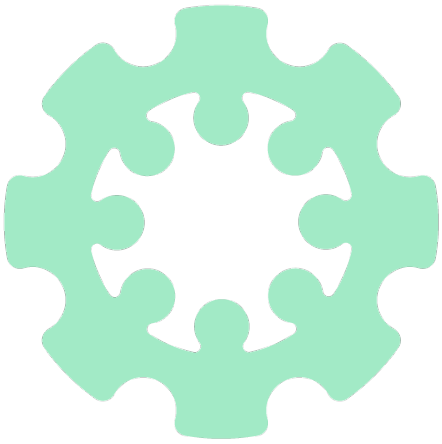
DIGITAL ACTION AT HIGHER EDUCATION INSTITUTIONS AS A CATALYST FOR SOCIAL CHANGE IN THE COVID-19 CRISIS



HEIDI

Higher Education guide for effectively embracing bottom-up Digital Action in Higher Education Practices

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Abstract:	This deliverable synthesises and presents the knowledge gained from IO5. We provide a detailed analysis of the key background characteristics of those who engage in DA at multiple levels through six persona designs and we further present our findings of how different stakeholders perceive the impacts of DA and the major challenges they face as well as the kind of support they need. We finally provide a list of key recommendations for HEIs that can be used to more effectively embrace bottom-up DA practices.
Keyword list:	Digital action; needs; requirements; personas; recommendations; Higher Education Institutions

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Partnership

	Name	Short Name	Country
1	**University College London**	UCL	UK
2	**Citizens in Power**	CIP	Cyprus
3	**Web2Learn**	W2L	Greece
4	**University of Malta**	UM	Malta
5	**Université Paris Cité**	UP	France

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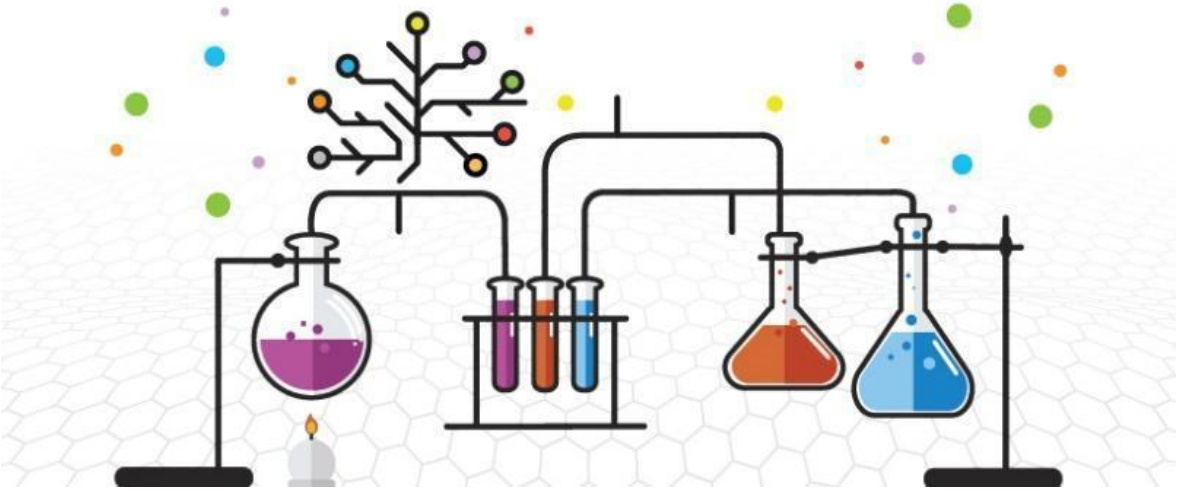

Figure 0.1 - Figure 1

Table of Contents

List Of Figures

List Of Tables

List of Abbreviations

The following table presents the acronyms used in the deliverable in alphabetical order.

Abbreviations	Description
DA	**Digital Action**
HEIs	**Higher Education Institutions**
IO	**Intellectual Output**
UK	**United Kingdom**
FR	**France**
MT	**Malta**
HE	**Higher Education**

Executive Summary

Intellectual Output 5 takes a holistic approach to explore the needs and requirements for successful Digital Action (DA) driven by communities to address societal needs. It subsequently raises awareness, increases the capacity of HEIs in engaging with communities and provides recommendations to inform digital transformation towards this direction. This report synthesises and presents the knowledge gained from IO5. In specific, we provide a detailed analysis of the key background characteristics of those who engage in DA at multiple levels through six persona designs and we further present our findings of how different stakeholders perceive the impacts of DA and the major challenges they face as well as the kind of support they need from mainly HEIs but also other actors. We finally provide a list of key recommendations for HEIs that can be used to more effectively embrace bottom-up DA practices.

1. Introduction

1.1 Scope

Project HEIDI recognised early on that there is a lack of systematic knowledge and evidence on how community groups and citizens shape DAs in collaboration with HEIs to address societal needs; and how this affects the digital transformation of HEIs. Most importantly, there is very little insight into what stakeholders need and require from DA at different stages and how HEIs can support them to more effectively engage in such activities to achieve anticipated impacts. IO5, through a series of mainly roundtable discussions in Malta, France and the UK with voluntary organisations, community groups and members of HEI staff and students, investigated and mapped key background characteristics (including motivations and interests) of these key stakeholder groups. We further investigated how different stakeholder groups perceive the impacts of DA and the major challenges they face as well as the kind of support they need from mainly HEIs but also other actors. This report presents our findings. We further provide a set of vignettes or personas – as important design tools - to assist anyone who designs and runs DAs to consider key information of stakeholder groups. Finally, we provide a list of key recommendations that target mainly HEIs to better embrace bottom-up DA practices.

1.2 Audience

The target audience of IO5 and therefore this report include: HE members of staff (academic and support) across the institution; students at different levels of study from various subjects (BSc/BA, MSc/MA, PhD); voluntary-sector organisations; community groups and members of the public, including marginalised communities. Our target audiences will involve the above mainly in the Partner countries, namely UK, FR and MT.

1.3 Structure

This report has the following structure:

- Section 2 provides essential background information on project HEIDI and links the work described in IO5 with the findings from our other IOs. It further outlines IO5 rationale and objectives and the key stakeholders groups in IO5.
- Section 3 provides a detailed description of our methodology; i.e., how the community groups', voluntary organisations' and HE staff and students' roundtables were designed and carried out to support the identification and mapping of needs and requirements, challenges and DA impacts. Section 3.3 describes in detail the data collection templates for a pre-event participant survey, the roundtable discussion agenda, padlets and the post-event survey.
- Section 4 provides an overview of the data collection and analysis and reviews the role of personas from a methodological point of view.
- Section 5 describes our findings. We start with an overview of our findings from the community groups and voluntary organisations (Section 5.1), then the findings from the HE staff and student roundtables (Section 5.2).
- Section 6 synthesises and summarises our key findings with respect to the following: who participates in DA through a set of personas we have created (Section 6.1); how DA impacts are perceived by our key stakeholders (Section 6.2); what are major challenges (Section 6.3) and what are their needs and requirements (Section 6.4).
- Section 7 provides our set of recommendations to more effectively embrace DA within HEIs.
- Finally, Section 8 includes a concluding summary of this report.

2. Background

2.1 An Overview of Digital Action

Digital Activism is an overarching term covering several types of initiatives. In project HEIDI (IO1A1) we performed an in-depth investigation to identify relevant forms of Digital Activism, or Digital Action (DA), for further analysis and consideration [Zourou, 2021]. We selected to focus on the following DA forms due to their widespread use, their popularity during the pandemic, as well as the growing interest of Higher Education Institutions (HEIs) to invest in them:

Citizen science

Citizen science covers that part of open science in which citizens can participate in the scientific research process in different possible ways: as observers, as funders, in identifying images or analysing data, or providing data themselves. This allows for the democratisation of science and is also linked to stakeholders' engagement and public participation. Because citizen science can make science more socially relevant and increase ownership and participation of citizens in the shaping of policies, it is considered a main form of digital activism.

Maker movement

Maker movement refers broadly to the growing number of people who are engaged in the creative production of artefacts and who find physical and digital forums to share their processes and products with others. It is characterised by three features: the use of digital desktop tools, a cultural norm

of sharing designs and collaborating online, and the use of open-source standards to facilitate sharing and fast iteration. Artefacts issued from 3-D printing, electronics and robotics are typical results of maker spaces (known also as fabrication labs or 'fablabs').

Hacktivism

As this umbrella term implies, hacktivism is hacking to achieve social or political objectives. In this publication we mostly refer to civic hackers, organised groups that perform digital actions such as building and updating digital systems for the good of the community and in a legal manner. Civic hackers deploy information technology tools to enrich civic life, or to solve problems of a civic nature, such as democratic engagement. Hackathons, datathons and annual Open Data Days, are typical hacktivism initiatives.

2.2 Overview of DA Challenges and Barriers: Preliminary Evidence from HEIDI

Not only did the project HEIDI research different forms of DA to identify the most relevant for further analysis and consideration as discussed in the previous section. In Intellectual Output 1 (IO1A2) we also investigated the barriers and drivers for Higher Education (HE) engagement in DA. The project's academic partners (UCL, UM and UP) completed in total 15 roundtables in UK, Malta and France, in which we invited different stakeholders all from the HE community (i.e., students, librarians, members of academic staff, decision-makers and technical staff) to discuss this topic. Table 1 below summarises the main findings from each stakeholder group.

Table 1.1. *Barriers of HE engagement in DA (after McNamara et al. 2021).*

Students' Roundtable	Lack of digital skills and equipment, lack of experience, lack of awareness of DA opportunities, problematic procedures (e.g., ethical approval) and limited or restricted access to governmental data, recruitment (very low turnout rates) for online events, lack of institutional support a visionary approach and participate in such problem-solving activities, language barriers (not being native speakers or fluent in English), cultural issues.
Academic staff roundtable	Digital literacy and social inequalities, lack of trust, lack of DA transferability skills, ineffective communication across academic partners due to different digital tools being used locally, reduced interaction and participation in online events, online fatigue, lack of awareness and understanding of how to be better involved in DA opportunities, lack of funding.
Academic Decision-Makers' roundtable	Accessibility, language barriers (not being native speakers or fluent in English), reduced interaction and participation in online events, digital inequalities within academic community.
Librarians' roundtable	Access to technology, participation inequalities, online training sessions are more demanding to design and run, fatigue, lack of suitable equipment, lack of feedback provision and tailored support.
Technical Staff roundtable	Lack of effective collaboration between HEIs and civil society organisations, bureaucracy hinders many online processes, usability barriers and digital literacy, lack of resources (i.e. mainly digital equipment) and shortage in supply, hybrid mode (i.e. online/offline) found to be a distraction, lack of entrepreneurial initiatives.

As we discuss in more detail in the next section, key stakeholders for IO5, are not only **HE members** (i.e., staff and students) but also **community groups, individual members of the public** and **voluntary organisations** which are key stakeholders in bottom-up DA. Even though stakeholder involvement in IO5 is much broader, to include all main DA actors and not just HEI members, and the fact that IO5 looks beyond barriers to engagement (i.e., explores needs and

requirements and challenges), we still consider the findings summarised in Table 1 above, in the proposed methodological framework (see Section 3).

2.3 Rationale and Objectives

Digital Activism has gained popularity over recent years (Kaun and Uldam, 2017), especially during Covid-19, and there is a growing number of people around the world who have become increasingly aware of or interested in utilising digital technologies for the purposes of achieving social change (Joyce, 2010). Joyce (2010) mentions that despite the popularity of Digital Activism and the increased interest, remains vague in terms of contextualising, framing, constructing, and executing Digital Activism activities. Especially with respect to the types of bottom-up Digital Action (DA) that the project HEIDI investigates, we acknowledged early on into the project that there is a lack of systematic knowledge and evidence with respect to: a. how community groups and citizens shape DAs in collaboration with HEIs to address societal needs; b. how this affects digital transformation of HEIs and c. what are the HE and voluntary groups' needs and requirements for DAs.

The aim of IO5 is to address these gaps and more specifically our objectives include:

a. Through a series of roundtable events in the UK, France and Malta, and a Webinar we investigated community and voluntary organisations' needs and requirements for digital upskilling and relevant HEI support to more effectively initiate and participate in DA.
b. Through a series of roundtable events in the UK, France and Malta, two webinars and an awareness raising film, we investigated the impact on the shape of HE systems and the implications for long-term strategic goals of HEIs for society;

emphasising on how HEIs can more effectively support community-initiated DAs to address local and global issues.

c. Through the data collected in a and b, we synthesise this new knowledge in this report to record the needs and requirements of communities engaged in DA as means to enhance digital transformation of the HE sector and their repositioning as key actors in societal change (see Section 2.5 for a more detailed description of the gaps this report attempts to fulfil).

2.4 Key Stakeholders

Key stakeholders in IO5 include:

a. Community Groups and individual members of the public;
b. Voluntary organisations;
c. HE members of staff and students.

DA stakeholders have different needs and requirements from DA projects and they face different challenges at different project stages. At the same time DA projects may impact those involved in multiple yet different ways.

For example, DA projects most frequently are initiated and run by HEIs, with HE members of staff and students being responsible for: identifying suitable funding; form partnerships with voluntary organisations, volunteers, and others; get ethical approval; organise and manage the project; recruit and retain participants (e.g., community groups or individual members of the public) and so on. Depending on the type of DA, voluntary organisations may: also initiate a project (having also full responsibility of tasks described previously) or – more frequently – participate as partners providing the basis for problem-solving identification with a direct societal impact, participant identification

and recruitment, training, and skill transfer opportunities and so on. Likewise depending on the type of bottom-up DA, community groups and members of the public who participate in DA, may be responsible for: either setting-up or helping to shape the project in a way that benefits their local communities; share their skills, knowledge, and experiences; participate in hands-on activities (e.g., collecting or analysing data, constructing equipment and digital tools) and others.

Stakeholders' needs and requirements may vary, not only, due to the different forms of stakeholder involvement and the key responsibilities they have in DA, but also due to background and demographic characteristics (e.g., educational background, digital skills, experience in running/managing or simply participating in DA). It is therefore logical to suggest that any relevant support - either to overcome various project challenges or simply enable their overall engagement - needs to take this range of needs and requirements into account.

Understanding and mapping these unique characteristics in detail may lead into the design and implementation of more successful DA projects, which will have the potential to maximise societal benefit and impact participants in many positive ways (e.g., improving their knowledge, skills and confidence, addressing local issues, supporting a greater cause participants believe in).

3. Methodology

To achieve the aims and objectives of IO5, we used the following methodology:

3.1 Roundtables for the Identification and Mapping of: Needs & Requirements, Challenges, Impacts (Community Groups and Voluntary Organisations)

HEIDI's academic partners (i.e., UCL, UM and UP) organised three roundtables with **community groups** and **three roundtables with members of voluntary organisations** in the UK, Malta, and France. **The purpose of these roundtables was to investigate and map community groups and voluntary organisations' *needs, requirements* and challenges for bottom-up DA during Covid-19 and the *impacts* as perceived by the participants involved.**

In the recruitment process we mainly targeted community groups and voluntary organisations that already engage in DA. Using mainly social media, phone calls and emailing lists, we further invited to the roundtables people who might be interested in DA but who do not have necessarily prior experience engaging with DA.

To ensure consistency across the data collected throughout all roundtables and further understand cultural, policy, and other contextual differences, all partners followed the same methodological protocol based on a set of templates developed by UCL (see Section 3.1). These included: a. agenda with main items for discussion during the roundtable event tailored to the specificities of each target audience; accompanied by a Padlet for data input directly from roundtable participants; b. pre- and post-event questionnaires (gathering background information from participants and further insight to address the aims and objectives of IO5).

Moreover, to raise further awareness of the outcomes of roundtables' discussion emphasising on digital skills for DA, UCL further organised one training webinar that targeted community and voluntary organisations. In this webinar, recruitment targeted the people who participated in the roundtables as well as additional participants. We particularly targeted voluntary groups such as the Wildlife Trusts by e-mailing their organisers or community managers. We also spread the word to other researchers, e.g. on social media and during other talks to the wider research community.

3.2 Roundtables for the Identification and Mapping of: Needs & Requirements, Challenges, Impacts (HE staff and students)

HEIDI's academic partners (i.e., UCL, UM and UP) organised three roundtables **with HE members of staff and students** in the UK, Malta, and France. **The purpose of these roundtables was to investigate and map HE staff and students' *needs, requirements, and challenges* for bottom-up DA during Covid-19 and the *impacts* on HEIs as perceived by the participants involved.**

For the recruitment of participants, open invitations were sent via email and social media to various groups and academic communities within the academic institutions organising the roundtable. We have also separately contacted the organisers' collaborators and other lists of contacts over the phone, emails and SMS messages, enabling us to further reach out to women and staff from underrepresented communities.

Similarly, to the previous set of roundtables, to ensure consistency across the data collected throughout all roundtables and further understand cultural, policy, and other contextual differences, all partners followed the same methodological protocol based on a set of templates, which were again developed by UCL (see Section 3.1). These included: a. agenda with main items for discussion during the roundtable event tailored to the specificities of this target audience; accompanied by a Padlet for data input directly from

roundtable participants; b. pre- and post-event questionnaires (gathering background information from participants and further insight to address the aims and objectives of IO5).

Based on UCL's prior experience in DA, we had pre-identified a set of issues that within HE settings challenge the design and implementation of DA initiatives; these include the process of HE ethical approval for online DA initiatives (which differs from running offline DA activities, while there is not enough experience and institutional support to enable the growth of DA especially during the pandemic) and within that context engaging particularly with marginalised and hard-to-reach communities. To discuss these two problematic areas in more detail, UCL organised two separate webinars (i.e., 'HEI Ethics for Digital Action during Covid-19' and 'Citizen Science in fragile contexts and with marginalised communities'). Finally, to raise awareness of how HE can effectively engage community groups and voluntary organisations in DA, UCL created an awareness raising video (entitled, *'UCL's services and activities for engaging with voluntary-sector organisations and community groups in DA'*) to showcase HE services and actions in place that specifically aim to better support bottom-up digital action.

3.3 Roundtables Data Collection Templates

3.3.1 Pre-event Participant Survey

Table 3.1 below summarises the main questions asked in the pre-event survey for both the community and voluntary group roundtables.

Table 3.1. Pre-event Survey (Community *Groups* and Voluntary *Organisations* Roundtables).

Themes/Sections	Description of Question	Type of Question

Your background Information	Educational Background	Closed/ 6 Options
	Age Range	Closed/ 5 Options
	Prior experience in DA	Open/ Text for participants to describe their answer
Digital Competence Framework	Communication and collaboration (engaging in citizenship through digital technologies or collaborating through digital technologies)	5-points Likert Scale
	Digital content creation (developing digital content, integrating and re-elaborating digital content, or programming)	5-points Likert Scale
	Problem solving (identifying needs and technological responses, creatively using digital technologies, identifying digital competence gaps)	5-points Likert Scale
DA Prior Experience *(Option to skip this section and go to the next section if participant has no prior experience in DA)*	Have you ever participated in any form of DA?	Closed/ 2 Options
	Types of DA in which you participated	Closed/ 3 Options
	Details of activity spent most time during past year	Open
	Motivations for participation	Closed/ 10 Options based on Haklay et al. 2021
	Hours in total spent in activity	Open/ Text
	Involvement in activity	Closed/ 3 Options
	Involvement in activity per week	Closed/ 5 Options
	Primary purpose of activity	Closed/ 5 Options (with an Other Option provided)
	Stages of DA in which participated	Closed/ 7 Options
	Compensation Received	Closed/ 2 Options
	Receipt of formal acknowledgement/recognition	Closed/ 5 Options
	Training Received	Closed/ 2 Options
Lack of DA Experience *(filled only if previous section was not)*	Major reason having not participated in DA	Closed/ 8 Options
	Interest in participating	Closed/ 2 Options
	Type of projects interested in participating	Closed/ 6 Options
	Potential Time Availability	Closed/ 5 Options

Acknowledging contributions to project HEIDI	Consent	Closed/ 3 Options
	If consent to use name provision of email	Open/ Text

Table 3.2 summarises the main questions asked in the pre-event survey before the HE staff and students' roundtables. Although several of the questions are similar to those in Table 3.2, it should be noted that some were removed (mostly those related to time availability), while we added a few more questions to investigate respondents' perceptions with respect to both organising and participating in DA. Completion of the survey in both cases required less than 5 minutes.

Table 3.2. Pre-event Survey (HE staff and students Roundtables).

Themes/Sections	**Description of Question**	**Type of Question**
Your background Information	Type of HE involvement	Closed/ 3 Options
	Age Range	Closed/ 5 Options
Digital Competence Framework	Communication and collaboration (engaging in citizenship through digital technologies or collaborating through digital technologies)	5-points Likert Scale
	Digital content creation (developing digital content, integrating and re-elaborating digital content, or programming)	5-points Likert Scale
	Problem solving (identifying needs and technological responses, creatively using digital technologies, identifying digital competence gaps)	5-points Likert Scale
DA Prior Experience *(Option to skip this section and go to the next section if participant has no prior experience in DA)*	Have you ever **participated** in or **organised** any form of DA?	Closed/ 4 Options
	Types of DA in which organised	Closed/ 3 Options
	Types of DA participated in	Closed/ 3 Options
	Primary purpose of activity organised	Closed/ 4 Options
	Motivations for participation	Closed/ 10 Options based on Haklay et al. 2021
	Involvement in activity as participant	Closed/ 4 Options

	Stages of DA in which participated	Closed/ 7 Options
	Compensation Received	Closed/ 2 Options
	Receipt of formal acknowledgement/recognition	Closed/ 5 Options
	Training Received	Closed/ 2 Options
Lack of DA Experience *(filled only if previous section was not)*	Major reason having not participated in or organised DA	Closed/ 8 Options
	Awareness of DA in HEI and reasons for not participating/organising DA	Closed/ 12 Options (considering IO1A2 report and barriers identified there)
	Main barriers for volunteer participation in DA	Open/ Text
	Type of projects interested in participating/organising	Closed/ 6 Options
Acknowledging contributions to project HEIDI	Consent	Closed/ 3 Options
	If consent to use name provision of email	Open/ Text

In all pre-event surveys, we evaluated the relevance of the Digital Competence Framework recommendations we made in HEIDI's IO4 deliverable report, especially with respect to skills that involve communication and collaboration, digital content creation and problem solving, which were considered as critical and particularly relevant to the context of DA.

Moreover, in all pre-event surveys we examined participants' motivations as these need to be further taken into account in the context of participants' needs and requirements. For this we used the factors identified in Haklay et al. (2021) and which were extracted from a thorough literature review in the context of citizen science. To ensure we do not restrict participants' responses, we further provided an 'Other' option where they could elaborate further on any additional elements that motivate them to participate in DA.

3.3.2 Roundtable Discussion Agenda & Padlets

All roundtables had a similar discussion flow, following an agenda template and a Padlet for data input, which were designed by UCL. The voluntary and community groups roundtables (as shown in Figure 3.1 below) had the following structure:

- 10 minutes: Introductions, emphasising on participants' prior experience with DA (or lack of);
- 5 minutes: Introduction to project HEIDI;
- 5 minutes discussion with Padlet input on **impacts** of DA;
- 10 minutes: discussion with Padlet input on **challenges** of engaging with DAs;
- 5 minutes: discussion with Padlet input on **Digital Skills** for DA (evaluating HEIDI's IO4 deliverable report recommendations on Digital Skills);
- 10 minutes: discussion with Padlet input on participants **needs** for DA;
- 5 minutes: discussion with Padlet input on the kind of **support** participants need to engage with DA;
- 5 minutes: discussion with Padlet input on the kind of **support** community groups/voluntary organisations need to engage with DA;
- 5 minutes: summary of project's next steps and thanking participants.

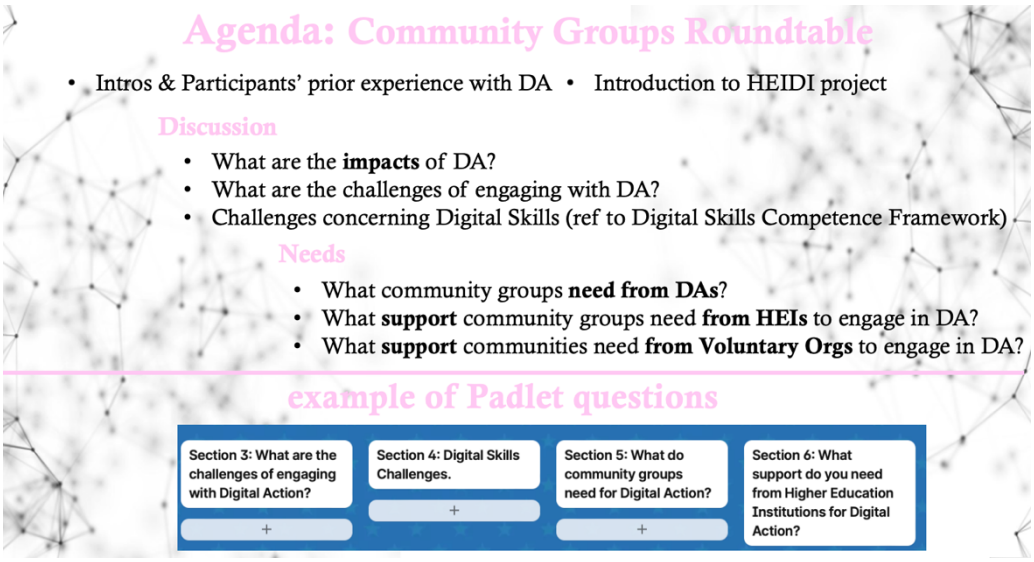

Figure 3.1. Example of Community Groups Roundtable Agenda and Padlet Questions.

For the roundtables with HE members of staff and students, partners followed the following agenda:

- 5 minutes: Introductions;
- 10 minutes: Discussion with Padlet input on **participants' experiences** with DA;
- 5 minutes: introduction to project HEIDI and examples of DA;
- 10 minutes: discussion with Padlet input on **impacts** of DA;
- 10 minutes: discussion with Padlet input on **challenges** of engaging with DAs;
- 10 minutes: discussion with Padlet input on organisers' needs and requirements for DA and on participants' requirements for DA;
- 5 minutes: discussion with Padlet input on needs and requirements for **institutional support** to participate or organise DA;
- 5 minutes: summary of project's next steps and thanking participants.

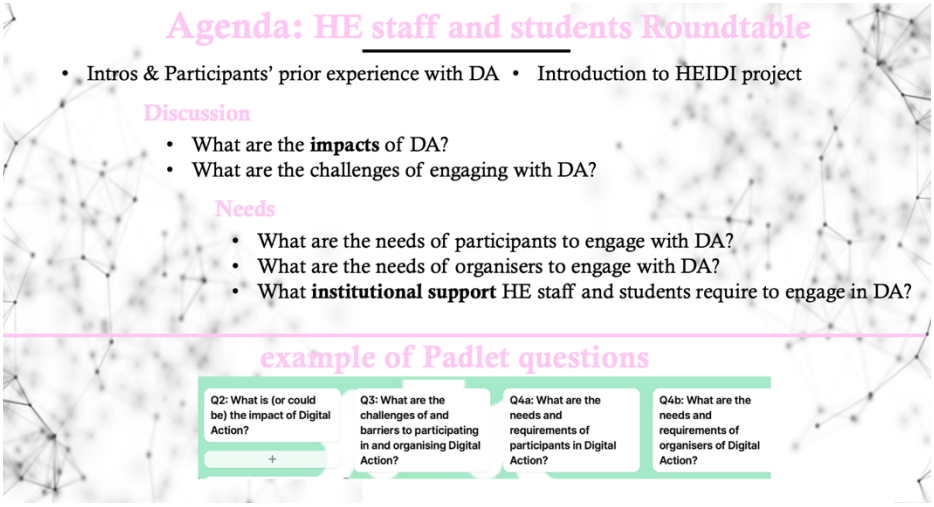

Figure 3.2. Example of HE staff and students Roundtable Agenda and Padlet Questions.

3.3.3 Post-event Survey

Tables 3.3 and 3.4 summarise the main topics the post-event survey covered. We gathered some initial data about their overall impressions and whether the roundtable event met their expectations. We asked them how likely it is to participate in DA projects in the future and the role they would like to have (assuming that some of the participants might have not been aware about bottom-up DA prior to attending the event). We finally provided participants with another opportunity to provide a more informed answer to any barriers, challenges, as well as needs and requirements relevant to them.

Table 3.3. Post-event survey questions (Community Groups and Voluntary Organisations Roundtables).

Themes/Sections	Description of Question	Type of Question
Event Expectations	Roundtable Met Expectations	Closed/ 4 Options
	Roundtable discussion helped to increase motivation/interest in DA	6-point Likert Scale (0 to 5)
Experience with DA	Likelihood to participate DA in the future	6-point Likert Scale (0 to 5)
	Role to take in future DA project as participant/organiser	Closed/ 5 Options (with Other option as text)
	Will you do anything different in the future	Open/ Text

	Barriers discussed during roundtable that are most relevant to you	Open/ Text
	Needs and requirements discussed during roundtable that are most relevant to you	Open/ Text
	Digital Skills discussed during roundtable that are most relevant to you	Open/Text
	Ways to improve skills for DA	Closed/ 4 Options

Table 3.4. Post-event survey questions (HE staff and students Roundtables).

Themes/Sections	Description of Question	Type of Question
Event Expectations	Roundtable Met Expectations	Closed/ 4 Options
	Roundtable discussion helped to increase motivation/interest in DA.	6-point Likert Scale (0 to 5)
Experience with DA	Likelihood to organise DA in the future.	6-point Likert Scale (0 to 5)
	Likelihood to participate in DA in the future.	6-point Likert Scale
	Role to take in future DA project as participant/organiser.	Closed/ 7 Options (with Other option as text)
	Will you do anything different in the future.	Open/ Text
	Type of role to take in organising future event.	Closed/ 3 Options
	Barriers discussed during roundtable that are most relevant to you.	Open/ Text
	Needs and requirements discussed during roundtable that are most relevant to you.	Open/ Text
	Digital Skills discussed during roundtable that are most relevant to you.	Open/ Text
	Ways to improve skills for DA.	Closed/ 4 Options
	Institutional support from HEIs for DA.	Closed/ 7 Options

4. Data Collection, Analysis and Use of Personas/ Vignettes

The quantitative and qualitative data collected through the pre- and post-event surveys and the data collected through the roundtable discussions and tablets was analysed by UCL and it is described in Section 5. From the roundtable discussions and the qualitative data collected we created summaries for each roundtable in each one of the three countries separately. Summaries were created by the roundtable facilitators in line with the predefined themes used in the close questions (mainly drawn from the literature as discussed in the previous Section) of the pre- and post-event surveys.

For each of the three main key stakeholder groups we present two personas (in Section 6.1) which captures key background information of each stakeholder group (i.e., community group, voluntary organisations, HE staff and students).

Personas: what are they and what is their role as a design tool?

A persona describes a hypothetical person, together with their background characteristics. Depending on the purpose of the persona design and use, a persona may further include concerns, feelings, behavioural attitudes, needs and so on. Although personas do not represent real people, their design is inspired by real people; they are based on relevant research undertaken to capture these characteristics, as a collection of patterns of behaviours and background characteristics, of real people. Therefore, personas represent a wider population group of users or, in our case of, potential DA participants [Blomkvist, 2002].

Personas help mainly designers empathise with target audiences as their lifelike quality makes their needs more tangible and alive [Blomkvist, 2002]. Personas have been used in the context of DA (e.g., in citizen science) to mainly describe the needs and expectations of specific user groups and subsequently support User Experience design [Skarlatidou and Haklay, 2021]. A detailed example of a well-designed persona and how to use the method can be found in [Skarlatidou and Haklay, 2021].

The information that is included in each persona is based on the data we collected from our pre- and post-event surveys and roundtable discussions. Due to some different characteristics, we present two personas for each stakeholder group. Moreover, as we discuss in more detail in our findings Section below, many participants, mainly from the voluntary organisations and HE staff and student roundtables, felt that there is very little known about the needs and requirements of potential DA audiences. Our personas attempt to fill in this gap and we disseminate them further (mainly through our website and social media) to be used as a design tool that could support the design and implementation of future DA activities which need to consider participants' need and requirements.

5. Findings

In total 145 people registered to attend all six roundtable events in France, UK and Malta. From those 76 people attended the events. Below we discuss our main findings.

5.1 Findings from Community Groups and Voluntary Organisations Roundtables (IO5A1)

5.1.1 Background Information (Pre-event Survey Results)

The pre-event survey was only completed only by 27 people. The significant majority have at least an undergraduate degree; in their majority they are 20-35 years old, and most respondents have no prior experience in DA.

Those participants with prior experience in DA have mostly participated in citizen science activities and to a lesser extend in makeathons and hackathons. By far, the most frequent motivation factors are to "support a cause", "address a local issue" and

"influence policy-making", followed by "learn about a subject" and "learn a new skill". Participation in DA varies from one week to over three years, with most respondents specifying that they were "semi-active", mainly completing small tasks (under one hour in duration). Only a couple participated at all stages of the DA process, with none receiving compensation (although five got acknowledge for their contributions in scientific papers and presentations). None of the participants received any training prior to participating in DA.

For those who have never participated in DA previously, the main reasons were either that they never had an opportunity or that they were not aware of any DA activities. Three only said that they never took part because of lack of time and one because of lack of skills. Of those who never participated in DA (20/27) the significant majority said they would participate in the future if the main purpose of the DA is to address a local issue or an environmental issue, with most being ready to spend one to two hours per week.

Last but not least, our respondents rated the relevance of the Digital Skills Framework as following: "Communication and Collaboration" skills scored an average of 4.2 (mode=4); "Digital Content Creation" skills scored an average of 3.8 (mode=4) and; "Problem Solving" skills got an average of 4.0 (mode=4).

5.1.2 Community Groups: Insights from the Roundtable Discussion

In this section, we present the key findings from the roundtable discussions of the community groups roundtable in the three countries (UK, Malta and France).

Prior experience

As discussed above, participants in all three roundtables had varying degrees of prior experience with DA. For example, a few participants in the roundtable discussions at UCL (UK) discussed their involvement in various national campaign panels, which mainly aimed to address local community issues surrounding neighbourhood planning as

mainly citizen science activities. Participants in the roundtable discussions at the UM (Malta) discussed how they previously used some form of social media to push their group's agenda and promote events and activities, which was described as a form of DA, due to the use of digital technologies to transfer information to a wider community for social good. Participants in the roundtable discussions at the UP (France) were previously involved in various forms of DA (i.e., mainly hackathons and makeathons) and the conversations were mostly about robotics, programming, and the use of AI to educate children, students, as well as people in the Global South on various scientific issues and address mainly environmental sustainability concerns.

DA Impacts

Participants in the roundtable discussions at UCL (UK) identified as main impacts the potential of addressing local issues and subsequently developing more effective policies, while widening participation due to the utilisation of the "digital". The potential of the "digital" (i.e., wider access to digital open-source tools; improved digital literacy) was further captured in the roundtable discussions that took place at the UM (Malta), where participants expressed the view that it also leads to better time management, and further enables more people to be involved in issues that matter to them. Finally, participants in the roundtable discussions at the UP (France) as potential impacts of DA discussed the following: improve public's understanding of what can be done using technology; how hackathons have the potential to increase entrepreneurship and enable people start their own business and earn money; and how DA can lead to more effective teaching practices and can help to bring more attention (and subsequently public input) to health-related issues.

DA Challenges

Participants in the roundtable discussions at UCL (UK) used several examples from their own previous DA experiences to describe challenges. Some of them concentrated on

challenges due to a lack of effective support and lack of access to information produced by DA. Subsequently, they emphasised the need for educated facilitators to support communication in a DA activity and the need for shared public digital access to all the information that DA produces. Participants in the roundtable discussions at UM (Malta) emphasised on digital communication barriers (e.g., lack of body language cues) and the overall digital divide due to which a significant number of the global population still has no access to technology and therefore participation in DA is much more restricted. Similarly, participants in the roundtable discussions at the UP (France) emphasised on challenges due to access issues (e.g., having no computer) and the insecurity feelings (of "not knowing enough" or "not having the skills"), which further limits participation. As a result, participants emphasised the importance of effective DA design to make it easier for people to participate (regardless of their background or previous skills) and which takes into account their needs to further motivate them.

Participants in the UK further discussed how the pandemic resulted in a shift to purely digital-based communication, even within the context of ongoing DA, which before the pandemic might have taken place online or offline (or both). Participants thought that due to lack of digital skills and also due to unclear instructions the number of people who were involved in DA during Covid-19 was reduced. Roundtable discussions in UM (Malta) focused on how reduced was the number of young people involved in DA during the pandemic, not because young people lack the digital skills, but perhaps they lack the relevant education that enables them to develop their civic citizenship understanding and become more aware of how DA can help to take a more active role in democratic societies.

Community Group Needs for DA

Community needs were discussed at different parts of the roundtable discussions. For example, it was mentioned above how participants expressed the importance of educated facilitators to support DA communication and the consistent and easy access to DA materials at all times. The roundtable agenda also included a more focused discussion on community needs and requirements. Here, roundtable participants in the UK mentioned the need to "share local knowledge digitally" and participants in Malta and France expressed the need for consistent and continuous funding, with more funds being allocated to DA campaigns and easy to use digital tools.

Support needed from HEIs and Voluntary Organisations

There are several bottom-up DA activities that are initiated and managed by community groups, albeit uncommon. To better understand the needs and requirements of community groups, we asked roundtable participants what kind of support they would need from HEIs and voluntary organisations to engage in DA.

Participants in the roundtable discussions at UCL (UK), who were mainly involved or interested in citizen science activities to address local issues, thought they needed more support from local authorities rather than HEIs and voluntary organisations. Participants in Malta suggested that HEIs develop work placements for community group members as knowledge transfer activities as well as internships to provide hands-on experience to both community groups and students. Participants here expressed the view that HEIs have the skills and resources to enable DA at multiple levels, while they suggested that applying the human community aspect within academic research would provide them with richer data that would also have the potential to address important social issues. Participants in France suggested that HEIs should organise more events locally to engage and mobilise local communities and enable collaboration. Finally, participants in Malta

suggested that voluntary organisations have knowledge about funding and running successful campaigns so their involvement in DA would be particularly beneficial.

5.1.3 Voluntary Organisations: Insights from the roundtable Discussion

In this section, we present the key findings from the roundtable discussions of voluntary organisation roundtables in the three countries (UK, Malta and France).

Prior experience

Participants in the roundtable discussions at UCL (UK) had no experience in DA but did have prior experience in working with local communities – particularly older people and with local deprived communities – as well as charities and other voluntary organisations on the topic of digital inclusion. This type of work is less related directly to DA; it mainly involves training provision (1:2:1 and group training) to improve people's digital skills and support them in the utilisation of digital platforms. Participants in the roundtable discussions at the UM (Malta) were mostly professionals who lead voluntary organisations and who had experience in DA, mostly citizen science activities. Participants in the roundtable discussions at UP (France) were similarly experienced and were mostly engaged in leading organisations, although the profiles were more varied: while approximately half of the participants had experience in citizen science projects, the rest had almost no expertise in it and were more experienced in either makeathons or hackathons, which contributed to making the discussion more animated as it involved a lot of comparisons between different types of DA.

DA Impacts

Participants in the roundtable discussions at UCL (UK) described the potential for "unlimited impact", yet emphasised three key impacts, particularly relevant to their prior work: digital inclusion; digital literacy; and combating loneliness and isolation. Amongst others, participants described how DA activities can help locally placed asylum seekers get connected, and access services, such as supporting those claiming Universal Credit, and people accessing other benefit support and cost of living funds. DA can impact digital literacy and inclusion and participants noted that Covid-19 had a positive impact in that context. In a similar context, participants in the roundtable discussions in Malta commented that DA can improve people's digital skills which eventually lead to better accessibility of resources. Another impact discussed here is that when voluntary organisations engage with communities through citizen science, they not only help to gather and analyse more data, but they also further collect and subsequently share knowledge offering an improved understanding of the subject matter.

Participants in the roundtable discussions at UP (France) thought that local NGOs are essential for running successful DAs, due to personal connections and links they have with local people and therefore the trust they can bring into the project from the very beginning. DA impacts depend on the involvement of the community. For example, within the context of hackathons, participants recalled examples of activities with increased levels of engagement which led to important results and further influenced policy-making and examples where volunteers were less enthusiastic and therefore the DA activity did not produce significant value. Considering this, participants noted that DA activities – such as makeathons and hackathons which are usually shorter in duration with a very specific set of tasks – need to properly consider the interests of those engaged and define the aims accordingly. They also suggested that bottom-up co-created DA examples always lead to higher levels of engagement with more significant impacts.

DA Challenges

Participants in the roundtable discussions at UCL (UK) described mainly two DA challenges they commonly come across: funding (i.e., mainly the lack of continuous and consistent funding to support resources, the provision of equipment to participants who do not have access to the appropriate technologies etc.) and local and participation issues (e.g., poverty and engaging with marginalised communities, working with older participants who tend to lack digital skills required to participate in DA, communication issues such as working with participants who do not speak English). Funding was also extensively discussed as a challenge in the roundtable discussions in Malta, especially with respect to maintaining professional digital presence for voluntary organisations and skilled human resources (employees and volunteers). Participants in France expressed concerns around the model of funding which applies to voluntary organisations and the fact that if all activities depend on funding, then such organisations have no control over their direction and the impacts they eventually want to achieve in the long-term.

The need for the provision of continuous training to keep up with technological advances which require new skills is another challenge discussed in almost all roundtable discussions. Participants in Malta further discussed how different social groups are attracted to different digital platforms – to keep up with these trends and ensure that DA is inclusive, voluntary organisations need to invest a significant number of resources for training how to use different platforms. Participants in France further expressed their concerns on how some makeathons or hackathons require much more advanced digital skills (e.g., coding and programming) and therefore the general public cannot possibly be the target audience. With respect to citizen science activities in specific, participants in the UK discussed how people need to be trained not only in terms of how to use a device and a digital platform but also in some cases training needs to be provided for online behaviour more broadly.

Finally, participants in Malta, discussed that while voluntary organisations need to rely on volunteers to disseminate unbiased information on campaigns or other parts of the DA, some volunteers may have their own political agenda, which does not fit within the voluntary organisation's framework or the broader DA context, and which can have significant implications.

Voluntary Organisations' Needs for DA

Discussions around voluntary organisations' needs directly link to the challenges discussed above. Perhaps the most popular need across all roundtables is the need for consistent and continuous funding, to further ensure the longevity of the DA activity as required in many cases. The second most popular need is to always design a DA after careful consideration of individual volunteers' and communities' needs and interests. For example, participants in the UK discussed how citizen science activities for data collection might require the use of both digital technologies to engage younger people but also paper forms to engage with those less digitally skilled.

Support needed from HEIs and Community Groups

Participants in the roundtable discussions at UM (Malta) noted that voluntary organisations could tremendously benefit from HEIs' international networks, which could amongst other things help improve assistance with new technologies, digital content creation and communication and dissemination. In a similar context, participants in the roundtable held in Paris suggested that HEIs should promote to networks not only events organised by them but also external events that are relevant to students and organised by voluntary organisations, while recognising student participation as an incentive in the form of credits or as internships, as suggested by participants in Malta and the UK. Participants in France further recognised the importance of training provision for HEI

students and staff on how to work with voluntary organisations. Last but not least, some recommendations for more concrete support that would benefit voluntary organisations, were made by participants at UCL who suggested that they would tremendously benefit from HEIs providing access to devices and IT tools whenever possible.

5.1.4 Community Groups and Voluntary Organisations post-event Survey Results

With the post-event survey, we had a much lower response rate. 24 people filled in the survey from the community groups roundtable and four people from the voluntary organisation roundtables. Generally, respondents thought that the roundtable events met their expectations. From Q2 of the post-event survey we can suggest that the discussions were generally found to be more motivating in terms of instigating future DA for voluntary organisations (average= 4) rather than for community groups (average= 3.6). Respondents from the voluntary organisations said it is more likely to organise a future DA (Q3) (average= 4.5), followed by community groups (average= 3.8).

Q6 of the post-event survey asked roundtable participants to identify the barriers discussed and which they think that are particularly relevant to them. They mention "communication"/ "advertising" (as improving awareness for their existence) (5); "time" (4); "funding" (4); "skills" (3); "access" issues due to e.g., age and the digital divide (2); "fear" (1); and "legal issues" (1). With some referring to these barriers, the most popular needs and requirements for community group members include: "skills and resources" (i.e., time, human resources, funding) (6); capacity for better "outreach" and "engagement" (3); "access" (3) and "curiosity" (1). In terms of the digital skills that are required, our roundtable participants from the community groups roundtable mention: fluency in the use of "social media"; "storytelling"; "programming" and "coding" skills; and "data management". Respondents from this group also thought that "training-attending a course by a digital skills specialist" (15) is the most effective way to improve

their digital skills, followed by simple "Participation in DA" (7) and "Collaborative work to improve skills as a group within your organisation" (3).

5.2 Findings from HEI Staff and Students Roundtable Roundtables (IO5A2)

5.2.1 Background information (Pre-event Survey Results)

20 people filled in the pre-event survey in all three countries. The significant majority (18/20) are members of staff and only 2/20 are students. Participants mostly fall in the 20-35 years old (8/20) or 36-50 years old (8/20) age groups and a few (4/20) in the 51-65 years old age group. 19 out of 20 respondents have prior experience with DA (mostly citizen science, but also hackathons and makeathons), either as participants or organisers. The majority of the DA activities organised by respondents had mostly a scientific impact (10/17), public engagement (6/17) and one policy-making focus (1/17).

Participation in DA was mostly motivated by "supporting a cause" (over half of responses), followed by "addressing a local issue", "learning a new skill" and "influence policy-making". Similarly, when we asked the survey respondents' what would be the focus of a future DA activity they would consider organising, in their majority they chose "addressing some local issue", a project addressing a "social issue" or "environmental concerns".

Creating a new product and creating something new were less popular choices but this is mainly due to the fact that the majority of participation involved citizen science activities rather than makeathons.

The amount of participation in DA was split between participating "in few small tasks" and participating "in all or nearly all stages" and helping to "organise the activity". It is not surprising to see that people with skills in running DAs, such as HE staff and students, take a more leading role (e.g. identifying the issue, helping to design research

questions, analyse results) even when they participate in an activity as volunteers. Most participants did not receive compensation (15/20), but in most cases their names were included in a list of contributors and in two cases participants' names were included in a journal paper. Only four survey respondents said they received "significant training" prior to participation, and the rest (14/20) said they did not receive any training at all.

We further asked survey respondents what they think are DA participation barriers for volunteers and they mention "lack of knowledge", "digital divide", "recruitment" issues, "poor communication", lack of "time" and "interest", and lack of digital skills. When we asked them about the importance of specific skills from the Digital Competence Framework, "Communication and collaboration", "Digital content creation" and "Problem solving" skills were all rated as very relevant (Average: 4.7; 4.2; 4.5 and Mode: 5, 5, 5 respectively).

5.2.2 HE Staff and Students: Insights from the Roundtable Discussion

In this section we present the key findings from the roundtable discussions of the HEI staff roundtables in the three countries (UK, Malta and France).

Prior experience

Most HEI staff had prior experience of DA, predominantly in citizen science and mostly as project leaders, lecturers, or writers of grant applications - most doing citizen science projects through their institutions, though some had participated in projects in their free time. Some had given online webinars presenting citizen science to a global audience, developed a citizen science platform or created online citizen science games. Two had worked with schoolteachers to develop pedagogical tools using citizen science, one of whose educational work will inform school educational policy in France.

Other HEI staff had taken part in activities such as hackathons or makeathons (in the UK there was a definite lack of these activities); the roles here tended to be supportive rather than leadership, for example studying what engages a community in this form of DA. The subject of one hackathon participated in by one participant was Covid-19; another hackathon subject was on language learning.

Several HEI roundtable participants also felt that webinars, online dissemination of new knowledge, filling out surveys, and taking part in online protests, also constituted some form of DA.

DA Impacts

Most impacts HEI staff hoped for were human impacts: knowledge sharing, empowerment, growing skills and sharing ideas. There were concrete examples, such as the creation of open online knowledge repositories, and giving "voice and space for action", and participants in the UK hoped that this would have a direct impact on research and innovation. All three HEI staff roundtables emphasised knowledge sharing and creation.

UK participants hoped that DA could address underrepresentation, for example by empowering women, by sharing local and traditional knowledge, and by people acting collectively to address global challenges.

One potential impact discussed by HEI staff in both the UK and Malta was online safety, including awareness and training. An HEI staff member in UK was leading a citizen science project about online tracking, including GDPR violations, and hoped to achieve a policy impact including in the way European citizen science projects are organised and

funded, as well as greater awareness by the public of the ways in which individuals are tracked online by large organisations and how to avoid this.

It was noted by French participants that there is a perceived pressure to have an enormous impact in order for the DA to be worthwhile - but some people participate simply because they find it entertaining! The same discussion elicited hopes that learning (for example in citizen science) would take place, but acknowledgement that it does not always do so. However, even getting to know how a project works is a form of new knowledge. In one interesting case in France, the impact of knowledge-generation was limited for ethical reasons: there was an investigation of cognitive skills, and it would have been unethical to give participants individual feedback on this (because the organisers were not medical doctors), so a general, anonymised, aggregate feedback was provided instead.

DA Challenges

This issue elicited by far the most responses from roundtable participants, and challenges were often discussed even during time allocated to separate questions, indicating that HEI staff in all three countries feel that challenges to participating in and organising DA are significant.

A variety of challenges were named. Malta participants felt that the overarching ones were funding and sourcing volunteers. France's roundtable revealed similar sentiments, pointing out that "people don't put money into it". People have to volunteer their own time, energy and resources, which not everyone is available to do equally, and which limits, for example, the number of items that a makeathon can generate.

UK and Malta participants felt that online fatigue was a problem: after over 2 years of events mostly being online, non-attendance was an increasing problem and it was

difficult to keep participants motivated, and additionally can lead to a large volume of e-mails seeking support or sending repetitive invitations. Motivation was mentioned by all three countries. This can be exacerbated by a lack of general knowledge of what DA is and why it is important, people's lack of confidence, and that DA is not so far widely known to have policy impacts.

Participants in all three countries also felt that a lack of digital literacy was a problem. People may lack skills and experience, need significant support, and there can be issues such as choosing which online platform to use, or a lack of accessible materials - sometimes specifics such as materials for Deaf participants. UK roundtable participants highlighted the need for trust-building and ethical and "mindful" work with communities, and the lack of an established communication system to get people involved in DA.

The French roundtable participants highlighted the need for equity and social inclusion - which, of course, all the above challenges can impact - but also mentioned that, where there is a well-organised team of DA leaders, the challenges can be greatly reduced. They also pointed out that there is no known educational component (which is different to, for example, academic research).

HEI Group Needs for DA

For HEI groups, this question was separated into the needs of organisers and participants, though the reports from the roundtables suggests there is much overlap - for example, the French participants recommended increasing visibility of DA, and access to the HEI's facilities, both of which affect both groups. Support and collaboration among the HEI's different staff and departments was frequently mentioned, including shared access to facilities.

There was a large variety of answers, though again, funding was frequently mentioned. A French participant recommended that DA organising be paid for by the HEI as part of teaching time. Training was also frequently mentioned for many aspects of DA organising especially: website building, communication, creating educational content, public engagement, social media, etc.

Malta participants had some very definite ideas for organisers concerning "thematic experts", proper design briefs, open access to data, knowledge of costs such as to hire venues, and defining and allocating roles among organisers including on matters such as quality assurance. On the subject of roles, the roundtable in France recommended "having someone making you aware of things you didn't consider - having access to someone who knows about data protection, ethics approval, etc".

UK participants recommended funding to "avoid creating dependencies", and flexibility - for example, to be able to engage with communities, understanding their needs, and not offering top-down solutions with fixed goals but rather bottom-up engagement. Funding could also be important, it was felt, to compensate individuals for their time or resources where appropriate.

UK roundtable participants (although they were mostly DA organisers themselves) suggested that DA participants would need time, interest and communication to understand the goal of the DA, including how it benefits them personally (rather than some external cause). Malta roundtable participants pointed out that DA participants may need training on the use of the online platform, especially where it was unfamiliar.

Other DA considerations

It was emphasised in the roundtable in France that a top-down model should not be assumed - for example, with the idea that someone is invited to the DA and then learns, but rather, to take the example of a citizen science project, the interest in learning - or in starting the project - may come from a participant. This further emphasises the need for social inclusion, equity, and flexibility. There may be some blurring of the lines between participants and organisers.

It was pointed out in the Malta roundtable that HEIs should fund DA specifically as a research model, along with open access of research materials, and that the development of tools that enable access to DA platforms should be taken into consideration.

A question was left on each Padlet for people to write additional comments - "Are there any further comments you would like to make on DA?" - but few participants answered this question except in Malta.

The question for the voluntary organisations and community groups regarding what support HEIs should provide to them was, obviously, not addressed in the HEI roundtables.

5.2.3 HE Staff and Students post-event Survey Results

As noted above, the post-event survey had a much lower response rate despite the reminders sent to participants of the roundtables to fill it in. Only five people from the HE staff and students roundtable filled in the survey. We summarise key findings below.

Generally, respondents thought that the roundtable events met their expectations. From Q2 of the post-event survey we can suggest that the discussions were generally found to be more motivating in terms of instigating future DA for members of staff and students

(average= 4) than for participants in the other two roundtable events. Respondents from the members of staff and students roundtable said it is more likely to organise a future DA following the event (Q3) (average= 3.8).

For members of staff, the most popular barriers included: "human resources" (2); funding (1); "access" issues due to the "digital divide" (1) and "culture change" (1). Needs and requirements for this group include: "resources" (e.g. human, physical) (2); "skills" (2); "identifying community needs and taking them into account in the design and implementation of any DA" (1). In terms of the digital skills that are required, our roundtable participants from the HE staff and students roundtable mention: "use of mobile phones" and fluency in using different "social media platforms". Respondents from this group also thought that "training-attending a course by a digital skills specialist" (3), is the most effective way to improve their digital skills, followed by simple "Participation in DA" (1) and "Collaborative work to improve skills as a group within your organisation" (1).

6. Synthesis: Summary of Key Findings

6.1 Who participates in DA? - Presentation of Personas (Community Groups and Voluntary Organisations)

As discussed in Section 4, we present in this section 6 personas/vignettes to be used as design tools and eventually support the design and implementation of future DA activities. The personas which we present below (i.e., two personas for each stakeholder group) were designed based on the findings (i.e. pre-event and post-event surveys and the roundtable discussions) presented in the previous sections. We present two personas from each group to capture effectively key characteristics; for example, the personas from community group members in Figures 6.1 and 6.2 include different experience levels

with DA (i.e. citizen science applications), background knowledge relevant to the DA being involved, they have different goals and frustrations that would influence participation in DA.

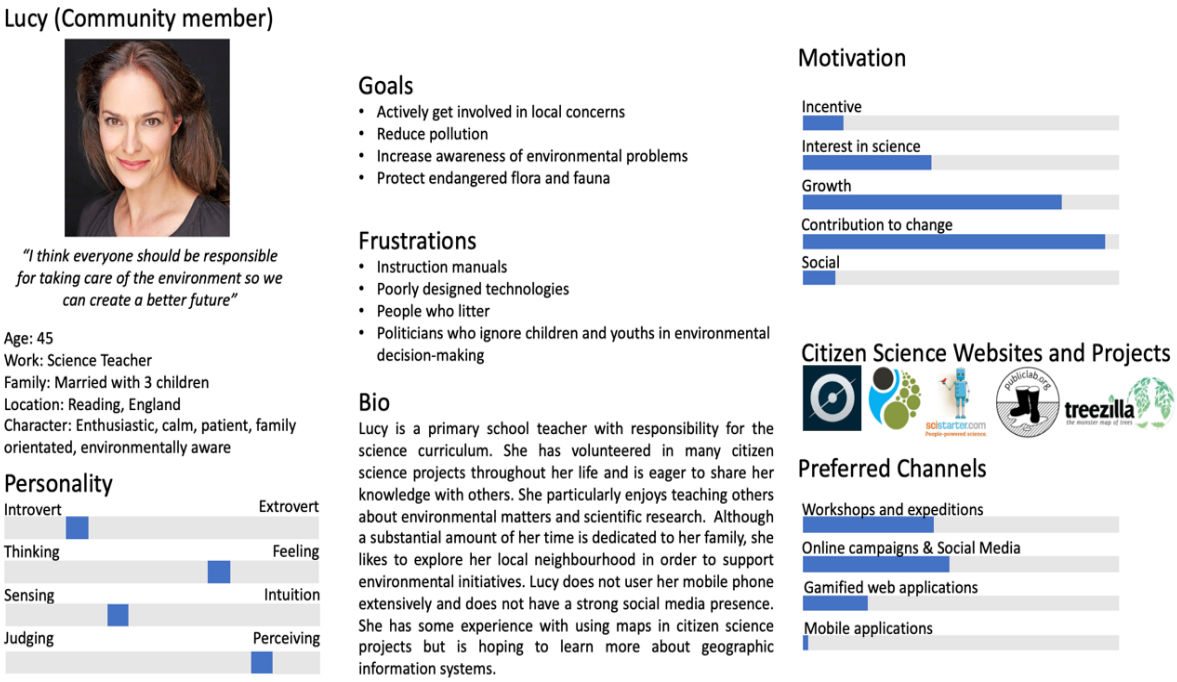

Figure 6.1: Persona Design to represent key background characteristics for community members.

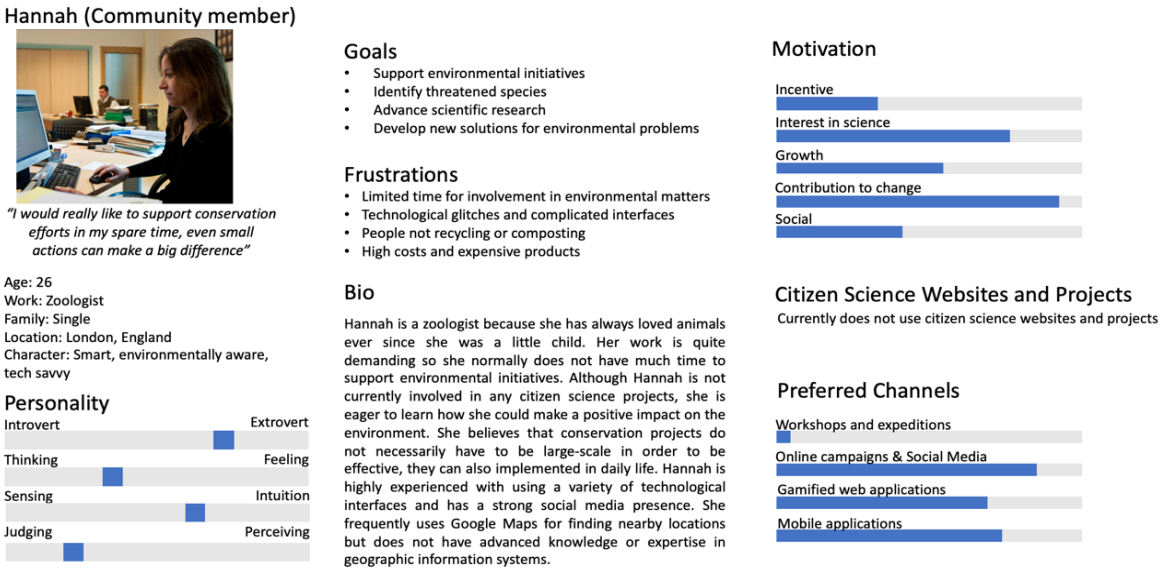

Figure 6.2: Persona Design to represent key background characteristics for community members.

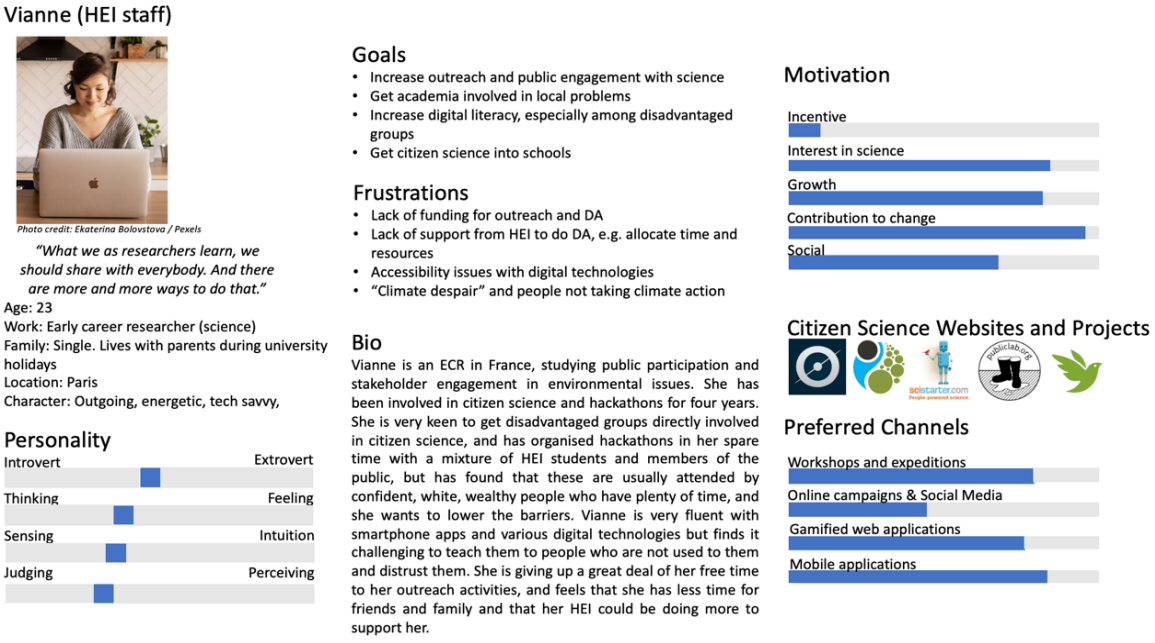

Figure 6.3: Persona Design to represent key background characteristics for HEI staff.

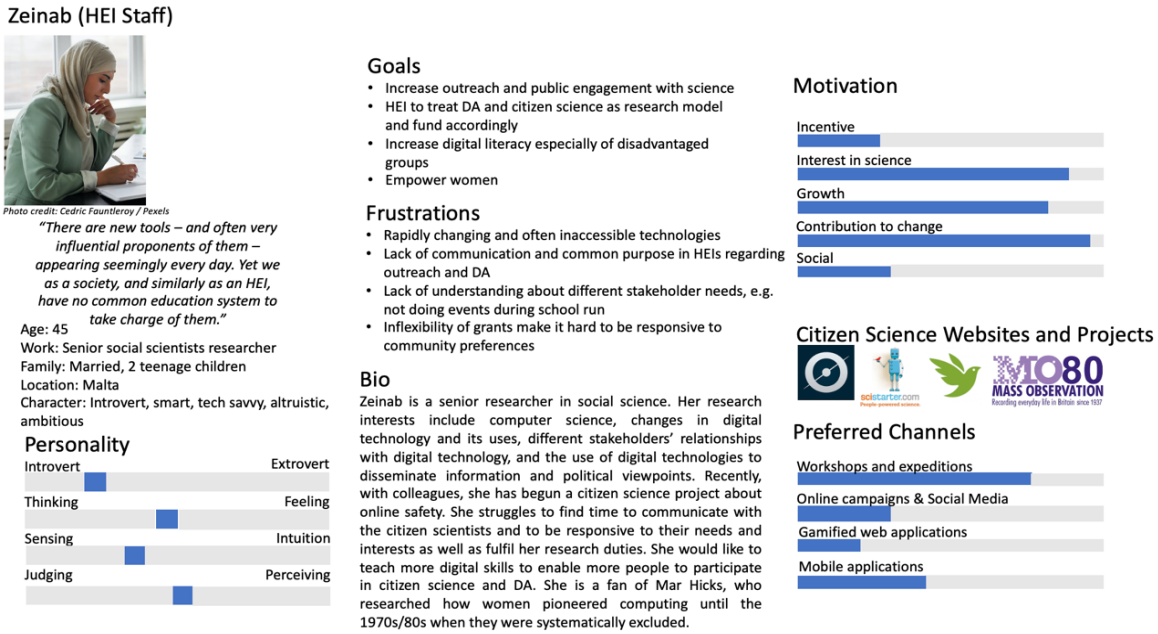

Figure 6.4: Persona Design to represent key background characteristics for HEI staff.

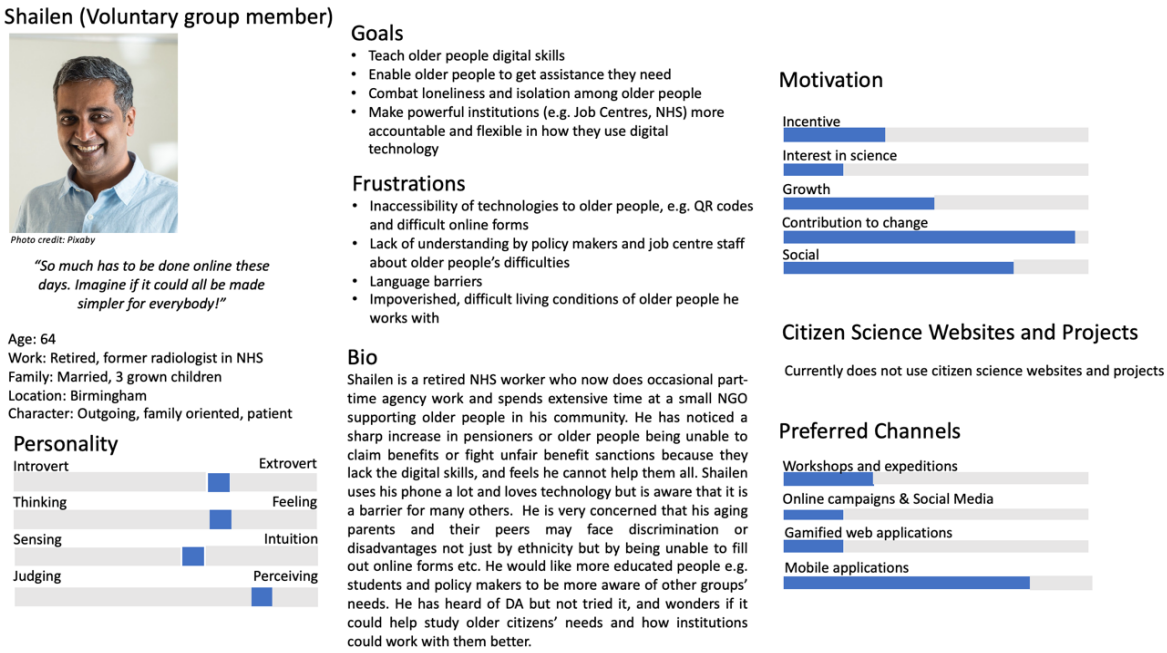

Figure 6.5: Persona Design to represent key background characteristics for voluntary groups.

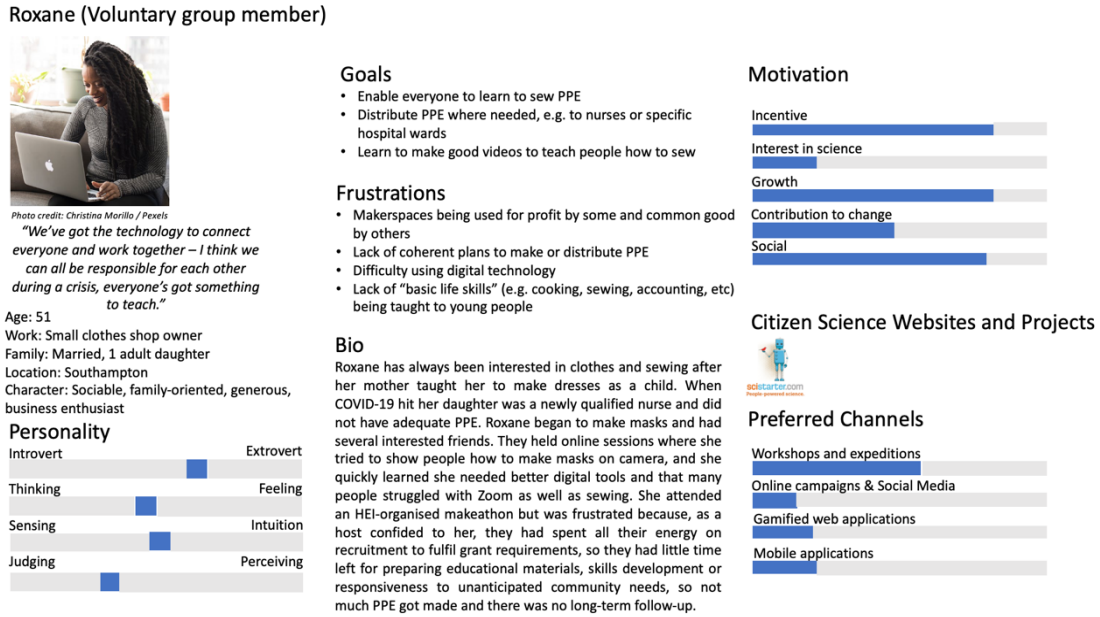

Figure 6.6: Persona Design to represent key background characteristics for voluntary groups.

6.2 Summary of DA Impacts

Although not everyone who participated in the roundtable discussions had prior DA experience, participants were able to identify and capture the most important DA impacts (Table 6.1). It is particularly interesting that community groups pay particular attention to how DA can help them address and find solutions to their local issues. Voluntary organisations mention that DA has unlimited impacts, yet they mainly focus on how DA can help their existing work in terms of improving digital skills, combat loneliness, but also help to improve people's understandings of various topics. HEI staff and students recognise that DA is a mechanism to give voice to people as well as space for action, it is a tool to help address exclusion and representation issues in science, and they further emphasise the importance of human impacts such as creating and sharing new knowledge and skills or simply having fun.

Table 6.1. Summary of DA impacts.

Community Groups	Voluntary Organisations	HEI staff and students
- Address local issues; - Develop effective policies; - Improve time management; - DA can lead to more effective teaching practices and can help to bring more attention (and subsequently public input) to health-related issues. *With an emphasis on hackathons and makeathons:* - Improve public's understanding of what can be done with technology; - Improve entrepreneurship skills; - Enable people start their own business.	- **Unlimited impact;** - Improve digital literacy (and help improve digital exclusion issues); - Combatting loneliness and isolation; - Enable better understanding of DA's topic (scientific or other); *With an emphasis on hackathons and makeathons:* - Impacts depend on level of engagement of participants.	- Giving "voice and space for action"; - Address exclusion and representation issues in science; - Improving awareness and training of online behaviour. *Emphasis on human impacts* - Knowledge sharing; - Empowerment; - Growing skills; - Sharing ideas; - Having fun. -

6.3 Summary of DA Challenges

Our three key stakeholder groups captured in their discussions a significant number of DA challenges (Table 6.2). First, community groups find it challenging that there is a lack of support, which is particularly important in terms of enabling bottom-up DA, initiated, and run by communities themselves. They further mention lack of confidence in terms of skills and digital communication barriers in the online context, as well as lack of access to information produced by DA. HEI members of staff and students, who in the context of our study have much more experience in DA, describe as an important challenge the limited understanding of what DA entails and that there is still a very limited understanding of communities and individuals' needs and requirements, which impacts the way DA is designed and executed.

From Table 6.2, it can be seen that voluntary organisations and HEI staff and students identify challenges which have similarities, such as the lack of consistent and continuous funding, which is absolutely essential for the necessary human and other resources and the digital infrastructure to enable DA. Other challenges common to the two groups are volunteer engagement and the lack of relevant training to upskill staff in HEIs and voluntary organisations. A particularly significant challenge described by voluntary organisations is the fact that there is often no control over what an organisation is trying to achieve in the longer term due to funding models.

Table 6.2. Summary of DA challenges.

Community Groups	Voluntary Organisations	HEI staff and students
- Lack of effective support; - Lack of access to information produced by DA; - Lack of confidence (skills); - Digital communication barriers (e.g., lack of body language cues).	- Lack of funding; - Lack of human resources; - Lack of time; - Lack of digital equipment/ infrastructure (magnifies digital divide); - Difficulties in volunteer engagement (especially for	- Lack of funding; - Lack of human resources; - Lack of digital skills/ digital divide; - Limited understanding of what is DA and how it can help them; - Difficulties in volunteer engagement (due to time, resources, online

	marginalised and hard-to-reach communities); - No control over longer-term impacts (due to funding models); - Limited trainings capabilities (to keep up with technological advancements and trends) - Participants' political agendas may influence campaigns;	fatigue, lack of motivation/ confidence etc); - No educational components for running successful DAs; - Limited understanding of communities and volunteers' needs.

6.4 Summary of Needs & Requirements

Discussions over guidance for successful DA are sometimes surrounded with much uncertainty; this is mainly due to much being dependent on who participates, what the topic is, what the anticipated impacts are and so on. Despite this uncertainty and the many challenges our participants identified, community groups, voluntary organisations and HEIs staff and students are very specific with what they need; i.e. what would enable them to organise and run (or simply participate in) successful bottom-up DAs. Their needs and requirements are summarised in Table 6.3.

Table 6.3. Summary of DA Requirements.

Community Groups	Voluntary Organisations	HE staff and students
- Educated facilitators to support various stages of DA; - Shared public digital access to all information generated by DA; - Effective DA design to make it easier for people to participate; - Digital skills required: social media, storytelling, programming, coding, data management.	- Continuous and consistent funding; - Capacity for better communication/ advertisement to improve awareness of DA; - Consideration of volunteers' and community needs and interests; - Digital skills required: social media, storytelling, programming, coding, data management.	- Improving visibility of DA; - Access to HEI facilities; - Enable HEI collaborations (i.e. amongst departments and staff); - Institutional support for data protection and ethics approval for DA; - Funding targeting DAs – especially bottom-up DA that involves works with communities to address their needs rather than top-down approaches; - Credit HEI staff that run DA for time needed to run DA (consider in teaching load); - HEI training for various skills needed for DA (e.g., website design,

		communication, creating educational content, public engagement, social media use).

Community groups clearly need educated facilitators to support the DA at various stages, shared digital access to all DA information and effective design so that it becomes easier for people to participate. In terms of skills required, both voluntary organisations and community groups mention: social media use, storytelling, programming, coding, and data management.

Voluntary organisations need consistent and continuous funding to enable them to run DA and shape successfully the organisation's longer-term impacts towards what they are trying to achieve. They further need the capacity and additional resources to help tackle the challenge of improving DA awareness, which would eventually result in more people being involved in DA. They also need a deeper insight into the volunteer and communities' needs and requirements, their interests and motivations, which is absolutely essential in designing and running successful bottom-up DA.

Finally, staff and students from HEIs have a very set of needs and requirements. First and foremost, there is a need for a more coordinated effort to improve the visibility of DA. Staff and students with an interest in running DA activities, they need easier access to HEI facilities, institutional support when it comes to data protection and ethics approval processes and incentives for interdepartmental or cross institutional collaborations. To enable DA, there is a need for more targeted funding (institutional or governmental). Funding, which does not see DA favourably in terms of public engagement (common with top-down approaches) but funding which is flexible enough to enable bottom-up DA that addresses important local needs. Members of staff and students feel that DA for social good is important but requires a significant amount of their time; recognition therefore of their time and efforts is essential. In terms of training, HEI members of staff

and students need training courses that target a specific set of skills: i.e., website design, communication, creation of educational content, public engagement, and use of social media.

7. Recommendations for effectively embracing DA in HEIs

Below, we summarise our recommendations which can fulfil the needs and requirements for DA of the key stakeholder groups that we engaged in IO5 and which can help to effectively embrace bottom-up DA in Higher Education practices.

- **Improving the visibility of DA and its multiple impacts for social good.** We suggest a structured and coordinated effort where mainly voluntary organisations and HEIs allocate some resources to promote the visibility of their DA work, with an emphasis on DA examples that support local or environmental issues. We suggest the use of various formats to share experiences and include people from all stakeholder groups.
- **Creating a network of people who are interested in DA.** We suggest future funding and relevant projects to focus on setting up a digital networking tool for stakeholders where we can further share and exchange experiences and lessons learned, seek support, and establish collaboration partnerships.
- **Reflecting on and sharing lessons learned from various DA contexts.** We recommend HE institutions to encourage staff and students to write their stories from their DA work and assist them with their wider dissemination. An institutional journal and blog that takes a more central role in coordinating this effort would be of significant value in terms of promoting DA and improving its visibility.

- **Training and upskilling for successful DA.** Although each of the three key stakeholder groups have their own needs and requirements for training and upskilling, we propose that this can be more effectively supported through a single DA training platform. The platform will bring together and provide access to existing training resources that target different stakeholder groups and different levels of expertise (e.g., beginner, intermediary, advanced). The platform would be also a place where any DA facilitator or organiser could upload training materials from any DA context for others to reuse.

- **Institutional and governmental funding for DA.** Funding needs to target voluntary organisations, HEIs and community groups separately (so that they can fund their work separately and achieve individual short and long-term impacts), while there should be also calls that further envision multiple stakeholder collaboration.
- **Flexible institutional and governmental funding for bottom-up DA.** The majority of calls for funding see DA as a form of public engagement activity, which usually takes place within the context of top-down research approaches. We suggest that funding which targets bottom-up DA needs to become more widely available to support communities and address local issues. This type of funding needs to offer flexibility to allow local people to shape the nature of the activities and the outputs that are generated in any direction they feel is more beneficial.
- **A Centralised Institutional Support Office for various forms of DA.** HEIs are responsible to adhere to Open Science principles [European Commission, Online] to ensure the scientific process becomes more inclusive and more transparent. As a result, some HEIs have established

relevant structures to provide centralised institutional support. For example, UCL's Office for Open Science and Scholarship supports the UCL community in the adoption of Open practices and approaches such as citizen science and coordinates all efforts towards this direction. This is a useful model, and we recommend it is more widely adopted by other HEIs. We further suggest that support is provided for other forms of Digital Action (e.g., hackathons, makeathons), not only citizen science, especially when HE staff and students are already being involved in these other forms of DA.

- **Institutional Support – Training for DA.** HEIs usually provide some basic Information Technology (IT) training to help employees and students improve relevant skills. DA requires a set of more specialised skills (i.e., website design, communication, creating educational content, social media use and public engagement methods and tools). Therefore, we suggest that HEIs consider offering training course packages that target DA skills explicitly. Academics (or students) who already work with DA or who teach relevant courses (e.g., in public engagement, science communication, citizen science, programming for hackathons, etc.) could be asked to be involved in the delivery of these seminars. An accreditation strategy (e.g., as a Professional Development Practice qualification) should be in place to encourage participation. Such training packages should be open to people from community groups and voluntary organisations who are interested in DA and want to improve their skills, preferably free of charge.
- **Institutional Ethics for DA.** Although Digital Activism, and the more specific types of Digital Action that we examine in HEIDI, have the potential to empower grassroot communities and society as a whole,

they do not come without critiques and risks. HEIDI 'Ethics in Digital Action' webinar discussed these in detail with a panel of six experts. We recommend that HEIs urgently need to set rigorous institutional ethical procedures and relevant support that targets DA. These need to be designed carefully and after consulting members of academic staff, with significant experience in various forms of DA, to ensure that ethical processes do not introduce additional barriers but that any potential barriers are eliminated, especially with respect to the digital divide.

- **Institutional Recognition**. HEIs should recognise, celebrate, and reward students, professional services, and the wider academic community for their DA efforts, especially when activities have clear social impacts. We recommend that HEIs support and take responsibility for the wider visibility of DA within the institutional context. We recommend the following: dissemination of newsletters to showcase DA projects and their impacts; organising DA lunch hour lectures and/or a DA podcast to be widely disseminated to the broader academic community; and the establishment of an institutional award on 'Digital Activism for Social Good'.

8. Summary and Conclusion

New technologies and new modes of engaging with multiple stakeholders in bottom-up participatory process to support various causes offer distinct possibilities for activism and social justice. Despite the capabilities and impacts of Digital Activism in terms of becoming a powerful tool to elevate underrepresented voices and in terms of creating new spaces to brainstorm, innovate and tackle our complex 21st century challenges, there

is little insight into how such activities can be supported at different institutional levels to improve their effectiveness, especially for bottom-up approaches. Joyce (2010) in her book 'Digital Activism Decoded' notes that:

> *"In our efforts to understand digital activism, however, we are too often presented with only anecdotes and case studies: tales of political campaigns, like Barack Obama's, that used a social network to mobilize volunteers; inspiring stories from Iran or Moldova about citizens broadcasting mobile phone videos on YouTube or giving protest updates on Twitter. Anecdotes are reported, lauded, hyped, and critiqued. Sometimes lessons and best practices are extracted that can be applied to other campaigns. The field nonetheless, remains fragmented."* (Joyce, 2010, vii).

Although the benefits of the forms of Digital Activism that we explore in project HEIDI - namely, hackathons, makeathons, and citizen science – are well documented in the literature and captured in various other online contexts and success stories, there is not yet a holistic understanding (especially from the perspective of multiple stakeholders) of any specific strategies, actions, processes, and tools that should be in place to improve the way they are executed. HEIs have a unique capacity to develop skills, foster knowledge, provide opportunities, and mobilise resources for DA. Given this we explored what are the major and most urgent gaps that HEIs can help to address with respect to DA.

More specifically, in IO5, through a series of mainly roundtable discussions in Malta, France and the UK with voluntary organisations, community groups and members of HEI staff and students, we first mapped the key background characteristics of different stakeholder groups that have an interest in participating in DA. Second, through in-depth discussions we captured: a. how they perceive the impacts of DA according to their motivations and interests; b. what are the key challenges they face; c. what are their needs

and requirements and the kind of support they would need from HEIs in future DA activities.

This knowledge enabled us to construct and present a set of personas, which are important design tools and can assist anyone who designs and runs DA activities in the future by helping them better understand those who are involved and their characteristics. Finally, based on the overall insight we gained from the roundtable discussions as well as additional IO5 events (e.g., co-creation events; webinars) we provide the first published list of key recommendations for better embracing bottom-up DA practices within HEIs. Our list of recommendations requires immediate action if we want to benefit from the very positive impacts of successful DA.

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