue.

What do you need to do before the Jury selection?

- Deadline 27 January NOON: read the briefing note and get back to Romain in case of questions and indicate to him the best 20mn slot for you following the jury session to have a recorded interview.
- Deadline 27 January NOON: Send back the consent forms (Annex 1 on page 4) to Romain filled in and signed by you

Who to contact in case you have questions:
In case of questions, please contact Romain:
r.muller@cern.ch
+41 22 766 45 06

Thank you once again for having agreed to participate to this jury and looking forward to your feedback as well on this first edition of a Challenge Based Innovation workshop in the context of the Crowd4SDG project.

Crowd4SDG **Annex 1** - Consent form to be filled and signed

Open 17 Challenge on Urban Water Resilience: Consent Form

All those participating in the Open 17 Challenge on Urban Water Resilience are requested to read this consent form, before completing, signing, dating and returning it to CERN.

Participant's full name: _____

I hereby authorise the Crowd4SDG consortium partners (hereinafter collectively referred to as the "Organisers") to take photos and record audio and videos of me, including any material incorporated therein (such as text, images or references) in the context of the Open 17 Challenge on Urban Water Resilience taking place between October 2020 and March 2021. This Challenge is supported by the Horizon 2020 Crowd4SDG EU project.

I hereby grant the Organisers a royalty-free license to use my name and image, as well as the aforementioned recordings, in whole or in part, for the purpose of being broadcasted, published and distributed free-of-charge in various media for educational or other non-commercial purposes, such as the Organisers' worldwide accessible websites, social and print media, presentations, and for reporting purposes including project deliverables and scientific publications.

I also acknowledge that the Organisers agree not to use my image for any other purposes than those described in the present consent form without my prior consent.

I further understand and accept that the Organisers bear no responsibility for the photographs and recordings taken by other participants in the Open 17 Challenge on Urban Water Resilience.

Withdrawal and revocation options

You may revoke your consent at any time. To withdraw, please either complete the relevant web form (via ServiceNow) on the Data Privacy at CERN website, or write to CERN's Office of Data Privacy, CH-1211 Geneva 23, Switzerland, providing proof of your identity.

You are entitled to receive a reply to your consent withdrawal request within 90 calendar days.

Date:

Signature:

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Crowd4SDG

Annex 3 - Bios of the jury members 1/4

Dr Belinda Bell, Cambridge Judge Business School

Dr Bell is the Programme Director of Cambridge Social Ventures, at the Cambridge Judge Business School Centre for Social Innovation. Cambridge Social Ventures runs a number of support programmes for social innovators.
Belinda is a social entrepreneur, and has established a range of social ventures including those focusing on finance, ageing and young people. She has acted as a mentor and advisor to many social entrepreneurs and has developed a broad knowledge of business models for social innovation.
Belinda sits on the University's Environment and Sustainability Committee and away from the University is Chair of charity Mermaids which supports transgender, nonbinary and gender-diverse children, young people, and their families and a trustee of international NGO Peace Direct, which supports local peace builders. Belinda's academic research has explored social finance. She holds a professional Doctorate by public works, a Masters Degree in Community Enterprise and a Batchelors degree in Social Anthropology.

www.cambridgesocialventures.org

Ben Costantini, Startup Sesame

Ben Costantini, Founder & CEO, Startup Sesame (France)
Ben runs Startup Sesame, the global network of Tech events. With more than ten years of experience in conference organization, he has one of the most extensive and trusted networks of event founders in the world, representing audiences of 400,000+ attendees.

An expert in the creative and mobility industries, Ben advises entrepreneurs and investors in the early and growth stages of their projects.

He has been involved in the curation of several international conferences and events, such as Midem, Symposium Stockholm's Brilliant Minds, Mondial Tech (Paris Motor Show), and more recently, the first edition of the Hanoi Innovation Summit.

Crowd4SDG

Annex 3 - Bios of the jury members 2/4

Jose Luis Fernandez-Marquez, University of Geneva

Dr. Jose Luis Fernandez Marquez is Senior Lecturer at the Centre Universitaire d'Informatique (CUI – UNIGE), and head of the Geneva-Tsinghua Initiative Accelerator. He has a computer science background, PhD collective artificial intelligence, and wide experience in Citizen Science. In 2011 he joined UNIGE after his PhD defense at the Artificial Intelligence Research Center (IIIA-CSIC).

In 2014, he formally joined the CCL as part of the Citizen Cyberlab EU project. He has a broad experience participating on EU research project such as SAPERE EU FP7, Citizen-Cyberlab EU FP7, DITOs EU H2020, and E2mC EU H2020, and also national projects. He is currently Technical Coordinator of the Crowd4SDG EU Project. His current research focuses on crowdsourcing tools, data quality analysis and methodologies to improve crowdsourcing data quality, and make it suitable for decision/policy makers.

Carmen Galindo Rodriguez, EIT Food

Carmen is Project Manager at EIT Food. She is a seasoned innovation consultant with a major in Agricultural Engineering and certificate on Corporate Finances.

She has been working with startups and other stakeholders all across Europe and the Middle East acting in various technological fields: agritech, food industry, water technologies, waste management, medical devices, Edtech and more.

She has joined EIT Food to lead an unique and ambitions initiative on finding innovative solutions for water scarcity in Southern Europe, and support the creation of synergies with other initiatives.

Crowd4SDG

Annex 3 - Bios of the jury members 3/4

Jose Iglesias, Techstars

I believe entrepreneurship can happen anywhere. So my true passion is to build entrepreneurial ecosystems around the world, connecting entrepreneurs, investors, corporations and cities.

At Techstars, I have the unique privilege to indulge in all the above. Techstars is the global platform for investment and innovation. We have over 2,000 portfolio companies, 48 mentorship-driven accelerator programs in four continents, work with over 70 large corporations and support over a thousand Startup Weekend and Startup Week programs per year.

As Senior Director of Community, I lead a globally distributed team supporting grassroots community and ecosystem engagement across the world, helping to deliver entrepreneurial education & awareness to every corner of the world.

Dorte Riemenschneider, M. Sc., ECSA Managing Director

Dorte Riemenschneider joined the European Citizen Science Association at the beginning of 2018 and was appointed Managing Director.

She completed her Master of Science by Research in Potsdam, Germany, while focusing her research on citizen participation in urban development processes. Prior to joining the Citizen Science Community, she was professionally active in the management at the Museum of Islamic Art in Berlin and in citizens' movements and international non-profit organizations.

At ECSA, she is particularly committed to the sustainable development of the European Platform for Citizen Science

Crowd4SDG

Annex 3 - Bios of the jury members 4/4

Radboud van Kleef, Aquasuite

As Business Developer, Radboud van Kleef is a strategical thinker. He was appointed to build the Aquasuite team as a new product group within Royal HaskoningDHV, to connect with the right partners, and to help Aquasuite grow internationally.

With a unique combination of a solid technical background and strong commercial capabilities, Radboud specialises in business development by designing business roadmaps; and is pragmatic in the execution of operations, delivering value via hands-on involvement.

With an international background working and living in Japan (Tokyo) and the USA (Boston), Radboud has in-depth knowledge of various industries including High-Tech, Semiconductor, Manufacturing, IT, Telecom, Financial Services and Advisory.

Annex 5: Letter of Commitment

LETTER OF COMMITMENT

The CERN workshop

Congratulations! We were delighted to see your pitch as the result of the O17 Water Challenge, and we are ready to help you improve your project during the CERN workshop. To enable a productive collaboration, we have outlined below some of our expectations and ask you to sign and date the attached and return it to us as soon as possible **(latest on 27th December 2020**).

The CERN workshop aims to provide a meaningful and challenging learning opportunity that will help you, the participants to develop further innovative, compelling solutions to societal problems.

As a participant, you are both a learner and a teacher. Your aim is to both learn from and help teach your peers. By working collaboratively and sharing skills and knowledge, we can help your project to succeed.

We expect that all participants will be self-driven learners. While we will provide you with training, mentoring and learning resources, the ultimate success of your project will rest on your commitment to learning the skills that you need, both in and out of class, and on putting in the work.

EXPECTATIONS

We expect participants to commit to the following:

Attendance: coaching sessions will be scheduled for two consecutive weeks starting 18th January and ending 29th January 2021. **Coaching (between 1,5 and 3,5 hours per day) will happen Monday through Friday every day.**

You are expected to participate in all sessions. If you are unable to join a certain session, you must notify the course coordinator in advance of the session. Each session must have at least one person per team present, and during the final pitches on Friday 29th the whole team must be present.

Work outside sessions: all participants will be expected to commit the necessary time to work on their projects through the homework given. This can be a significant outlay of time that needs to be put in on each day following the day's sessions or prior to the sessions of the next day, depending on your timezone. **We are expecting the homework to take between 1 and 3 hours per day.** We're looking for people who are willing to invest the time and energy required to ensure that their project is as compelling as possible.

Completion: in accepting your place on this program, you are committing to participate until the conclusion of the program, and should you be selected to present at the SDG Conference on 18. March 2021, until then.

Timeliness: all participants are expected to complete the required tasks by the due date and to communicate with the program facilitators, collaborators, mentors and peers in a timely manner.

Community: all participants are expected to be good community members. This means providing meaningful and respectful feedback to peers, making an effort to teach as well as learn and to work collaboratively with others.

Help: as part of the program, you will have access to the program coordinators whose role it is to provide help, guidance, feedback and advice. You should feel confident asking them for help at any point during the program. However, we expect that if you are in need of help, you will ask for it in a timely manner.

In total, we are expecting that the programme, including the Zoom sessions and homework, will take at minimum 40 hours per person, divided in two weeks. We understand that this is a significant commitment on your side, but it is what we expect in return for making the same commitment from our side.

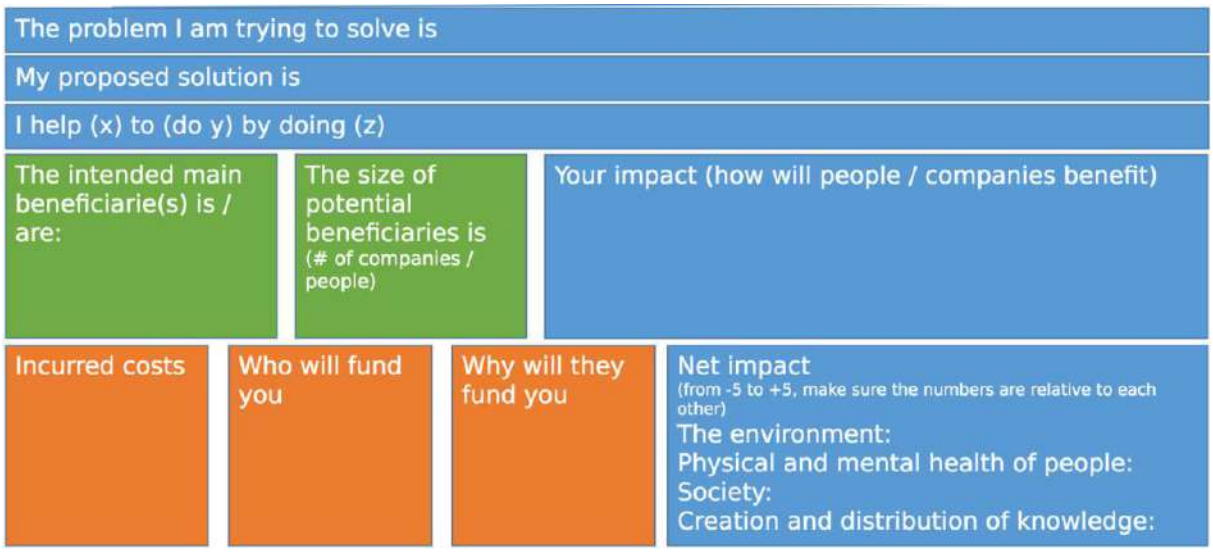
We are thrilled to have you in the program and as part of this experiment. Please sign either physically or digitally and date this form and return it as a scanned pdf or smartphone camera image to jane.doe@org.com latest on **27th November 2020** to signal your commitment to participating.

By signing this document, you also agree to the following privacy policy.

_____ Participant Name

_____ Date

Annex 6: Impact Canvas



Annex 7: List of abbreviations

Abbreviation	Description
CBI	Challenge Based Innovation
CBIW	CBI Workshop organized by CERN IdeaSqaure
CBIWx	CBIW satellite event organized by another institution
CS	Citizen Science
GEAR	Gather, Evaluate, Accelerate, Refine
IO	International Organization
O17	Open Seventeen Challenge (online coaching)
NSO	National Statistical Office
SDG	Sustainable Development Goal