TIME4CS

SUPPORTING SUSTAINABLE INSTITUTIONAL CHANGES TO PROMOTE CITIZEN SCIENCE IN SCIENCE AND TECHNOLOGY

D2.1: Compilation of roadmaps and Grounding Actions for the Implementers - First Version

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Executive Summary

This document, entitled 'Compilation of roadmaps and Grounding Actions for the Implementers', was developed within the framework of the TIME4CS project which is funded by the European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement No 101006201.

This document presents the first version of the TIME4CS roadmaps to achieve Institutional Changes in Citizen Science (CS), as developed by the project's four Implementers (Tyndall National Institute; Kaunas University of Technology; Centre for Genomic Regulation; Vita-Salute San Raffaele University), with the support of the facilitator partner European Science Foundation (ESF), for the period 2021-2023. The document also describes the activities organised by TIME4CS to assist the Implementers in the roadmap development process.

The four Implementers present very diverse backgrounds in relation to their origin countries, scientific fields, and expertise in Citizen Science initiatives. Overall, 19 Grounding Actions have been defined covering the four Intervention Areas (Research, Education & Awareness, Support Resources & Infrastructure, and Policy & Assessment). Most Implementers have devised Grounding Actions in relation to training, awareness raising, identification of CS contact points, development of CS policies/guidelines, and participation in CS networks.

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1. Introduction

The TIME4CS (Supporting sustainable Institutional Changes to promote Citizen Science in Science and Technology) project aims to support sustainable Institutional Change at research performing organizations (RPOs), to promote Citizen Science and public engagement in science and technology.

The project is built on the concept that research performing organisations willing to achieve Institutional Change can learn from organisations that have already gone through some similar, well-planned transformational process, the three TIME4CS 'Front-Runner' organizations (Aarhus University, Citizen Science Center Zurich, University College London).

The research performing organisations seeking to implement change (known in the project as 'Implementers') gather experiences from the Front-Runners and use this information to develop and follow roadmaps for change centred around specific 'Grounding Actions'. Each Implementer needs to specify and implement at least one Grounding Action for each of four TIME4CS Intervention Areas (i.e. research, education & awareness, support resources & infrastructure, and policy & assessment) that have been identified as relevant to Citizen Science.

The project consortium is composed of eleven partners from eight EU Member States and one associated country. In addition to the four Implementers and three Front-Runners, there are three impact partners supporting the Institutional Change process, the knowledge transfer, the monitoring and evaluation, and the communication of the project outcomes.

1.1 This document

This document presents the first version of the roadmap from each Implementer in support of Institutional Change for Citizen Science and public engagement. The roadmaps provide a detailed and tailored action plan for each Implementer, defining their short-term goals (the Grounding Actions to be carried out during the project lifetime) as well as providing the basis for medium- to long-term progress. The roadmaps are intended to be living documents and are expected to be updated on need basis along the lifetime of the project. Formal revisions of the initial roadmaps are scheduled for December 2022 and December 2023.

The document comprises seven chapters, including the Introduction. **Chapter Two** (Background) provides a brief theoretical background of Citizen Science and public engagement in science, as well as Institutional Change in this context. **Chapter Three** (The Roadmap Development Process) describes the activities undertaken to support the creation of the roadmaps and the design of the Grounding Actions, as well as how these relate to the overall project.

Chapters Four to Seven set out the roadmaps and planned Grounding Actions for each of the four Implementers.

This document was drafted by the European Science Foundation. The structure is based on the Deliverable 3.2 'Definition of Grounding Actions and roadmaps towards RRI' developed by Luciano d'Andrea and Giovanna Declich (Knowledge and Innovation SLRs) for the EC-funded GRACE project [GA 824521].

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2. Background

2.1 Public Engagement and Citizen Science

Since its Sixth Framework Programme (FP6), which ran from 2002 to 2006, the European Commission has had an explicit goal of increasing society's acceptance of, and engagement in, science[1]. The Rome Declaration in 2014 introduced the concept of 'Responsible Research and Innovation', which is defined as the "ongoing process of aligning research and innovation to the values, needs and expectations of society"[2]. This declaration referred to three observations on the interplay between science and society, including that "early and continuous engagement of all stakeholders is essential for sustainable, desirable and acceptable innovation".

Citizen Science has been a prominent aspect of public engagement in science and innovation under the Horizon 2020 research programme[3]. Different definitions of Citizen Science exist, but most refer to the participation by members of the public in the scientific process[4]. In its decision on the Horizon 2020 work programme for 2018-2020, the European Commission described **Citizen Science as covering a "range of different levels of participation: from raising public knowledge about science, encouraging citizens to participate in the scientific process by observing, gathering and processing data, right up to setting scientific agenda and co-designing and implementing science-related policies"**[5]. Citizen Science has a major role in the democratisation of science by renegotiating the relationship between science and society, by empowering participatory grassroots research, and by facilitating co-creational research projects[6]. Several commentators emphasise that Citizen Science projects should have a genuine scientific outcome, in addition to the citizen participants' education or enjoyment.[7]

The commitment of the European Commission towards Open Science and Citizen Science has been renewed and strengthened in the Horizon Europe framework programme for 2021-2027. Open Science is an umbrella term covering several practices that aim at making the whole research cycle more open and inclusive. Open Science (including Citizen Science) is a policy priority for the European Commission and the standard method of working as it improves the quality, efficiency, and responsiveness of research[8]. The UNESCO Science

[1] European Commission, 'Citizen Science and Citizen Engagement' (2020)

[2] Italian Presidency of the Council of the European Union, 'Rome Declaration on Responsible Research and Innovation in Europe' (2014)

[3] European Commission, 'Horizon 2020: Work Programme 2018-2020' (2017), p34

[4] Haklay *et al.*, 'What Is Citizen Science? The Challenges of Definition', The Science of Citizen Science (2021)

[5] European Commission, 'Horizon 2020: Work Programme 2018-2020' (2017), p34

[6] Thomas *et al.*, 'Co-creation in citizen social science: the research forum as a methodological foundation for communication and participation', *Humanit Soc Sci Commun 8, 244* (2021)

[7] For example, see: European Citizen Science Association, 'Ten Principles of Citizen Science' (2015); Australian Citizen Science Association, '10 Principles of Citizen Science', accessed 16 June 2021; US National Oceanic and Atmospheric Administration, 'Citizen science and crowdsourcing', accessed 16 June 2021

[8] European Commission, Strategy 2020-2024, 'Open Science'

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Commission has recently adopted the recommendation on Open Science which recognizes 'citizen and participatory science' as a key aspect of Open Science[9].

Recent examples of successful Citizen Science projects include:

- research teams working with local actors (including local authorities, schools, social workers and residents) to co-design, implement and evaluate interventions aiming to reduce risk factors for long-term health in deprived areas[10];
- researchers working with schoolchildren to monitor nitrogen oxide pollution across London[11];
- the establishment of a digital platform for metal detector users to register their finds, to help museums keep track of all finds[12];
- using an online game format to explore optimum laser control of atoms for quantum physics applications[13];
- volunteers reviewing social media posts in combination with machine learning techniques to help monitor adherence to social distancing measures during the Covid-19 pandemic[14] and
- researchers working with schools to assess the impact of adding tephra (volcanic ash) to different soils on plant growth and the capture of carbon dioxide from the atmosphere[15].

2.2 Institutional Change

Institutional Change was first introduced as an explicit concept under the European Framework Programmes for Research and Technological Development with the Gender Equality Plans of FP7[16]. Within the context of responsible research and innovation (RRI), the European Commission has defined **Institutional Change as a "change (with meaningful impact) in terms of how a beneficiary governs or structures itself in relation to any of the RRI dimensions (public engagement, open access, gender, ethics, science education), and lasts beyond the lifetime of project funding"**[17]. One key performance indicator for the 'Science with and for

[9] International Science Council, 'UNESCO Science Commission adopts Open Science Recommendation'

[10] John Wright *et al.*, 'ActEarly: a City Collaboratory approach to early promotion of good health and wellbeing', *Wellcome Open Research vol 4* (2019)

[11] University College London, 'UCLChemAirPoll', accessed 25 June 2021

[12] Aarhus University, 'New digital tool sparks enthusiasm among metal detectorists', published 27 September 2018

[13] Aarhus University, 'About Quantum Moves 2', accessed 25 June 2021

[14] Citizen Science Center Zurich, 'Social Distancing & Masks', accessed 25 June 2021

[15] Citizen Science Center Zurich, 'The Tephra Bag Experiment', accessed 25 June 2021

[16] European Commission, 'Reinforced European Research Area Partnership for Excellence and Growth' (2012)

[17] European Commission, 'Institutional changes towards responsible research and innovation' (2020), p6

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Society' programme of Horizon 2020 was the "number of Institutional Change actions promoted by the programme"[18].

As suggested by the term itself and the definition stated above, Institutional Changes focus on transformations at the level of individual organisations[19]. These could, for example, be higher education institutes, research funding and performing organisations, businesses or local authorities. Based on various efforts aimed at achieving gender equality in science and technology, Colizzi *et al.* [20] identified four common features of Institutional Change:

- **Irreversibility:** where the induced changes become so embedded in the institution that they cannot be easily reversed (for example, through a change in leadership or budget cuts);
- **Comprehensiveness:** where the changes span the full organisation, affecting the cultural and cognitive attitudes of staff and leaders, daily behaviours and practices, communication patterns, as well as procedures, rules, standards, and organisational structure;
- **Inclusiveness:** where the changes involve all stakeholders within the institution as a collective effort, from the leadership team to junior stakeholders, and
- **Contextualisation:** where the Institutional Change uses strategies and tools tailored to the specific institution.

Two theoretical approaches to the implementation of Institutional Change have been proposed[21]. The **social approach** starts from the modification of social patterns such as cognitive, emotional or relational patterns that are largely shared by the people within an organisation. The approach aims to use the personal commitment of people to change their own behaviours, views and mindset. In contrast, the **organisational approach** aims to modify the organisational structures (such as norms, procedures and protocols) of an institution. This places more responsibility on leaders and managers, to use hierarchical relations to change norms that lead to further behavioural change in time. While the social approach proposes a mostly bottom-up style of Institutional Change, the organisational approach works on a top-down basis. In practice, a combination of both approaches is needed. Clear procedural and structural interventions can support the social approach by stabilising new behavioural arrangements. Meanwhile, the organisational approach requires a certain level of consensus and involvement to legitimise the changes.

[18] European Commission, 'Horizon 2020 indicators: Assessing the results and impact of Horizon' (2015), p15

[19] European Institute for Gender Equality, 'Gender Equality in Academia and Research: The GEAR Tool' (2016), p7

[20] Colizzi *et al.*, 'Structural Transformation to Attain Responsible BIOSciences (STARBIOS2): Protocol for a Horizon 2020 Funded European Multicenter Project to Promote Responsible Research and Innovation', JMIR Research Protocols vol 8 (2019)

[21] North et al., 'Institutions, Institutional Change, and Economic Performance' (1990)

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2.3 Institutional Change to Support Citizen Science

Under Horizon 2020, projects aiming to achieve Institutional Change on RRI have typically started by assessing institutions' existing RRI practices before drafting action plans to implement long-lasting changes[22]. For public sector and non-profit research organisations, these projects mostly sought to influence governance structures whereas for industrial organisations, projects mostly focused on producing practical tools and highlighting best practice to support the provision of goods and services responding to societal needs. In all cases, effective measures have included building a strong evidence base, raising awareness and knowledge of relevant tools and practices, supporting networks of practitioners and monitoring progress towards defined goals.

Based on the recommendations of the League of European Research Universities[23], the TIME4CS project identified, at proposal stage, four 'Intervention Areas', as fields requiring some actions to trigger an Institutional Change to promote Citizen Science. For each Intervention Area, a set of Grounding Actions has been described, as concrete actions that are recommended to undertake in order to achieve Institutional Changes:

- **Research:** Actions promoting and supporting the adoption of Citizen Science initiatives to enable and enhance research activities. For example, this could be achieved through the use of Citizen Science in research projects or the creation of communities practising Citizen Science.
- **Education and Awareness:** Actions raising awareness of Citizen Science and building capacity for its implementation amongst researchers, funders and civil society, including knowledge of the criteria for success and the requirements for compliance with ethical, legal and privacy regulations. This could include events to promote Citizen Science, training programmes within the RPOs or the establishment of links with existing EU Citizen Science projects or training programmes.
- **Support Resources and Infrastructure:** Actions developing systems and resources to support researchers at the RPO in successfully conducting Citizen Science activities. For example, this could be the creation of a single point of contact within an RPO for addressing questions related to Citizen Science or the establishment of infrastructure relevant to Citizen Science, such as data repositories.
- **Policy and Assessment:** Actions embedding Citizen Science within the policies and assessment criteria used by the RPO. This could include adaptation of research evaluation frameworks to acknowledge Citizen Science contributions or the introduction of incentives to encourage the implementation of Citizen Science activities.

[22] European Commission, 'Institutional changes towards responsible research and innovation' (2020), p5

[23] League of European Research Universities, 'Citizen Science at universities: Trends, guidelines and recommendations' (2016) and League of European Research Universities, 'Open Science and its role in universities: a roadmap for cultural change' (2018)

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The 'Front-Runner' institutions involved in the project have already undergone Institutional Changes in one or more of these Intervention Areas. An analysis of how they achieved this change identified 24 Grounding Actions (see below, Figure 1) that had contributed to successful institutional change and which could be implemented by others to achieve similar changes. The analysis further identified 13 best practices and six successful broad approaches. These are discussed in more detail in the separate document, 'D1.2: Best practices repository of TIME4CS Front-Runners'[24] .

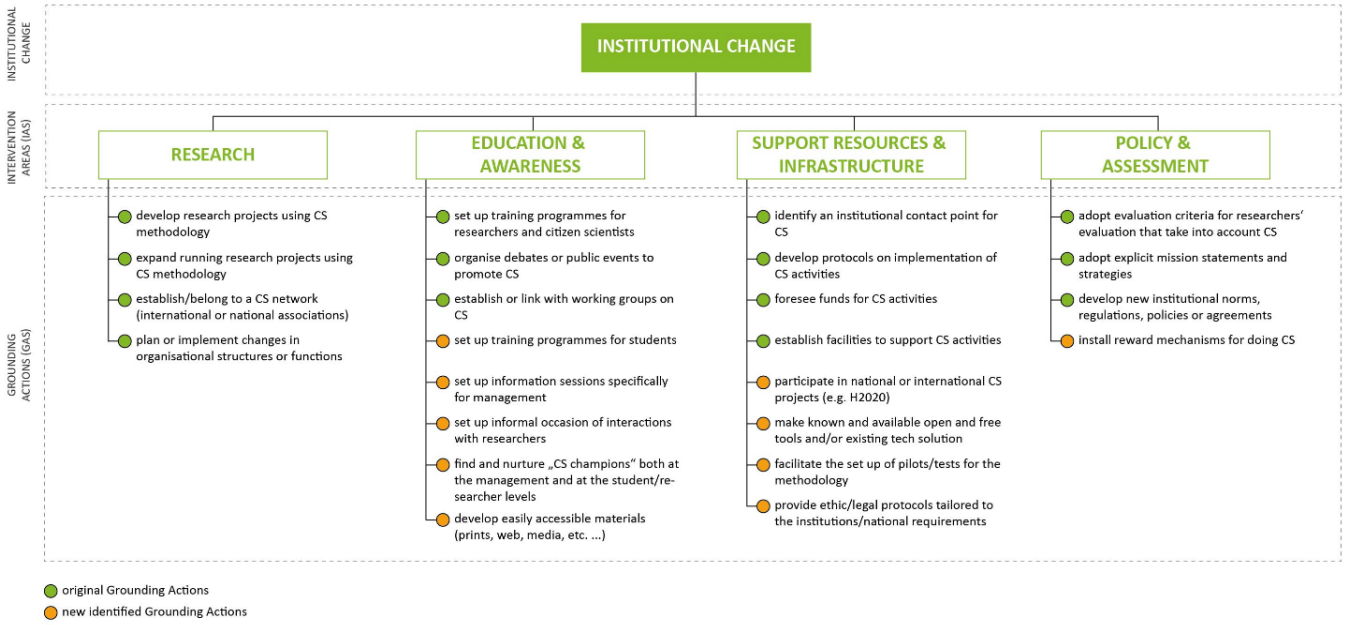

Figure 1 – Overview of the 24 identified Grounding Actions per Intervention Area

[24] TIME4CS Consortium, 'D1.2: Best practices repository of TIME4CS Front-Runners' (2021) DOI: 10.5281/zenodo.5017362

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3. The Roadmap Development Process

This chapter sets out the process for developing the roadmap and Grounding Actions, as well as how this process fits into the overall TIME4CS project.

3.1 Relation to other TIME4CS work packages

The overall TIME4CS project incorporates eight work packages, running from January 2021 to December 2023. Work package 2, for which this document is a deliverable, involves the definition and implementation of Grounding Actions by each Implementer. It builds on the work of WP1, during which successful initiatives to support Citizen Science are reviewed and analysed to inform future initiatives to be undertaken by the Implementers (with a natural focus on the work of the Front-Runners), and WP3, which supports knowledge exchange between the Implementers and Front-Runners. WP2 also draws on the self-assessment of existing Citizen Science policies and practices at the Implementers' institutions (WP5). In turn, the work of WP2 is intended to feed into WP4, which focuses on building capacity in the Implementers and external organisations to design, execute, support and evaluate Citizen Science projects.

TIME4CS project consists of four phases:

- The **preparatory phase** (January – June 2021): This phase preceded the development of each Implementer institution's Grounding Actions and roadmap. The best practice repository drawing on the Front-Runners' experiences was completed, as well as a preliminary review of case studies of institutional adoption and maintenance of Citizen Science and open science capacity. Initial evaluation of the Implementers was also conducted to provide a baseline of Citizen Science activities. The Reflection Tool for Implementers to use to start planning their Grounding Actions was developed and distributed.

- The **early phase** (June-November 2021): Each Implementer defined at least four Grounding Actions, at least one for each Intervention Area, to be implemented in the short-term (*i.e.* over the course of the project lifespan). Each roadmap was co-created with local stakeholders of each Implementer, together with the Front-Runners and the facilitator partners. This took place partly through dedicated co-creation events, which were supervised by ESF. Other elements that fed into the definition of Grounding Actions included: Front-Runner workshops (one run by each Front-Runner) attended by all Implementers to ensure knowledge transfer; analysis of the key elements and drivers necessary for transformation, identified from the best practice repository and case studies prepared for tasks T1.1 and T1.2 (produced as deliverable D1.3).

- The **middle phase** (November 2021-December 2022): The implementation of specific Grounding Actions will be guided by the individual roadmaps for each Implementer. Three guiding principles will be applied throughout this process: self-tailoring, fast-tracking and long-term viewing. A second co-creation meeting focused on implementation will also be held. The Implementers' roadmaps will be formally reviewed at the end of the middle phase.

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- The **final phase** (January-December 2023): Implementers will complete implementation of their Grounding Actions. Looking beyond the Grounding Actions and project lifetime, Implementers will develop new medium- and long-term goals and set out realistic timeframes for their achievement. The Implementers' roadmaps will be formally reviewed at the end of the final phase, with a view to informing these goals and assuring sustainability of the actions. An evaluation of the implementation of the Grounding Actions will be done together with an assessment of the Institutional Changes generated by them (WP5).

3.2 Developing the Roadmaps and Grounding Actions

In order to achieve Institutional Changes, the Implementers developed a first version of a personalised roadmap with well-defined Grounding Actions tailored to their specific institutional needs.

Grounding Actions are any action aimed at implementing or favouring Institutional Change to support or promote Citizen Science. Therefore, the Grounding Actions should share the same key features that were previously described at Section 2.2 Institutional Change: irreversibility, comprehensiveness, inclusiveness, and contextualisation. A Grounding Action should then result in one or more institutional arrangement ensuring long-term sustainability (**irreversibility**), trigger both procedural and cultural changes at the organisation (**comprehensiveness**), mobilise change agents and key actors (**inclusiveness**), and be based on an analysis of existing initiatives, needs and obstacles for their implementation (**contextualisation**).

To ensure effective Institutional Change, the Grounding Actions cannot be implemented in isolation, but should be embedded in a broader strategy: the roadmap. **A roadmap is an action plan that sets the Grounding Actions into a common strategic framework and timeframe, and has the key features of being flexible and progressive.** The roadmap assists the work of the implementation team by providing a well-defined pathway for implementing the Grounding Actions and the possibility of adapting this pathway to the changes on the context.

Under TIME4CS, five different types of activities supported and fed into the development of the roadmaps and Grounding Actions described in the rest of this document: stock-taking exercises, the best practices repository, the Front-Runners' workshops, the Reflection Tool, and the stakeholders' co-creation workshop.

3.2.1. Stock-taking exercises

As part of WP5 (the evaluation and impact assessment strand of the project) stock-taking exercises were completed from January to June 2021. Using a self-assessment questionnaire developed by the Centre for Social Innovation (ZSI), the Implementers described the current state of Citizen Science activities at their institutions. The main purpose of this exercise was to establish a baseline against which the impact of the overall project could be judged at the project's conclusion, but it also provided Implementers and other project partners with a description of current activities and support structures on which to base the planned Grounding Actions and wider roadmaps for change.

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3.2.2. Best practices repository

As described in the background section, task T1.2 of WP1 also established a repository of best practices for Institutional Change for Citizen Science based on analysis of successful programmes implemented by the three Front-Runners. In total, this identified 24 Grounding Actions as well as 13 best practices and six successful broad approaches that Implementers could tailor to their own organisation[25].

3.2.3. Front-Runners' workshops

Several Front-Runner workshops were organised in order to exchange knowledge with Implementers and give them inspiration in the definition of their Grounding Actions. The first Front-Runner workshop was held on 13 April 2021. Front-Runners presented their institutions and their experience of Citizen Science and gave an overview of what Grounding Actions they applied and how successful they had been. A series of three workshops led by each Front-Runner took place on 19 October, 27 October and 3 November 2021. They helped to further refine the selected Grounding Actions on the basis of the Front-Runners' suggestions and advice tailored according to the questions and challenges raised by Implementers. These workshops will be described in detail in the TIME4CS D3.2: Report on TIME4CS Knowledge Transfer from Front-Runners to Implementers due in December 2021.

3.2.4. Reflection Tool

With regards to specific work undertaken as part of WP2, the European Science Foundation (ESF) developed a 'Reflection Tool' to assist Implementers in developing Grounding Actions and roadmaps for change. This was based on a similar tool used for the GRACE project[26]. The tool guided Implementers through initial consideration of the aims, stakeholders, implementation steps, potential obstacles and necessary resources associated with each planned Grounding Action. Implementers used the tool to start planning their Grounding Actions from June to September 2021.

3.2.5. Stakeholders' co-creation workshops

Based on the outcomes of the Reflection Tool, co-creation exercises were conducted in October bringing together each Implementer with their local stakeholders to refine the proposed Grounding Actions. These co-creation exercises were supported by ESF.

3.3 TIME4CS Roadmaps

Within the TIME4CS project, 8-year roadmaps will be developed by the Implementers. This Deliverable focuses on the development of the **roadmaps for the TIME4CS period (3 years: 2021-2023)**, further updates will be done to include the post-project period (2 years: 2024-2025) and the long-term period (3 years: 2026-2028).

[25] TIME4CS Consortium, 'D1.2: Best practices repository of TIME4CS Front-Runners' (2021)

[26] GRACE Consortium, 'What is GRACE', accessed 25 June 2021

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The Implementers' roadmaps described in chapters 4 to 7 share a common structure consisting of five sections, detailing:

- **The institution:** This section includes basic information about the relevant Implementer.
- **Citizen Science related activities:** This section describes the main Citizen Science policies and measures adopted by the organisation prior to commencing the project.
- **The overall goals/strategy:** This section sets out the overall goals and strategy for Institutional Change, with reference to the best practices identified from the Front-Runners.
- **The Grounding Actions:** A detailed description of each Grounding Action to be implemented by the Implementer during the TIME4CS project is given. These descriptions set out: the Intervention Area targeted by the Grounding Action; the aim of each Grounding Action; the identification of the stakeholders and an overview of the co-creation exercises that fed into the Grounding Action's development; and an implementation plan setting out the individuals, organisations and resources involved, and potential obstacles and how they will be managed.

  For each Grounding Action, the stakeholders are identified according to their participation on the action, they could be either **involved** in the project (core team or extended team), or they could be **impacted** by the project (see below, Figure 2):

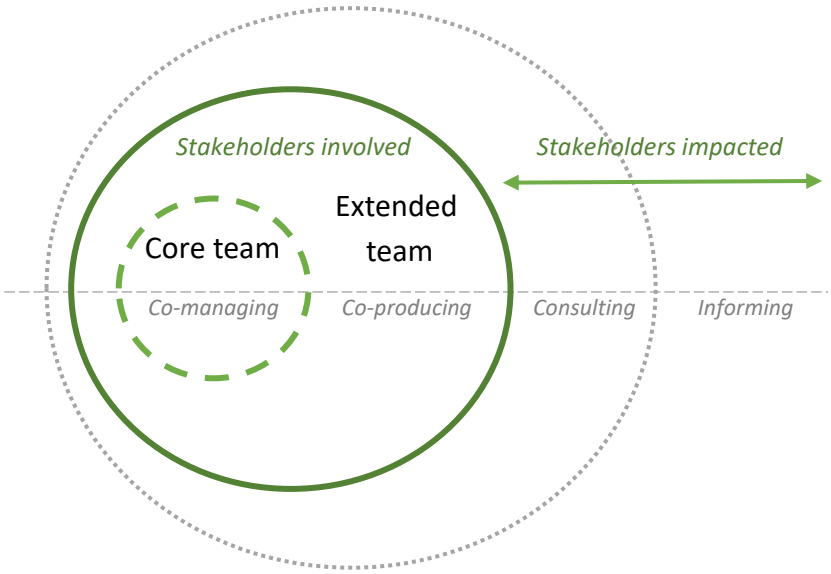

Figure 2. Identification of stakeholders involved and impacted by the Grounding Actions

- **An overall timeline of planned activities:** This section provides an overall timeline of the Grounding Actions planned for the TIME4CS period (up to December 2023), identifying the main milestones.

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The four Implementers present very diverse backgrounds in relation to their origin countries, scientific fields, and expertise in Citizen Science initiatives. Overall, 19 Grounding Actions have been defined covering the four Intervention Areas. The roadmaps can be found here:

- Tyndall National Institute (Ireland)
- Kaunas University of Technology (Lithuania)
- Centre for Genomic Regulation (Spain)
- Vita-Salute San Raffaele University (Italy)

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4. Roadmap for Tyndall National Institute

4.1 Tyndall National Institute

Tyndall National Institute (Tyndall) is one of Europe's leading research centres in Information and Communication Technology (ICT) research and development and the largest facility of its type in Ireland. Established in 2004 as successor of the National Microelectronic Research Centre (NMRC founded in 1982) at University College Cork (UCC), Tyndall employs over 460 researchers, engineers and support staff, with a full-time graduate cohort of 135 students, and generates over 200 peer-reviewed publications each year. With a network of 200 industry and customers worldwide, Tyndall generates 85% of its €30 M each year from competitively won contracts. Tyndall is also lead partner in European research partnerships in its core areas of ICT, energy, health and the environment worth €48 M from Framework 7, including €10 M to industry in Ireland. Hosting the only fully complementary metal oxide semiconductor (CMOS) integrated circuit, micro-electronic mechanical systems (MEMS) and III-V wafer semiconductor fabrication facilities and services in Ireland, Tyndall National Institute is a globally leading centre in photonics, microsystems, micro/nanoelectronics and theory, modelling and design.

4.2 Citizen Science at Tyndall National Institute

Tyndall does not have any citizen science initiative. However, some initiatives are present within the wider UCC area, such as Campus Engage, GRIPP Project in Responsible Research and Innovation, Praxis project, Citizen Science Ireland initiative, and University College Cork • PPI Ignite Network (ppinetwork.ie).

Research

There are several Citizen Science research projects at UCC level, mainly funded within the Science Foundation Ireland (SFI) Discover initiative (Appetite for Knowledge, Dingle Peninsula 2030, Ireland's secret past, NatureWatch, Science 4 Sight Loss, Tree Explorers) but Tyndall currently does not have any ongoing Citizen Science research projects.

Education and Awareness

Tyndall has two Education and Public Engagement (EPE) officers who work under the umbrella of the funded Science Foundation Ireland (SFI) centres of excellence CONNECT and IPIC with researchers and students on public and school engagement programmes. Tyndall is also part of three more SFI centres (VistaMilk, CONFIRM and Insight) who also have EPE officers working with researchers.

Support Resources and Infrastructure

Tyndall itself does not have specific offices and officers dedicated to CS, however, being part of UCC, Tyndall can avail of the wider support functions available in UCC.

UCC has the following support:

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- UCC Civic and Community Engagement Committee (UCCEC)
- CE Committees, Champions or Heads in each College
- EPE Officers in SFI Funded Research Institutes/ Centres – Head of UCC Civic & Community Engagement:
- Community Engaged Learning Lead, Student Volunteering Lead
- UNIC Engaged Research Officer, Community Academic Research Links Coordinator
- UNIC European University CityLabs

Policy and Assessment

The importance of "engaging with communities and strengthening Cork as a city of learning" has been highlighted in the UCC Strategic Plan 2017-2022 (UCCStrategicPlanSummary.pdf). A number of offices support the plan above, including the Centre for Global Development (https://www.ucc.ie/en/cgd/).

A UCC Civic and Community Engagement Plan has been drafted by the Civic and Community Engagement Committee, following extensive consultations with staff, students and community stakeholders. A staff survey conducted in 2016 found that there was reasonable staff activity in the area of community engagement. However, staff cited barriers such as having insufficient time, a lack of recognition or valuing of engagement, and engagement needing to be integral to the mission of the University[27].

Based within the Irish Universities Association (IUA), Campus Engage is dedicated to supporting Irish higher education institutions to embed, scale and promote civic and community engagement across staff and student teaching, learning and research (https://www.campusengage.ie/).

4.3 Overall Goals and Strategy for Institutional Change

Tyndall is a research organisation that receives a large amount of funding from EU and local funding agencies such as Science Foundation Ireland (SFI), Irish Research Council (IRC) and the Environmental Protection Agency (EPA). Increasingly, there is an awareness for the necessity to co-design and co-develop research, in line with needs of end-users and the wider society. This aspect is still not widely taken in consideration neither during the initial phases of project design/writing nor after, during project execution. However, all funding agencies now require grant holders to engage with end users/taxpayers. This is done mainly through Education and Public Engagement activities aiming to raise awareness of the project to specialised audiences, wider public and students. These forms of EPE activities are moving from "traditional" passive activities (lectures, etc.) to more interactive experiences, whereby demos and videos or interactive activities are developed allowing the audience to more actively participate and understand the technology. While there are occasional examples of CS projects (mainly in EPA funded projects), there is definitely an opportunity to implement CS, co-design and co-development of research. The main barriers at the moment are associated

[27] https://www.ucc.ie/en/media/centralmedia/UCC_Civic_Engage_2017a.pdf

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to lack of funding and lack of training at all levels (from undergraduate to experienced senior academics) to implement CS into projects and project proposals. The trainings should help Tyndall to better understand how it can tailor its academic research to the need of actively involving citizens. Two specific GAs will help Tyndall to address these needs and limitations: the development of a postgraduate module on CS for Science, Engineering and Food Science (SEFS), and the implementation of training for researchers, raising funding awareness in order to stimulate i) the uptake of CS-based projects, ii) the incorporation of CS aspects into research projects; and iii) development of an engaged research strategy.

4.4 Planned Grounding Actions

In total, 5 GAs are planned:

- GA1 – Promoting and supporting incorporation of CS dimension into future research projects [Research]
- GA2 – Development of postgraduate module on CS [Education and Awareness]
- GA3 – Training program for researchers [Education and Awareness]
- GA4 – Funding Awareness [Support Resources and Infrastructures]
- GA5 – Supporting the development of an engaged research strategy [Policy and Assessment]

4.4.1 GA1 – Promoting and supporting incorporation of CS dimension into research projects

Intervention Area

This GA falls under “Research”.

Description and aims of the GA

At Tyndall, the CS dimension is currently only taken into account where required in Horizon Europe project submissions. The aim of the Tyndall core team is to raise awareness of the benefits that incorporation of CS dimensions could bring into projects and also support incorporation of CS-based activities into projects. The aim is to see an increase of the submission of CS based projects or projects with a strong CS component in the next five years. This Grounding Action is associated with the Grounding Actions 3 and 4.

Implementation plan

The implementation of this Grounding Action will be organised around 4 main activities:

1. Activity 1.1: Identify funding calls particularly benefitting from CS dimension (like IRC coalescence, SFI centre associated projects, HE projects)

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2. Activity 1.2: Raise awareness of CS-based calls among Tyndall researchers
3. Activity 1.3: Build national and international network of collaborators (build on TIME4CS experience)
4. Activity 1.4: Identify and participate to international conferences (with the support of TIME4CS partners)
5. Activity 1.5: Liaise with funding agencies (SFI, IRC) into the implementation of policies incorporating CS dimension into research projects

Stakeholders & Co-creation

The individual, teams and organisations responsible for this action will be:

- Core team
- Stakeholders: SFI centres EPE officers, funding agencies, Tyndall researchers, UCC researchers

Potential Obstacles

The potential obstacles of this action are the lack of interest and the lack of opportunities. In order to counteract these obstacles, Tyndall is proposing to foster opportunities for further funding and interdisciplinary collaborations with the organisation of interdepartmental talks and workshops. In parallel, the core team in Tyndall will lease with its own EU Programmes Officers to raise awareness on the opportunities for funding.

Timeline

Step	Activity	Responsible	Timeline
1	Organisation of interdisciplinary talks/workshops to increase opportunities for funding.	Extended team	September 2022
2	Scoping of funding opportunities. Organisation of quarterly meetings internally to target funding opportunities	Core team	Starting January 2022
3	Organisation of interdisciplinary workshops with NGOs or community partners to increase opportunities for funding.	Core team	Starting May 2022

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4	Participation to conferences	Core team	From April 2022

4.4.2 GA2 – Postgraduate module on CS

Intervention Area

This GA falls under "Education and Awareness".

Description and aims of the GA

Science students are in general not familiar with the concept of Citizen Science and the benefits that an integrated approach could have to address scientific and societal challenges. Education of students at this level will hopefully create future workforce (at academic and private levels) more open to include CS into research projects.

The aim of this GA is the creation of a CS module targeting postgraduate students in Tyndall. The idea is to educate young researchers on the basic principles of CS and ways of incorporation into research projects.

Implementation plan

The implementation of this Grounding Action will be organised around 4 main activities:

1. Activity 2.1: Assemble an extended "production" team interested in the development of such module
2. Activity 2.2: Reach out to the wider stakeholder community. Co-design of module length, format and delivery
3. Activity 2.3: Collect information from a wider UCC team on existing material for relevant complementary courses
4. Activity 2.4: Assembly of course and delivery
5. Activity 2.5: Discuss and implement a sustainability plan; identify the routes to make the course viable past the length of the project.

Stakeholders & Co-creation

The co-creation exercise highlighted the need for the proposed module. Academia representatives including experts in teaching and learning, lecturers and students were present. Members from community groups were also present and expressed their willingness to come on board in the hosting of the module practical activities. An extended team has been identified who will be guided by the core team and contribute into the assembly of the module.

The individual, teams and organisations responsible for this action will be:

- Core team
- Extended production team

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- Stakeholders impacted: SEFS managing team (consulting), graduate studies committee (Tyndall and UCC), postgraduate students

Potential Obstacles

The obstacles the core team sees are related to the timely mobilisation of people. Luckily, UCC has a very active community officer and a newly appointed Engaged Research Officer who will be part of the extended team and will work closely with the core team towards meeting the scheduled tasks. An important aspect will be the timely scheduled of tasks, delegation of tasks to individual team members in order to receive material and feedback within defined timescales. The extended team members have extensive experience into module assembly and teaching. Another point will be the delivery of the module. A number of volunteers will have to be identified in order to ensure sustainability.

Timeline

Step	Activity	Responsible	Timeline
1	Open consultation between core team members. Identification of the wider co-production team	Core team	September/October 2021
	Definition of course length and delivery method	Core team	October 2021
	Definition of course content (blocks), outcomes and assess learning methods	Core team and experienced partners in TIME4CS	December 2021/January 2022
2	Assembly of material	Production team	June 2022
	Iterative process to assess content in consultation with experienced partners	Production team	August 2022
	Implementation of group activities within the course	Production team	August 2022
3	Promotion of course	Postgraduate team, Tyndall	November 2022
	Identification of course delivery team	Production team	December 2022
	Delivery of course and testing of attendance feedback	Production team	From October 2023

4.4.3 GA3 – Training program for researchers

Intervention Area

This GA falls under “Education and Awareness”.

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Description and aims of the GA

There is a general poor knowledge of CS in Tyndall's research environment. We would like to develop a program (to be incorporated initially within the EPE remit) to explain what CS is, how to incorporate CS elements into research proposals and how to benefit from CS. Tyndall feels that this would be an important step for the research institute, heavily focused on applied research and on dissemination activities. In addition, the incorporation of CS element will increase the chances of success in European and national funding for the institute.

Implementation plan

The implementation of this grounding action will be organised around 4 activities:

1. Activity 3.1: Internal Dissemination of TIME4CS project
2. Activity 3.2: Assembly and delivery of a general CS presentation for Tyndall researchers, linked to TIME4CS
3. Activity 3.3: Gather interest in CS in order to build centre of mass through promotion of seed projects
4. Activity 3.4: Organisation of training modules for researchers

Stakeholders & Co-creation

In order to deliver the implementation plan, the core team will organise the internal dissemination of the TIME4CS project and its objectives at wide Tyndall level. Through this process a selected number of researchers (extended group) will be identified who has interest in pursuing the development of CS-based projects. A small bursary will be established, with the cooperation of Tyndall's Institute Leadership Team (ILT), to support this activity. Overall, the individuals, teams and organisations involved will be as follows:

- Core team
- Extended team
- Stakeholders impacted: Tyndall researchers, Tyndall high management, wider research community associated with SFI funding, funding agencies, trainers

Potential Obstacles

The potential obstacles for the implementation of this GA can be the access to funding, which in turn will determine the interest and participation. According to the Tyndall business system, each researcher is funded by specific projects and does not have the person-month to take on unfunded pieces of research. Therefore, the key to entice participation is the focus on the benefits of CS and the proper scoping of funding opportunities. Long-term funding for training of personnel could also be an issue. The core team mission is to raise the importance of CS incorporation at ILT level to seek necessary support.

Timeline

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Step	Activity	Responsible	Timeline
1	Assembly presentation on TIME4CS for internal use	Core team	December 2021
	Assembly wider presentation on CS and TIME4CS, high profile talk targeted to Tyndall audience. Source presenters and make it Tyndall relevant	Core team	March 2022
2	Structuring of training	Core team	April 2021
	Grant scheme – allocation of funding scheme for seed projects	Core team	April 2022
	Organization and delivery of training workshops for restricted number of applicants. Submission proposals in september 2022	Core team	May 2022
3	Identification of Proposal evaluation criteria and committee	Core team	July/August 2022
	Incorporate CS training into training modules offered in Tyndall	Core team and Tyndall Human Resources department	Long term

4.4.4 GA4 – Funding Awareness

Intervention Area

This GA falls under "Support Resources and Infrastructure".

Description and aims of the GA

The overall objective is to raise funding awareness for researchers in order to stimulate the uptake of CS-based projects.

In order to do so, this Grounding Action will aim at i) promoting generation of interdisciplinary research with other scientific or humanities-based groups in UCC and beyond in order to stimulate the application for CS-based funding; ii) Preparing researchers to fulfil the future CS requirements of upcoming HE proposals and SFI projects.

Implementation plan

The implementation of this grounding action will be organised around 2 activities:

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1. Activity 4.1: Organise interdisciplinary seminars
2. Activity 4.2: Identify humanities-based projects requiring scientific inputs

Stakeholders & Co-creation

The individuals, teams and organisations involved will be as follows:

- Core team
- Stakeholders: funding agencies, UCC humanities staff, Tyndall staff, SFI centres and EPE officers

Potential Obstacles

The main obstacle for this GA is the establishment of communication channels between humanities and STEM teams in order to define interdisciplinary projects with an element of CS incorporated into it. This in turn would allow Tyndall to leverage funding from the Irish Research Council dedicated to collaborative research towards the fulfilment of UN SDGs. Often these projects have NGOs or other community groups on board and are difficult to access because they are humanity-led.

Timeline

Step	Activity	Responsible	Timeline
1	Organise interdisciplinary seminars	Core team	May 2022
	Identify humanity-based projects requiring scientific inputs	Core team	October 2022
	Organise interdisciplinary networking events	Core team	January 2023
2	Identify community projects through connections with local community groups	Core team and UCC community officer	July 2022

4.4.5 GA5 – Supporting the development of an engaged research strategy

Intervention Area

This GA falls under “Policy and Assessment”.

Description and aims of the GA

UCC aims to develop a research and innovation structure around the core concept of engaged research (inclusive of Citizen Science) which offers a transdisciplinary approach and method for systematic knowledge production not only for society, but also with and within society. It offers an approach for combining excellence, relevance and impact, necessitating a process of boundary crossing where academia steps

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outside its customary domains to co-create knowledge with societal actors. Essentially an umbrella term that describes research approaches that have a common interest in collaborative inquiry with society (inclusive of Citizen Science), it assumes knowledge, insight and expertise comes from a variety of sources - researchers, citizens, policy makers, practitioners - and that research outputs are concerned with the process of co-production of knowledge through partnership for societal impact.

The aim of this GA will be to adopt explicit mission statements and strategies, and more specifically:

- To incorporate Citizen Science as a component part of the development and implementation of an *Engaged Research Strategy* for UCC and its component Research Centers and Institutes
- To incorporate Tyndall's engaged research strategy into the above
- To incorporate CS as core component of the engaged research strategies above

Implementation plan

The implementation of this grounding action will be organised around 4 core activities:

1. Activity 5.1: Organise an Engaged Research Strategy Forum
2. Activity 5.2: Map current institutional practices, policies and initiatives for Engaged Research and CS
3. Activity 5.3: Develop a common institutional understanding of Engaged Research and CS
4. Activity 5.4: Define and develop a (Preliminary) Engaged Research Strategy (inclusive of CS)
5. Activity 5.5: Sign an institutional and external partner Declaration on Engaged Research (inclusive of CS)

Stakeholders & Co-creation

The individuals, teams and organisations involved will be as follows:

- UCC Engaged Research Strategy
- Citizen Science Extended Team
- Stakeholders: Citizens, NGO's / CSO's, Cork Partnership (Community Development EU Leader Company), SECAD (Community Development EU Leader Company), Cork City Council (Municipality), Cork City and County Public Participation Network (Citizen Leadership Body for formal input into local government policy development), Cork Smart Gateway, UNESCO Learning City, Cork Healthy Cities, Cork Food Policy Council, Campus Engage (National Support Organization for Engaged Research), Science Foundation Ireland (Funding Body)

Potential Obstacles

The main obstacles foreseen are related to the capacity of the engaged team to build bridges across different understanding of Engaged Research and CS as well as to secure a university-level strategic commitment to

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Engaged Research and CS. In order to minimise these obstacles the intention is to organize an Engaged Research Strategy Forum in order to share and develop supportive policies, strategies and initiatives

Timeline

Step	Activity	Responsible	Timeline
1	Organize an Engaged Research Strategy Forum for Research Support Services in order to share and develop supportive policies, strategies and initiatives. (The Forum is an institutional level initiative being organized as part of UCC's European University initiative)	Citizen Science Extended team	January 18th/19th 2022 In person and online
2	Develop a common understanding of Engaged Research. We will seek to encourage critical, interdisciplinary discussion about what engaged research is (inclusive of CS), as well as the methods by which it can be implemented.	Citizen Science Extended team	June 2022
3	Define and develop a (Preliminary) Engaged Research Strategy, (inclusive of CS) providing a roadmap for the future development of engaged research across the institution (to be adopted as part of UCC's Strategic Plan)	Citizen Science Extended team	June 2022 (Preliminary Draft)
	Develop and sign a *Common Declaration on Engaged Research*, (inclusive of CS) that will be co-signed by the UCC University President and the Municipality/City CEO, and other key stakeholders in civil society and policy communities	Citizen Science Extended team	July 2022

4.5 Planned Timeline

Month	GA1 – CS into research projects	GA2 – Postgraduate module on CS	GA3 – Training program for researchers	GA4 – Funding Awareness	GA5 –Engaged research strategy

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2021					
December		Open consultation, co-creation of content	TIME4CS Tyndall story. Assembly pptx		
2022					
January	Scoping funding opportunities				Engaged Research Strategy Forum organization
February					
March			Delivery of TIME4CS talk to wide Tyndall audience		
April	Conferences		Allocation of funding for seed projects		
May	Workshops with NGOs and community partners		Delivery of training	Interdisciplinary seminars	
June		Assembly of material			(Preliminary) Engaged Research Strategy
July				Identification of community-based projects of mutual interest	Develop and sign a *Common Declaration on Engaged Research*
August		Iterative consultation with	Proposals' evaluation team		

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		stakeholders to fix module content			
September	Interdisciplinary talks scheduled				
October				Identification of interdisciplinary projects/collaboration/partners	
November		Course promotion			
December		Identification of delivery team			
2023					
January					
February					
March					
April					
May					
June					
July					
August		Academic approval			
September					
October		Course delivery			
November					
December					

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5. Roadmap for Kaunas University of Technology

5.1 Kaunas University of Technology

Kaunas University of Technology (KTU) is the largest technical university in the Baltic States. It has 9 faculties, and 9 research institutes, offers Bachelor, Master and Doctoral Degree programmes. The university enrols 8.500 students (including 330 PhD students) and has approx. 1000 academic staff. The University seeks to become a strong science and innovation university, where the university studies are based on study and scientific research symbiosis. The mission of Kaunas University of Technology is to provide research-based studies of international level, to create and to transfer knowledge and innovative technologies for sustainable development and innovative growth of the country, to provide an open creative environment that inspires leaders and talented individuals.
KTU is a member of many international associations (ECIU, EUA, CESAER, EUCEN, SEFI, EAIE, EDEN, Global Compact, IACEE, UICEE, BALTECH, ATUBS, ECSA). The University and its scholars are very active in European and international scientific cooperation. There is a wide spectrum of research teams, mostly working in interdisciplinary academic areas, including active participation in Framework, Eureka, COST or national programmes. KTU is/has been implementing 48 projects under H2020 and Horizon Europe programmes. It also hosts the LiDA archive that is responsible for acquisition and dissemination of national and international data sets, data access to international data archives, national and international data analysis training.

5.2 Citizen Science at Kaunas University of Technology

Research

The research on Citizen Science and public engagement in science is supported by internal and external mechanisms. KTU is running only a few Citizen Science projects.

Internal mechanisms focus on the overall support provided by KTU Research and Innovation Projects Centre. The Centre aims to ensure the quality of projects' preparation and administration processes that are carried out by academic units as well as to develop appropriate competences in order to compete successfully for financing for R&D&I activities in Lithuania, the European Union and beyond.

External support is mainly related to initiatives from EU and national agencies that provide grants or networking opportunities for KTU scholars. KTU has started to be involved in research on Citizen Science since 2016 through the participation in several international and national initiatives (COST Action CA15212; CS4Welfare S-GEV-20-6), and in several H2020 projects (YOUCOUNT, SMART-ER, etc).

Education and Awareness

The current educational practices focus on:

- Including science communication topics into BA and MA level courses (none of the courses had Citizen Science topic till the beginning of this project);

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- Including social perceptions of technological risk, trust in science, public participation and technology assessment topics into PhD courses (offered to PhD students in Sociology);
- Teachers familiar with Citizen Science topic contribute to development of MOOCs (e. g. "Storytelling for Citizen Science" training module, a free course which is hosted on the EU-Citizen. Science Moodle platform or contributing to ECSA online training programme 2021).

KTU has in place some awareness raising practices for the general public, the local communities and the international academic community

Support Resources and Infrastructure

KTU has a long successful experience in the implementation of science and innovation projects. Though Citizen Science is still not very well-known in Lithuania, international and national funding opportunities are available to implement Citizen Science projects. Different funding opportunities are available under H2020, Horizon Europe programs, also national programs coordinated by Lithuanian Research Council and the 2014–2020 Operational Programme for the European Union Funds' Investments in Lithuania. Internal Research and Innovation Fund of KTU also funds research projects in different thematic areas including civil society building.

Researchers of KTU have access to open data archive "Lithuanian Data Archive for Social Sciences and Humanities (LiDA)" (https://lida.dataverse.lt/). The archive is ready to deposit quantitative and qualitative data sets, also including data from Citizen Science projects. KTU is also a member of the European Open Science network "OpenAIRE" (https://www.openaire.eu/), where a KTU representative is the OpenAIRE National Open Access Desk coordinator.

Policy and Assessment

In 2021 Kaunas University of Technology adopted KTU Strategy for 2021 – 2025 and Action Plan 2021 – 2025 to implement this strategy. The document of open access to scientific publications and research data at KTU was approved in 2020. These documents do not explicitly include Citizen Science, but science communication and public engagement are integrated. The university also disseminates information about the open access and its benefits among the members of the university community, supports international and national initiatives promoting open access.

Science communication is one of the elements that is evaluated during the *attestation* of researchers and university teachers (for the position of professor, assoc. professor, chief researcher, and senior researcher). Public engagement and societal impact (where CS is a contributor and catalyst for impact and engagement) are assessed as part of a national comparative qualitative evaluation of Lithuanian higher education institutions' research units, conducted every five years.

5.3 Overall Goals and Strategy for Institutional Change

The overall goal of KTU is to become an active member of CS initiatives, implementing multiple projects in CS (together with society), to be embedded into the main CS networks(such as ECSA, national Association of Citizen Science, ECIU, Open science community), and involved in different events, presenting research and

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practical experience in CS at conferences, seminars, workshops, webinars. KTU has an ambition to continuously serve in building and growing community of practice of researchers interested in implementing the Citizen Science projects as well as empowering a community of citizens and organizations, ready to join, initiate and lead CS projects and establish registered non-formal education programmes on CS as well as include CS topics in formal education programmes. KTU aims to get equipped with the infrastructure and organizational arrangements that enable and facilitate the development of CS by hosting Virtual CS Contact Point and that acknowledge the importance of CS in strategic documents.

The current mission of the university is: "to provide the research-based studies at international level; to develop and to transfer knowledge and innovative technologies for sustainable development of the State and development of innovations; to create an open creative environment which inspires talents and leaders" (https://en.ktu.edu/university/).

University has a strategic goal to implement university's third mission: cooperation between university and society, assuring effective science communication and public participation in research. This is indirectly reflected in KTU strategy: "ENSURING EFFECTIVE COMMUNICATION. The University's communication system will be developed and expanded to effectively strengthen the image of KTU in the public domain, properly represent the achievements of the University's employees and clearly reveal the added value created by the University's community to all the interested parties".

5.4 Planned Grounding Actions

In total, 4 GAs are planned:

- GA1 – Research and Networks [Research]
- GA2 – Non-formal education programs [Education and Awareness].
- GA3 – Virtual Hub and University Contact Point for CS Projects [Support resources and Infrastructures].
- GA4 – Strategic CS guidelines [Policy and Assessment]

5.4.1 GA1 – Research and Networks

Intervention Area

This GA falls under "Research".

Description of the GA and aims

The overall goal is to establish and belong to CS networks and to expand running research projects using CS methodology

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The specific objectives of this GA are as follows:

- To establish connections with CS networks
- To expand research projects using CS methodology and involve researchers of diverse career stages and disciplines from different fields into research project proposals on CS
- To disseminate research results on CS through different academic channels

The objectives of this GA contribute to the achievement of the following elements of the big vision from a long-term perspective:

- KTU is an active member of CS initiatives, implementing multiple projects in CS (together with society).
- KTU participates in ECSA, national Association of Citizen Science, ECIU, Open science community.
- KTU is involved in different events, presenting research and practical experience in CS at conferences, seminars, workshops, webinars.

Implementation plan

GA1 implementation activities are split into three major groups: 1) activities aimed to achieve "G1.1: To establish connections with CS networks"; 2) activities aimed to achieve "G1.2: To expand research projects using CS methodology and involve researchers of diverse career stages and disciplines from different fields into research project proposals on CS"; 3) activities aimed to achieve "G1.3: To disseminate research results on CS through different academic channels".

Activities aimed to achieve "G1.1: To establish connections with CS networks":

1. Activity 1.1: Initiating membership application in ECSA. Contacting ECSA, implementing public procurement procedures to pay membership fee. Membership fee for 2021 was paid by the project. Potential obstacles: finding resources to pay membership fee after the project ends.
2. Activity 1.2: Initiating membership application in national Citizen Science association.
3. Activity 1.3: Initiating cooperation with Eu-citizen.science platform

Activities aimed to achieve "G1.2: To expand research projects using CS methodology and involve researchers of diverse career stages and disciplines from different fields into research project proposals in CS":

4. Activity 1.4: Developing and disseminating research priorities related to CS and open science at the Faculty of Social Sciences, Arts and Humanities (FSSAH)
5. Activity 1.5: Organizing co-creation workshops for writing project proposals on CS topic or using CS methodology
6. Activity 1.6: Developing project proposal with multidisciplinary team

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Activities aimed to achieve "G1.3: To disseminate research results on CS through different academic channels":

7. Activity 1.7: Organizing a national seminar to share research results
8. Activity 1.8: Presenting research findings at the international conferences
9. Activity 1.9: Using media to disseminate research results to a wider public.

Stakeholders and Co-creation

Stakeholders impacted by the action: researcher communities of diverse academic units at Kaunas University of Technology; local/territorial communities; school communities willing to participate in CS related projects; other universities (as research partners) on national and international level, whose members are willing to do research on CS.

Stakeholders that will have influence on the decisions: university research units who decide about research strategies, EC and Research Council of Lithuania which determines topics of research calls.

The following co-creation activities with different stakeholders are foreseen during the implementation of the project:

- Co-creating research priorities related to CS and open science at the Faculty of Social Sciences, Arts and Humanities. These priorities will be developed together with the research community.
- Cooperation with the University Research and Innovation Project Centre. The constant consultations about the forthcoming calls related to CS are foreseen.
- Cooperation with ECSA and national Citizen Science association.
- Co-creation sessions for development of project proposal related to CS and open science with researchers' communities of diverse academic units at Kaunas University of Technology
- External partners (other universities, school communities, etc.) will be contacted for possible cooperation in project proposals development.

Potential Obstacles

While implementing this GA, there are several obstacles that may affect the quality of its implementation:

- **No interest from KTU researchers.** This obstacle may be addressed by using intensive efforts to reach out different faculties and involve researchers. Also, to plan internal (within University) dissemination and outreach activities together with the central office of the University and the Dean's office of the Faculty of Social Sciences, Arts and Humanities.
- **No interest from external partners to participate in project proposals.** This obstacle may be addressed by using already existing networks which facilitate involvement of external partners; e. g. using Crowdhelix for dissemination of call for interest in particular project proposal, including information on the weekly digest of collaboration opportunities posted on Crowdhelix.

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- **No sufficient funding to participate in networks.** The strategy to overcome this obstacle is to attract external funding.

Timeline

Step	Activity	Responsible	Timeline
1	Initiating membership application in ECSA	TIME4CS LT core team	November 2021
	Initiating membership application in national Citizen Science association.	TIME4CS LT core team	December 2021
	Initiating cooperation with Eu-citizen.science platform	TIME4CS LT core team leader, CS Point of Contact	November 2022
2	Developing and disseminating research priorities related to CS and open science at the FSSAH	TIME4CS LT core team leader	March 2022
	Organizing cocreation workshops for project proposals writing in CS topic or using CS methodology	TIME4CS LT core team leader	October 2022
	Developing project proposal with multidisciplinary team	TIME4CS LT core team	February 2023
3	Organizing a national seminar to share research results	TIME4CS LT core team	December 2022
	Presenting research findings at the international conferences	TIME4CS LT core team	April 2023
	Using media to disseminate research results to a wider public	TIME4CS LT core team	October 2023

5.4.2 GA2 – Non-formal education programs

Intervention Area

This GA falls under “Education and Awareness”.

Description and aims of the GA

University establishes registered non-formal education programs. One is dedicated to researchers of all career stages and diverse disciplinary backgrounds. The other, in MOOC format, is dedicated to citizens and

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various interested non-academic stakeholders. University lecturers would include CS topics in the already existing and delivered formal education programs and courses.

KTU aims to develop tools that would continuously serve the community of practice of researchers and non-academic stakeholders interested in Citizen Science. The non-formal education program would help upskilling of the researchers and help building a lively, active and CS committed community of researchers. The MOOC would help in building and empowering a community of citizens and organizations, ready to join, initiate and lead CS projects. Introducing the CS topics in the already existing programmes and courses would allow to engage and motivate students. University will seek to sustain the educational tools beyond the lifetime of the TIME4CS project. The overall goal is to establish CS related educational programs and courses.

The specific objectives of the GA2 are as follows:

To engage researchers of diverse career stages and disciplines into a series of non-formal education sessions on the CS topics.

- To engage citizens and non-academic organizations into a series of non-formal education – MOOC – sessions on the CS topics.
- To include CS topics in formal education programs.
- To establish sustainable non-formal education programs on CS topic.

Ideally, when implemented, these objectives will continuously help building the mindset and motivation to engage with CS initiatives.

These objectives of GA contribute to the achievement of the following elements of the big vision from a long-term perspective:

- KTU continuously serves in building and growing community of practice of researchers interested in implementing the Citizen Science projects as well as empowering a community of citizens and organizations, ready to join, initiate and lead CS projects.
- KTU establishes registered non-formal education programs on CS and includes CS topics in formal education programs

Implementation plan

GA2 implementation activities are split into three groups: (1) activities needed "G2.1 to develop the new educational programs or include CS topics into existing formal programs"; (2) activities needed "G2.2 to implement, improve and support the programs"; (3) and activities needed "G2.3 to ensure the sustainability of the educational programs beyond the lifetime of the TIME4CS project".

Activities needed to achieve "G2.1 develop the new non-formal educational programs or include CS topics into existing formal programs":

1. Activity 2.1. Organize at least two cocreation sessions for developing the non-formal educational programs.

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2. Activity 2.2. Develop and register the non-formal educational programs (one for researchers and one for non-academic communities in a MOOC format)
3. Activity 2.3. Disseminate the call for non-formal educational programs
4. Activity 2.4. To introduce the CS topic in existing identified formal educational programs and courses within KTU.

Activities needed to achieve "G2.2 to implement, improve and support the programs educating about CS":

5. Activity 2.5. Develop a Moodle platform for the educational session for researchers and for the MOOC for non-academic communities, via https://open.ktu.edu/ .
6. Activity 2.6. Organize one educational session for researchers, and one MOOC session for the non-academic communities.
7. Activity 2.7. Organize feedback surveys, analyse their data and suggest improvements for the non-formal education programs on CS at KTU.
8. Activity 2.8. Prepare and publish a Lithuanian textbook on CS methodology to further support the non-formal and formal education programs.

Activities needed to achieve "G2.3 to ensure the sustainability of the educational programs beyond the lifetime of the TIME4CS project":

9. Activity 2.9. Integrate the non-formal educational programs with the already established DAtA centre Methods' School (https://data.ktu.edu/courses/buve-mokymai/).

Stakeholders & Co-creation

Stakeholders impacted by the action: researcher communities of diverse academic units at Kaunas University of Technology; local/territorial communities; school communities willing to integrate CS into their educational programs; various non-governmental organizations in Lithuania; other not-for-profit and business organizations, whose members are willing to engage with CS.

Stakeholders that will have influence on the decisions: non-formal education and studies' committee of the Faculty of Social Sciences, Arts and Humanities, that decides upon the registration and further implementation of the non-formal education programs; University central studies' department that registers the non-formal education programs and provides with infrastructure for the MOOC; Research Council of Lithuania that might decide to foster the CS and therefore recommend the program to the interested Lithuanian researchers.

Stakeholders will be involved in the decision-making and execution of the initiative:

- Non-formal education and studies' committee of the Faculty of Social Sciences, Arts and Humanities will be contacted and consulted before drafting the preliminary programs (including MOOC) of the CS education, and before introducing CS topics to the already existing formal educational programs or courses.

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- The University central studies' department will be informed about the forthcoming MOOC and will be consulted about the MOOC infrastructure.
- Research Council of Lithuania will be contacted about possible reach out to the Council registered researchers, informing about a new educational program.
- Researcher communities of diverse academic units at Kaunas University of Technology will be contacted through educational program cocreation sessions and later – for participation in the educational sessions.
- Local/territorial communities, school communities, various non-governmental organizations in Lithuania, other not-for-profit and business organizations will be contacted through educational program cocreation sessions and later – for participation in the MOOC educational sessions.
- Major obstacle for GA2 - lack of motivation from researchers to participate in the educational sessions. This might be related to knowledge deficit, lack of competence and willingness of the researchers to include Citizen Science projects in their research. To overcome this obstacle, internal (within University) dissemination and outreach activities will be planned by the core team together with the central office of the University and the Dean's office of the Faculty of Social Sciences, Arts and Humanities.
- Another important obstacle is the lack of initiatives and lack of competence of citizens and non-academic organizations to participate in Citizen Science projects. To overcome this obstacle, the core team plans public dissemination and outreach activities together with external stakeholders, etc. schools and local communities, and the deans' office of the Faculty of Social Sciences, Arts and Humanities. For disseminating the information on the MOOC, KTU is going to learn from good practices of the TIME4CS project partners, e.g. employing social media, working with the University library, cooperating with museums who are often motivated to reach out to citizens. To overcome this obstacle, the core team also plans to contact NGOs that bring people together by interests, showcasing them the value of participating in CS projects.
- For implementing GA2, various resources are needed, such as educational environments to organize and implement the training sessions, and virtual environments for the MOOC. Kaunas University of Technology has the needed infrastructure, publicly accessible via https://open.ktu.edu/. Educational environments will be obtained through the University settings. MOOC will be hosted by a University platform https://open.ktu.edu/.
- It is also important to have educators with competences to teach about CS projects. Educators with needed competences will be sought internationally. TIME4CS KTU core team leader and members will also serve as educators.
- Funding for the educational sessions and funding for a textbook on CS projects are also crucial resources. Funding for the organization of the educational sessions and funding for the textbook publication will be sought through the TIME4CS project. And later – via University funding.

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Timeline

Step	Activity	Responsible	Timeline
1.	Organize at least two cocreation sessions for developing the non-formal educational programs	TIME4CS LT core team and KTU CS PoC	February 2022
	Develop and register the non-formal educational programs	TIME4CS LT core team	March 2022
	Disseminate the call for non-formal educational programs	TIME4CS LT core team and KTU CS PoC	April 2022
	To introduce the CS topic in existing identified educational programs and courses within KTU	TIME4CS LT core team	September 2022
2.	Develop a Moodle platform for the educational session for researchers and for the MOOC for non-academic communities	TIME4CS LT core team	October 2022
	Organize one educational session for researchers, and one MOOC session for the non-academic communities	TIME4CS LT core team	May 2023
	Organize feedback surveys, analyse their data and suggest improvements for the non-formal education programs on CS at KTU	TIME4CS LT core team and KTU CS PoC	June 2023
	Prepare and publish a Lithuanian textbook on CS methodology to further support the non-formal and formal education programs	TIME4CS LT core team	December 2023
3.	Integrate the non-formal educational programs with the already established DAtA centre Methods' School	TIME4CS LT core team	November 2023

5.4.3 GA3 – Virtual Hub and University Contact Point for CS Projects

Intervention Area

This GA falls under the IA "Support resources and Infrastructures".

Description of the GA and aims

University establishes a virtual hub for the CS projects. The main functions of the hub would include building citizens' and researchers' communities and promoting the CS methodologies and projects.

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The grounding action GA3 also includes appointing a Contact Point for CS at the University. This person would be responsible for mediating and facilitating the CS projects, working with both – academic and non-academic communities.

The overall goal is to establish infrastructure and organizational arrangements that enable and facilitate the development of CS.

The specific objectives of the GA3 are as follows:

- To establish a virtual hub for the CS projects and appoint a contact point for the CS initiatives.
- To sustain a virtual hub for the CS projects and embed it into international networks.

When implemented, these objectives will allow KTU to close the gap – the lack of dedicated personnel that could answer the CS related issues and coordinate the actions towards the CS projects development on a University level. It will also address and solve another problem – lack of a hub in Lithuanian that could be employed as arena for CS community building and CS projects outreach.

The GA3 objectives contribute to the achievement of the following element of the big vision from a long-term perspective:

- KTU is equipped with the infrastructure and organizational arrangements that enable and facilitate the development of CS by hosting Virtual CS Contact Point.

Implementation plan

GA3 implementation activities are organized around the two objectives: (1) activities needed "G3.1 to establish a virtual hub for the CS projects and appoint a contact point for the CS initiatives"; (2) activities needed "G3.2 to sustain a virtual hub for the CS projects and embed it into international networks".

Activities needed to achieve "G3.1 to establish a virtual hub for the CS projects and appoint a contact point for the CS initiatives:

1. Activity 3.1. Organize consultation session about the establishment of CS hub with the Dean's office of the Faculty of Social Sciences, Arts and Humanities.
2. Activity 3.2. Establishment of the CS Virtual Hub as a third level unit within the Faculty of Social Sciences, Arts and Humanities
3. Activity 3.3. Opening the section on the CS projects as part of the www.data.ktu.lt website
4. Activity 3.4. Appointing the Contact Point for the CS projects
5. Activity 3.5. Organize discussion of the functions and the facilitation scope of the Contact Point, with researchers and citizen representatives participating in the discussion.

Activities needed to achieve "G3.2 to sustain a virtual hub for the CS projects and embed it into international networks":

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6. Activity 3.6. To develop and adopt a feasibility study on Virtual Hub's funding and resource mobilization, accompanied with two-year activity plans.

Stakeholders & Co-creation

Stakeholders impacted by the action: researchers of diverse research career stages and disciplines willing to initiate and develop Citizen Science project sand seeking for advice, facilitation and infrastructure; local/territorial communities, school communities, various non-governmental organizations in Lithuania, other not-for-profit and business organizations, whose members are willing to engage with CS and want to get informed about the CS.

Stakeholders that will have influence on the decisions: dean's office of the Faculty of Social Sciences, Arts and Humanities, that issues decrees for establishment of third level units within university; University Rector's office whose support is needed in order to sustain the organizational establishments for a prolonged period.

Stakeholders will be involved in the decision-making and execution of the initiative:

- Dean's office of the Faculty of Social Sciences, Arts and Humanities, and the University Rector's Office will be consulted before the request to establish a new unit and will be contacted on a regular basis throughout the lifetime of the CS Virtual Hub (via participation of the head of the Center for Data Analysis and Archiving in the dean's office meetings and through regular information feeds to the Rector's Office meetings).
- Researcher communities of diverse academic units at Kaunas University of Technology will be contacted through internal dissemination and outreach activities.
- Local/territorial communities, school communities, various non-governmental organizations in Lithuania, other not-for-profit and business organizations will be contacted through public dissemination and outreach activities.

Potential Obstacles

Potential obstacles for implementing GA3 include the lack of motivation of a competent person to become the CS Contact Point. To overcome this obstacle, the Faculty of Social Sciences, Arts and Humanities will invest in competence building and up-skilling of an interested researcher.
Another important challenge is related to integrating the activities of the CS Virtual Hub with other activities of the Faculty and the Center for Data Analysis and Archiving (DAtA center). To overcome this obstacle, discussion and cocreation sessions with dean's office and members of the DAtA center are planned.

For implementing GA3, several crucial resources are needed. First, the Hub needs funding for monthly person hours to work on facilitation tasks as the Contact Point for the CS. For the initiation period, the funds will be sought from TIME4CS project, and later, the funds will be sought through external project funding opportunities. The second type of resources is needed for developing a website that would host the section on the CS projects. The TIME4CS KTU core team intends to make use of the www.data.ktu.lt website.

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Alternatively, an integration with the SMART-ER project will be sought and the team will make use of the intended webpage csinitiatives.smarter.eciu.org. Third type of needed resources are administrative capacities to ensure the functioning of the newly established hub. The Hub will make use of the administrative settings and organizational practices established within the Faculty of Social Sciences, Arts and Humanities at Kaunas University of Technology.

Timeline

Step	Activity	Responsible	Timeline
1.	Organize consultation session about the establishment of CS hub with the Dean's office of the FSSAH	TIME4CS LT core team	January 2022
	Establishment of the CS Virtual Hub as a third level unit within the FSSAH	TIME4CS LT core team	February 2022
	Opening the section on the CS projects as part of the www.data.ktu.lt website	TIME4CS LT core team	March 2022
	Appointing the Contact Point for the CS projects	TIME4CS LT core team	April 2022
	Organize discussion of the functions and the facilitation scope of the Contact Point, with researchers and citizen representatives participating in the discussion	TIME4CS LT core team and KTU CS PoC	May 2022
2.	To develop and adopt a feasibility study on Virtual Hub's funding and resource mobilization, accompanied with two-year activity plans	TIME4CS LT core team and KTU CS PoC	January 2023

5.4.4 GA4 – Strategic CS guidelines

Intervention Area

This GA falls under "Policy and Assessment".

Description and aims of the GA

In 2021 Kaunas University of Technology (KTU) adopted KTU Strategy for 2021 – 2025 and Action Plan 2021 – 2025 to implement this strategy. The next step to reassess a new strategy is in 2025, which is beyond the period of project implementation. As a preparation action to integrate Citizen Science into the next KTU

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strategic document, CS guidelines will be developed and adopted. To promote knowledge about Citizen Science and its' implementation these guidelines will be disseminated through internal KTU communication tools and presented for KTU community during info-sessions.

The overall goal of this GA is to promote knowledge about Citizen Science and its' implementation by adopting strategic document: CS guidelines at KTU.

The specific objectives of this GA are as follows:

- To develop and adopt CS guidelines at KTU;
- To present and disseminate CS guidelines for KTU community.

These objectives of GA contribute to the achievement of the following element of the big vision from a long-term perspective:

- KTU acknowledges the importance of CS in strategic documents.

Implementation plan

GA4 implementation activities are organized around the two objectives: (1) activities needed "G4.1 to develop and adopt CS guidelines at KTU"; (2) activities needed "G4.2 to present and disseminate CS guidelines for KTU community".

Activities needed to achieve "G4.1 to develop and adopt CS guidelines at KTU":

1. Activity 4.1. Consultations with stakeholders regarding the development of CS guidelines at KTU.
2. Activity 4.2. Development of CS guidelines.
3. Activity 4.3. Adoption of CS guidelines on the university level.

Activities needed to achieve "G4.2 to present and disseminate CS guidelines for KTU community":

4. Activity 4.4. Dissemination of CS guidelines for KTU community through internal KTU communication tools.
5. Activity 4.5. Presentation of CS guidelines for KTU community during info-sessions.

The first idea was to develop and adopt CS guidelines on the Faculty of Social Sciences, Arts and Humanities level, but after the co-creation workshop and discussion it was decided to adopt CS guidelines on the university level. These activities will be implemented by the core team. During the process of development and adoption of CS guidelines consultations will be organized with KTU administration (Vice-Rector for Research and Innovation), representatives from Research Department and Research and Innovation Projects Centre, Dean's office of the Faculty of Social Sciences, Arts and Humanities and KTU Legal Department. When CS guidelines will be approved by the decree of the Rector, it will be disseminated through internal KTU communication tools and presented for KTU community during info-sessions.

Stakeholders & Co-creation

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Stakeholders impacted by the action: KTU administration (Vice-Rector for Research and Innovation), administration of the Faculty of Social Sciences, Arts and Humanities (Dean), representatives from Research Department and Research and Innovation Projects Centre, KTU Legal Department, researchers of diverse research career stages and disciplines willing to initiate and develop Citizen Science projects; students.

Stakeholders that will have influence on the decisions: KTU administration (Vice-Rector for Research and Innovation), administration of the Faculty of Social Sciences, Arts and Humanities (Dean); representatives from Research Department and Research and Innovation Projects Centre, KTU Legal department.

The following co-creation activities with different stakeholders are foreseen during the implementation of this GA:

- KTU administration (Vice-Rector for Research and Innovation), administration of the Faculty of Social Sciences, Arts and Humanities (Dean), representatives from Research Department and Research and Innovation Projects Centre, KTU Legal Department will be approached and consulted about the CS guidelines, clarifying the needs and challenges in order to develop and adopt CS guidelines.
- Students and researcher communities of diverse academic units at KTU will be contacted through internal dissemination and outreach activities.

Potential Obstacles

The main difficulties during the implementation of this GA might be the lack of motivation to adopt CS guidelines and the lack of interest from researchers to use it. In order to solve it, the core team will communicate with KTU administration, Research Department, Research and Innovations Projects Centre intensively explaining the benefits of these guidelines. In addition, information about CS guidelines on different institutional levels (including all academic community) will be disseminated.

Timeline

Step	Activity	Responsible	Timeline

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1	Consultations with stakeholders regarding the development of CS guidelines at KTU: • Consultations with Dean's office of the Faculty of Social Sciences, Arts and Humanities • Consultations with the Office of Vice-Rector for Research and Innovation (includes Research Department and Research and Innovation Projects Centre) • Consultations with KTU Legal Department	TIME4CS LT core team	December 2022
2	Development of CS guidelines	TIME4CS LT core team	March 2023
3	Adoption of CS guidelines on the university level	TIME4CS LT core team	September 2023
4	Dissemination of CS guidelines for KTU community through internal KTU communication tools	TIME4CS LT core team	December 2023
5	Presentation of CS guidelines for KTU community during info-sessions	TIME4CS LT core team	December 2023

5.5 Planned Timeline

Month	GA1. Research and Networks	GA2. Non-formal education programs	GA3. Virtual Hub and University Contact Point for CS Projects	GA4. Preparation of CS guidelines
2021				
November	Initiating membership application in ECSA			

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December	Initiating membership application in national citizen science association			
2022				
January			Organizing consultation session about the establishment of CS hub with the Dean's office of the FSSAH s	
February		Organizing cocreation sessions for developing the non-formal educational programs.	Establishing of the CS Virtual Hub as a third level unit within the FSSAH	
March	Developing and disseminating research priorities related to CS and open science at the FSSAH	Developing and registering the non-formal educational programs	Opening the section on the CS projects as part of the Data KTU website	
April		Disseminating the call for non-formal educational programs	Appointing the Contact Point for the CS projects	
May			Organising discussion of the functions and the facilitation scope of the Contact Point, with researchers and citizen representatives	
June				
July				

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August		Introducing the CS topic in existing identified formal educational programs and courses		
September		Developing a Moodle platform for the educational session for researchers and for the MOOC for non-academic communities		
October	Organizing co-creation workshops for project proposals writing in CS			
November	Initiating cooperation with Eu-citizen.science platform			
December	Organizing a national seminar to share research results			Consultations with stakeholders regarding the development of CS guidelines at KTU
2023				
January			Developing and adopting a feasibility study on Virtual Hub's funding and resource mobilization, accompanied with two-year activity plans	

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February	Developing project proposal with multidisciplinary team			
March				Developing the CS guidelines
April	Presenting research findings at the international conferences			
May		Organizing an educational session for researchers, and a MOOC session for the non-academic communities.		
June		Organizing feedback surveys, analysing data and suggesting improvements for the non-formal education programs on CS		
July				
August				
September				Adopting the CS guidelines on the university level
October	Using media to disseminate research results to a wider public			
November		Integrating the non-formal educational programs with the already established		

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		DAtA centre Methods' School		
December		Preparing and publishing a Lithuanian textbook on CS methodology		Disseminating the CS guidelines for the KTU community through internal communication toolsPresenting the CS guidelines for KTU community during info-sessions

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6. Roadmap for the Centre for Genomic Regulation

6.1 Centre for Genomic Regulation

The Centre for Genomic Regulation (CRG) is an international biomedical research institute of excellence, created in July 2000. It is a non-profit foundation funded by the Catalan Government through the Department of Business & Knowledge and the Department of Health, the Spanish Ministry of Science & Innovation, the "la Caixa" Banking Foundation, and includes the participation of Pompeu Fabra University.

The mission of the CRG is to discover and advance knowledge for the benefit of society, public health and economic prosperity. The CRG believes that the medicine of the future depends on the ground-breaking science of today. This requires an interdisciplinary scientific team focused on understanding the complexity of life from the genome to the cell to a whole organism and its interaction with the environment, offering an integrated view of genetic diseases.

The CRG is a unique centre in Spain, based in an innovative organization research model. Group leaders at the CRG are recruited internationally and receive support from the centre to set up and run their groups. An external evaluation panel, made up of renowned leaders in the different areas, evaluates them. The result of evaluations conditions the future of the CRG scientists, no matter whether they have open-ended or time-limited contracts. This ensures the mobility and the renewal of the workforce.

6.2 Citizen Science at the Centre for Genomic Regulation

Research

At the moment, CRG is running a CS project called Genigma as an experiment within the EU project ORION Open Science. It is a co-created mobile game app which has been in development for 2 years. Previously, the CRG has carried out for 4 years (2 runs) a CS project on the mouth microbiome Saca la lengua (Stick out your tongue) with a high national impact. Currently the project has been completed and the scientific results are being published.

Education and Awareness

There have been some informative talks for support staff about both Genigma and Saca la lengua projects and one-to-one contacts with some scientists. Also, a brief session about Citizen Science was delivered to new PhDs during their induction course in 2019. CRG is regularly running training on open science for the PhD students.

For the moment, Genigma and Saca la lengua are included in the Science and Society section of the CRG website. CRG actively uses the institutional social networks to promote participation in CS projects. In the context of Genigma, co-creation events to talk about CS have been organised and the team took part in several workshops and conferences.

Support Resources and Infrastructure

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Genigma and Saca la lengua were led by two different PIs with a few members of their teams who got in contact with CS for the first time. In both cases, they had no expertise and collaborated with the CRG CS facilitator. The CRG Bioinformatics Unit, part of CRG's core facilities, and CRG IT Department, were assisting in both CS projects. Involved staff can access open repositories, but they are scientific, they do not include citizen data. CRG direction supports CS projects at institutional level.

CRG members are bound by the PRBB Code of Good Scientific Practice (PRBB is the building which hosts the CRG and other research institutes), which defines and strictly bans scientific misconduct, and promotes better science. CRG members are expected to be familiarized and comply with the PRBB Code.

Policy and Assessment

Public engagement is integrated in the CRG new Strategic Plan 2021-2024, as it was integrated in the previous one. Participation in public engagement is positively appreciated in evaluations, and the CRG direction supports CS and has been promoting CRG projects in different forums.

CRG researchers are not explicitly encouraged, but from Communication and the International & Scientific affairs departments are looking for incentives for scientists to engage in CS. This was the case for example of the H2020 ORION Open Science, a project supported also by the management, that brought the opportunity (and the funding) to develop a new CS project (e.g. Genigma).

The CRG has a policy on Open Access to publication, and has just developed a policy on Research Data Management.

6.3 Overall Goals and Strategy for Institutional Change

Through this project, CRG aims to promote a cultural change in the use of CS as a regular research methodology at the CRG by including it as a structural pillar of its Open Science framework. CRG may achieve this by implementing several institutional and organisational changes, such as an impactful series of trainings for the different research communities, accessible policies and guidelines for running research projects with CS methodology, the adaptation of research evaluation policies to assess CS contributions and, ultimately, the consolidation of a CS contact point within the centre.

6.4 Planned Grounding Actions

In total, 4 GAs are planned:

- GA1 – Planning changes in organisational structures [Research]
- GA2 – Raising internal awareness & train researchers on CS [Education and Awareness]
- GA3 – Developing institutional guidelines on the implementation of CS projects [Support resources and infrastructures]

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- GA4 – Developing an institutional policy about CS projects [Policy and assessment]

6.4.1 GA1 – Planning changes in organisational structures

Intervention Area

This GA falls under "Research".

Description and aims of the GA

The CS does not have a structural place at the CRG organisation. With this GA, the aim is to include CS under the already existing Open Science framework of the centre, which would be the first step towards a structural place for CS at the CRG.

The objective is to make CS a structural area at the CRG by including it under the already existing Open Science framework of the centre.

Including CS in the organisational structure of the CRG would be the cornerstone towards a solid Institutional Change regarding CS methodology.

Implementation plan

The implementation of this GA will be organized around the following activity:

1. Activity 1.1: To include Citizen Science as a pillar in the CRG Open Science framework.
2. Activity 1.2: To create and publish the content for the CS section at the CRG Open Science web page.
3. Activity 1.3: To disseminate the new structural place of CS to all the CRG community.

Stakeholders & Co-creation

- Stakeholders: CRG Comms team, CRG International and Scientific Affairs team, higher management
- Attendants to the co-creation workshop: CRG Comms team, CRG International and Scientific Affairs team, higher management
- Outputs from the co-creation workshop: The CRG Open Science website must be more visible and accessible form the home of the CRG webpage. A dedicated webpage to CS must be developed under the umbrella of Open Science, and all the CS projects run by the CRG till the moment and the one that will be developed in the future should be included

Potential obstacles

The potential and most important obstacle of this GA could be the lack of recognition of CS as an Open Science pillar from CRG researchers. In case that CS is properly recognised as an Open Science pillar, another potential obstacle could be the lack of interest from researchers in Open Science approaches, including CS.

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These obstacles might be mitigated through proper training and internal awareness of CS practices and benefits (GA2).

Timeline

Step	Activity	Responsible	Timeline
1	To include Citizen Science as a pillar in the CRG Open Science framework	CRG Comms team CRG International and Scientific Affairs	March 2022
2	To create and publish the content for the CS section at the CRG Open Science web page	CRG Comms team	November 2022
3	To disseminate the new structural place of CS to all the CRG community	CRG Comms team	December 2022

6.4.2 GA2 – Raising internal awareness & train researchers on CS

Intervention Area

This GA falls under "Education and awareness".

Description and aims of the GA

This GA aims at making CRG researchers aware about the CS methodology, its benefits for research, for society and for the CRG. Also, it will provide the necessary knowledge to adapt or design a research project using CS methodology and to build capacity amongst researchers for successful CS projects in compliance with ethical, legal and privacy regulations.

The objective is to inform, raise awareness and train interested researchers and relevant staff about the importance and benefits of running CS projects and to train them on the basis of this methodology.

This GA is the very first step to achieve the big vision by raising awareness and knowledge among the researchers about CS methodology, as there is very little knowledge about it at the moment.

Implementation plan

The Implementation of this GA is organised around 3 main activities:

1. Activity 2.1: To organise an online talk describing success stories of other CS projects, explained by researchers with previous experience in running CS projects.
2. Activity 2.2: To set up CS training programmes for PhD students and include them in the mandatory training courses for this community.

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3. Activity 2.3: To set up CS training programmes for post-docs and PIs.

Stakeholders & Co-creation

- Stakeholders: CRG Comms team, CRG Training team, internal and external CS experts (researchers and facilitators)
- Attendants to the co-creation workshop: CRG Comms team, CRG Training team
- Outputs from the co-creation workshop: The most important obstacle of this action is the lack of interest from researchers to join the trainings, so before the trainings an inspirational talk about CS will be organised in order to grab researchers' attention and to show the potential benefits of this methodology

Different sessions of the trainings will be organised, addressed to different communities at the CRG: the PhD students, who have to take a mandatory course about different research aspects, so CS could be included here, and the post-docs and PIs. This last group will be engaged through the inspiring talks.

Potential obstacles

The potential obstacles for this GA would be:

- Difficulties in the engagement of researchers to the talk and/or course due to the lack of time and interest in the field
- Lack of interest in CS methodology of PhD students due to the remoteness that they could feel about it at the first stages of their research career
- Lack of knowledge on how to evaluate the impact of this action

Timeline

Step	Activity	Responsible	Timeline
1	To organise an online talk describing success stories of other CS projects, explained by researchers with previous experience in running CS projects	CRG Comms team	March 2023
2	To set up CS training programmes for post-docs and PI's	CRG Comms team CRG Training team	May 2023
3	To set up CS training programmes for PhD students and include them in the	CRG Comms team CRG Training team	November 2023

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	mandatory training courses for this community		

6.4.3 GA3 – Developing institutional guidelines on the implementation of CS projects

Intervention Area

This GA falls under "Support resources and infrastructures".

Description and aims of the GA

The CRG has only conducted two CS projects in seven years, involving a small number of scientists. There's no knowledge about this methodology beyond the scientists involved in CS projects, so developing institutional guidelines for implementing CS projects will not only help researchers adopt the needs and implications of this new way of doing science, but it will legitimate this methodology amongst them.

The guidelines will include the basic and general aspects of CS adapted to basic biomedical research, criteria to decide which projects should be supported and their priorities, the steps for evaluation and implementation of any given project and a protocol on how to design, set up and run a CS project.

The objective is to inform and facilitate the use of CS methodology at the CRG by developing clear institutional guidelines on the principles of CS and how to design and run a CS project.

Having CS institutional guidelines will legitimate CS methodology at the CRG so that it will encourage researchers to use it as a regular methodology rather than as an exception.

Implementation plan

The implementation of this GA will be organized around the following activity:

1. Activity 3.1: To develop institutional guidelines on the principles of CS and how to design and run a CS project.
2. Activity 3.2: To publish and disseminate the guidelines through CRG

Stakeholders & Co-creation

- Stakeholders: CRG Comms team
- Attendants to the co-creation workshop: CRG Comms team, CRG International & Scientific Affairs team

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- Outputs from the co-creation workshop: The guidelines will be developed by the CRG Comms team in collaboration with CRG scientists with and without previous experience in CS projects. The guidelines should include what a CS project is, details about the process, protocols (etc)

Potential obstacles

The GA could have several potential obstacles. On one hand, during the development of the guidelines there could be difficulties in their elaboration due to different needs and expectations of the internal stakeholders involved. On the other hand, when implementing the guidelines developed, there could be a lack of interest or difficulties from researchers to incorporate the principles of the guidelines into their research projects.

Timeline

Step	Activity	Responsible	Timeline
1	To develop institutional guidelines on CS	CRG Comms team	March 2023
2	To publish and disseminate the guidelines through CRG	CRG Comms team	May 2023

6.4.4 GA4 – Developing an institutional policy about CS projects

Intervention Area

This GA falls under "Policy and assessment".

Description and aims of the GA

Developing a policy is essential for the appropriate development of a CS project from the legal, ethical and societal perspectives. Additionally, it will legitimate CS methodology amongst researchers and the CRG management, as supporting it will then become an institutional responsibility or priority.

The objective is to inform researchers about the appropriate use of CS methodology from the legal, ethical and societal perspectives, about the rights and duties of the actors involved and about the rights of the project by developing an institutional policy on the principles of the CS projects of the CRG.

By implementing an institutional policy, CS will be legitimated at the CRG, so it will enhance the interest amongst scientists about this methodology and, ultimately, promote a change in how research is performed.

Implementation plan

The implementation of this GA will be organized around the following activity:

1. Activity 4.1: To develop an institutional policy for CS at the CRG
2. Activity 4.2: To publish and disseminate the policy for CS.

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Stakeholders & Co-creation

- Stakeholders: CRG Comms team, CRG Legal team, CRG International & Scientific Affairs team, higher management
- Attendants to the co-creation workshop: CRG Comms team, CRG Legal team, CRG International & Scientific Affairs team, higher management
- Outputs from the co-creation workshop: CRG has several policies already developed, these will be put all together to see what's missing in a CS context to include it and to develop a framework that covers different types of CS projects and data collected. First, all the possible types of data that could be collected by CS projects will be defined, types of citizen participation, etc., so that the policy covers all the possible scenarios.

Potential obstacles

The potential obstacles in this GA would be the lack of agreement amongst the stakeholders involved to develop the policy due to their different needs and expectations, as well as the lack of interest or difficulties from researchers to incorporate the principles of the guidelines to their research projects.

Timeline

Step	Activity	Responsible	Timeline
1	To develop an institutional policy for CS at the CRG	CRG Comms team CRG International & Scientific Affairs team	April 2023
2	To publish and disseminate the policy	CRG Comms team	May 2023

6.5 Planned Timeline

Month	GA1. Planning changes in organisational structures	GA2. Raising internal awareness & training	GA3. Developing institutional guidelines	GA4. Developing an institutional policy
2021				
December				
2022				
January				

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February				
March	To discuss and agree on the purpose, scope and definition of this new pillar, as well as CRG researchers' responsabilities			
April		To brainstorm and define the contents and speakers for the talk and the trainings		
May	To start drafting the content for the CS section at the CRG Open Science web page	To design the trainings		
June		To invite speakers for the talk and the trainings		
July			To gather examples of CS guidelines in biomedical/basic research and start drafting the document	
August				
September				
October		To organise travels and accommodations for speakers if needed		To gather CRG related policies as well as examples of CS policies in biomedical/basic research
November	To validate and publish the content for the CS section at			To define what to include in the policy and to start drafting the document

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	the CRG Open Science web page			
December	To disseminate the new structural place of CS to all the CRG community			
2023				
January		To announce the talk to the CRG community		
February			The first draft of the guidelines will be finished	
March		The inspiring talks about CS will be held	The guidelines will be validated and approved by the stakeholders involved	The first draft of the policy will be finished
April		To announce the trainings for the CRG community		The policy will be validated and approved by the stakeholders involved
May		The course for post-docs and PI's will be held	Publication & dissemination of the guidelines	Publication & dissemination of the policy
June				
July				
August				
September				
October				
November		The course for PhD's will be held		
December				

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7. Roadmap for Vita-Salute San Raffaele University

7.1 Vita-Salute San Raffaele University

The Vita-Salute San Raffaele University is a prestigious Italian private not-for-profit university leading the most important national rankings. It hosts more than 4000 students and comprises the faculties of Medicine, Psychology and Philosophy. Since its establishment in 1996, teaching and research at Vita-Salute San Raffaele University have been tightly integrated, resulting in high quality education and training at all levels: specialized post-graduate masters, residency programs in various medical specialties, international PhD programs, undergraduate and graduate courses.

UniSR is affiliated – for both clinical training and research activities – to Ospedale San Raffaele (OSR), a research hospital and scientific institute established in 1971 to provide specialized care for the most complex health conditions. OSR is recognized as a global authority in gene and cell therapies, and perform cutting-edge translational research in areas such as oncology, immunology, infectious diseases, neuroscience, advanced imaging and genetics. With more than 100 high-tech laboratories and pre-clinical facilities, 50 medical specialties and 800 ongoing clinical trials, at San Raffaele basic science translates quickly into clinical practice and clinical needs drive basic research.

In this unique environment, UniSR offers students an unsurpassed training experience, in which scientific research, clinical practice and teaching activities effectively interact on a daily basis.

7.2 Citizen Science at Vita-Salute San Raffaele University

Research

The awareness of Citizen Science among UniSR researchers is generally low with a few exceptions in some research groups. Also, there are a few isolated and fragmented research initiatives which embody Citizen Science and public engagement activities (i.e. EU funded projects such as PERITIA and RENergetic) but these experiences have been neither shared nor collected.

Education and Awareness

UniSR does not yet offer training activities and workshops on Citizen Science for researchers and students or for support staff. As for public engagement, there have been some initiatives dedicated to “expert” patients to engage them and make them more active players in clinical activities.

Support Resources and Infrastructure

UniSR has not yet joined any specific Citizen Science-focused network and does not cooperate with Citizen Science-dedicated organizations, apart from the TIME4CS project.

Within UniSR there is a lack of specific professional expertise with a focus on Citizen Science and this is one of the first gaps the core team would like to bridge throughout the project.

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Policy and Assessment

Currently, science communication, public engagement and open science are integrated in our institutional research strategy and policies, and considered in the evaluation schemes for researchers. However, Citizen Science is not an integral part of the open science strategy yet. This gap will be bridged through TIME4CS project activities.

7.3 Overall Goals and Strategy for Institutional Change

UniSR is fully committed to ensuring the quality, trustworthiness and reproducibility of the research conducted by its investigators by upholding high standards of integrity, working to foster an environment in which the responsible conduct of research is explicitly discussed and encouraged. In order to achieve this goal, the integration of Citizen Science through Institutional Changes is fundamental. UniSR participation in the TIME4CS project will provide a relevant support in this process, collecting best practices from other project partners and sharing experiences related to Citizen Science.

The selected Grounding Actions will allow UniSR, in the medium to long term, to achieve some relevant goals. Firstly, being part of an international Citizen Science community will be of great support in implementing Institutional Changes within our organization by bringing in new points of view, experiences and inspiration. Joining such a community would likely start a cascade process, where people involved in the community can transfer the new approaches and the inspirations received from the community to other researchers within the organization, allowing the change to become structural and then institutional.

Being part of TIME4CS will ease also the internal organizational change already started in 2021. Indeed, a completely new Area for Research Development has recently been created in UniSR. This Area includes the newly created Open Science Team, dedicated to the provision of support to the research community regarding the eight pillars of Open Science, as stated in the LERU “Roadmap for Open Science”. Considering Citizen Science as one of the eight open science pillars, it will be fully integrated among the services provided by the Open Science Team and by the Research Development Area in general.

The process of integrating Citizen Science within the research practices requires to raise researchers and students’ awareness regarding this topic. This will be achieved through the implementation of *ad-hoc* trainings and information initiatives which represent an essential milestone for the process of Citizen Science integration in order to provide concepts, methodologies, practical examples, concrete expertise. This process will contribute to build a strong knowledge base for the research community, allowing people to better understand what Citizen Science is and how Citizen Science can have a positive impact on the R&I activities.

7.4 Planned Grounding Actions

In total, 6 GAs are planned:

- GA1 – Participation in a CS network [Research]

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- GA2 – Implement changes in the organizational structures or functions [Research]
- GA3 – Set up information initiatives for researchers and training programs for students [Education and Awareness]
- GA4 – Set up informal opportunities for interactions with researchers [Education and Awareness]
- GA5 – Identify an institutional contact point for Citizen Science [Support resources and Infrastructures]
- GA6 – Adopt evaluation criteria for researchers' evaluation that consider CS [Policy and Assessment]

7.4.1 GA1 – Participation in a CS network

Intervention Area

This GA falls under "Research".

Description and aims of the GA

The international community of CS practitioners is organized in international networks, such as the European Citizen Science Association (ECSA).

This GA will aim at joining ECSA as a member organization and its Working Groups. This Grounding Action will support in collecting relevant CS examples, sharing ideas and experiences with other research institutions. Indeed, the stock taking of relevant experiences and new knowledge is the first essential step in the path to Citizen Science.

Being part of an international CS community would be of great support in implementing Institutional Change within the organization by bringing in new points of view, experiences and inspiration. Joining such a community would likely start a cascade process, where people involved in the community can transfer the new approaches and the inspirations received from the community to other researchers within the organization, allowing the change to become structural and then institutional.

Implementation plan

1. Activity 1.1: Survey to better understand researcher's awareness and understanding regarding CS

This activity will be articulated in three different sub-activities listed in the timeline section. The core team is the main responsible for this activity, supported by the WG on CS.

2. Activity 1.2: Communication of activities related to CS will be planned through a communication plan

The core team will develop a communication plan with the aim to communicate and disseminate all the relevant information related to CS.

3. Activity 1.3: Joining ECSA

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This activity will be articulated in three different sub-activities listed in the timeline section here below. Firstly, the core team will proceed with formalizing the membership in ECSA. This initial step will be followed by a raising awareness process in order to engage researchers who participate in the internal WG on CS within the ECSA WGs activities. This activity will be carried out by the core team with the participation of the WG on CS.

Stakeholders & Co-creation

The main stakeholders for this Grounding Action are the researchers as they represent the main target for the raising awareness process on CS.

As a first step of the engaging process, the core team plans to share a survey among researchers to understand their level of knowledge regarding CS. Afterwards, the team will start engaging with a small group of more CS-sensitive researchers (called Working Group on CS) who will represent the entry point for discussion on CS and raising awareness initiatives in the research community. They could also be the first people engaged in the CS Community, being already interested in CS and in some cases having already been involved in CS-like projects.

Potential Obstacles

The main obstacles we expect to face during the implementation of this GA are the following:

- The lack of interest from researchers, especially in life sciences. The insufficient knowledge of the CS concept and methodology could create a barrier to spreading the new approach.
- The limited internal communication practices within the institution will make it more difficult to share the experience of the WG and to make the resources of the international CS community available to the interested researchers.

Timeline

Step	Activity	Responsible	Timeline
1	The Core team prepares a survey to be shared with the research community	Core team	September 2021
	A draft of the survey is shared with some top-level researchers identified as potential drivers for spreading Citizen Science in the research community to collect their feedbacks.	Core team, WG on CS	October 2021
	The survey is shared among researchers.	Core team	December 2021
2	Communication activities related to CS will be planned through a communication plan.	Core team	June2022 first version

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3	UniSR joins ECSA as member.	Core team	June 2022
	Engaging our WG on CS in the activities organized in the ECSA Working Groups. This will be achieved thanks also to the engaging process and raising awareness initiatives implemented.	Core team and WG on CS	2022 and 2023
	Including information and ideas coming from ECSA into raising awareness activities which we will implement in our organization.	Core team and WG on CS	2022 and 2023

7.4.2 GA2 – Implement changes in the organizational structures or functions

Intervention Area

This GA falls under "Research".

Description and aims of the GA

The integration of CS within the organizational structure of the institution represents an essential step towards the Institutional Change.

An innovation process in the organizational structure of UniSR has already started. Just this year (2021) a completely new Area has been created, dedicated to Research Development. This Area includes the Research Integrity Office, the EU Research Strategy and Policy Office, the PhD Programme Office and the newly created Open Science Team, dedicated to the provision of support to the research community regarding the eight pillars of open science, as stated in the LERU "Roadmap for Open Science". As CS is part of these 8 pillars of open science, it is expected that this Institutional Change will facilitate the CS integration, offering an *ad-hoc* support to researchers. Indeed, the intention is to integrate a relevant component of CS among the services provided by the Open Science Team and by the Research Development Area.

In order to address the lack of an internal body aimed at supporting researchers in Open Science and specifically CS practices, UniSR aims at implementing a structural change, developing a new Area with specific teams able to bring CS in the institutional research practice. This will be fundamental in order to provide researchers with an essential information center and specific support. The first objective of this GA will be building the relevant knowledge on CS for the people who are actually involved in the Research Development Area. Secondly, disseminating the information regarding this kind of support among researchers will be essential in order to make them fully aware of the available support.

Implementation plan

1. Activity 2.1: Formalization of the Open Science Team

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Under this activity the Open Science Team will be formally adopted. This activity is implemented under the Research Development Area.

2. Activity 2.2: Building the knowledge base on CS

In order to offer a proper support to researchers, it is essential for the core team and the Open Science Team to gain knowledge and practical experiences on CS. Indeed, this action is strongly related to the project activities that will allow the core team to gain relevant knowledge and to learn methodologies and best practices. Also, the ECSA Working Groups will contribute to this learning phase.

3. Activity 2.3: Preparation of the information materials

The third step of this GA will be the creation of adequate information materials to be used in the supporting services offered to researchers.

Stakeholders & Co-creation

The first step for the implementation of this Grounding Action will be a preparatory phase where the Open Science Team and the Research Development Area will gain the proper preparation to become a supportive service for CS. Management should be aware of the process and should agree with it.

The second step will involve research community in order to make researchers fully aware of the existence of this support. This will be done through an appropriate communication campaign including mailing, intranet website and other communication activities, both online and in-person, during internal meetings and events. These communication activities will be fully planned in the communication plan described in GA1.

Potential Obstacles

The main obstacles that might appear during the implementation of this GA are the following:

- Lack of institutional support because of a low interest in CS could slow down the process of integration.
- Time will be needed before achieving a real integration of CS in the Area.

Timeline

Step	Activity	Responsible	Timeline
1	Formalization of the Open Science Team	Management	September 2021
2	Building the knowledge base on CS	Core team, Open Science team	2022-2023
3	Preparation of the information materials for research community.	Core team, Open Science team	2022-2023

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7.4.3 GA3 – Set up information initiatives for researchers and training programs for students

Intervention Area:

This GA falls under "Education and Awareness"

Description and aims of the GA

This GA will aim at developing both information initiatives for researchers and training programmes for students in order to raise awareness and build a strong knowledge base for the research community. This will represent an essential milestone for the process of CS integration as providing concepts, methodologies, practical examples and concrete expertise will allow people to better understand what CS is and how CS can have a positive impact on the R&I activities.

This GA will contribute to the CS integration within the research practice in UniSR as it will increase the awareness and knowledge of researchers regarding CS, making them aware of the real potential and added value that the CS approach can have in the research activities. This action will play an essential role in overcoming the barrier of researcher scepticism.

Implementation plan

1. Activity 3.1: Communication plan for raising awareness (see GA 1)

This activity is related to GA1.

2. Activity 3.2: Information sessions for researchers

This activity will be split into a first planning phase where the core team, together with the support of relevant stakeholders such as the Open Science Team and the WG on CS, will develop the information materials and prepare the information sessions.

3. Activity 3.3: Training activities for students

This activity will be split into a first planning phase where the core team, together with other relevant stakeholders as the Open Science Team and, the WG on CS, involving the Chairs for Degree Courses if relevant, will develop the information materials and prepare the information sessions. Under this activity, the trainers will be identified, and the programme content defined.

4. Activity 3.4: Monitoring activities

This activity will aim at constantly monitoring and assessing the quality and efficacy of both the information sessions and training activities through means such as surveys and questionnaires

Stakeholders & Co-creation

During the preparatory phase, when training activities will be designed and planned, there will be the involvement of WG on CS and of Chairs of Degree Courses (if relevant) in order to collect their contributions and suggestions.

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Top Management will be constantly updated during all the process.

Specific surveys will be made available to students and participants attending the events in order to monitor the experiences and collecting feedbacks on their comprehension of the topic.

Potential Obstacles

The main obstacles related to this GA are the following:

- Lack of financial and logistic support.
- Difficulties in designing relevant information and training materials.

Timeline

Step	Activity	Responsible	Timeline
1	Communication plan for raising awareness (see GA 1).	Core team	June 2022, first version
2	Planning of information sessions.	Core Team, with the support of WG on CS and Open Science Team.	June 2022
	Implementation of information sessions: webinars and quick info sessions.	Core Team with the support of WG on CS and Open Science Team.	December 2022
3	Design content of and planning for training activities.	Core Team with the support of WG on CS and Open Science Team.	June 2023
	Implementation of training activities (webinars, presentations, workshops).	Core Team with the support of WG on CS and Open Science Team.	December 2023
4	Monitoring and assessment of information and training activities, through surveys and questionnaires.	Core team	Second half of 2022 and 2023.

7.4.4 GA4 – Set up informal opportunities for interactions with researchers

Intervention Area

This GA falls under “Education and Awareness”.

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Description and aims of the GA

In UniSR there is still limited interaction between researchers belonging to the three different faculties (and hence the three areas of expertise) of psychology, philosophy and biomedicine. The core team strongly believe that Citizen Science approaches (especially in biomedicine) would be most successfully pursued through multidisciplinary collaborations with psychologists and philosophers, as well as with other experts working in OSR research area (such as bioinformaticians, engineers, statisticians, etc.). Consequently, UniSR would like to establish a Working Group on Citizen Science (the core team has already started working with some researchers) involving researchers from different fields (at this stage we have on board a clinician, a philosopher and an engineer). This WG will offer them the opportunity to exchange experiences, ideas, contacts, practices from each of the participant, creating a virtuous circle and maximizing the impact with a multidisciplinary approach.

This GA will allow researchers from different fields to exchange best practices and experiences related to CS. This aspect is relevant as very often researchers have knowledge of specific research practices in their field but totally ignore practices from other research fields. Furthermore, learning about experiences from other researchers may help in breaking down the barrier of scepticism for CS.

Implementation plan

1. Activity 4.1: Creation of the WG on CS

Under this activity the core team will organize the first meeting with a small group of researchers with a potential interest of or past experience in CS. The second meeting of this informal WG is represented by the co-creation workshop organized for collecting relevant input to integrate the first version of the roadmaps.

2. Activity 4.2: Keeping the WG on CS active as a consultancy body

Under this activity, the WG on CS will become a consultancy body which the core team and other stakeholders can consultant in order to collect suggestions and inputs from the researchers' perspective.

Stakeholders & Co-creation

Researchers will be the core of this action. The existence of the WG on CS will be communicated and disseminated also during the events dedicated to CS.

Internal networking will play a relevant role in involving new people, through the word-of-mouth.

Potential Obstacles

The main obstacles related to this GA are the following:

- Different "languages" spoken by researchers in different fields
- Lack of interest in other researchers' experiences.

Timeline

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Step	Activity	Responsible	Timeline
1	First meeting with the identified researchers	Core team	July 2021
	Co-creation meeting for delivering the first version of roadmaps	Core team and WG on CS	October 2021
2	Keeping the WG on CS active as a consultancy body	Core team and WG on CS	2022-2023

7.4.5 GA5 – Identify an institutional contact point for Citizen Science

Intervention Area

This GA falls under "Support resources and Infrastructures".

Description and aims of the GA

The identification of an institutional contact point for CS represents an essential step towards the Institutional Change.

As anticipated in GA2, an innovation process in the organizational structure of UniSR has already started and an Open Science Team has been created under the Research Development Area, launched at the beginning of 2021. The Open Science Team will provide support to the research community on the eight pillars of Open Science, as stated in the LERU "Roadmap for Open Science". As CS is part of these 8 pillars of Open Science, it is expected that this dedicated team will facilitate CS integration, offering an ad-hoc support to researchers. Indeed, the intent is to integrate a relevant component of CS among the services provided by the Open Science Team and by the Research Development Area.

The role of the Open Science Team will be essential in order to provide researchers with relevant information and specific support on Open Science, including CS. As stated for GA2, the first objective will be building the relevant knowledge on CS for people who are actually involved in the Research Development Area. Secondly, disseminating the information regarding this kind of support among researchers will be essential in order to make them fully aware of the support available.

Implementation plan

1. Activity 5.1: Formalization of the Open Science Team

Under this activity the Open Science Team will be formally activated. This activity is implemented under the Research Development Area.

2. Activity 5.2: Building the knowledge base on CS

To offer appropriate support to researchers, it is essential for the core team and the Open Science Team to gain knowledge and practical experiences on CS. Indeed, this action is strongly related to the project activities

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that will allow the core team to gain relevant knowledge and to learn methodologies and best practices. Also, the ECSA Working Groups will contribute to this learning phase.

3. Activity 5.3: Preparation of the information materials

The third step of this GA will be the creation of adequate information materials to be used in the supporting services offered to researchers.

Stakeholders & Co-creation

The first step for the implementation of this Grounding Action will be a preparatory phase where the Open Science Team and the Research Development Area will gain the proper preparation in order to become a supportive service for CS. Management should be aware of the process and should agree with it.

The second step will involve the research community to raise researchers' awareness of the existence of this support. This will be done through a proper communication campaign including mailing, intranet website and other communication activities, both online and in-person, during internal meetings and events. These communication activities will be fully planned in the communication plan described in GA1.

Potential Obstacles

The main obstacles the core team can face during the implementation of this GA are the following:

- Lack of institutional support because of a low interest in CS could slow down the process of integration.
- Time will be needed before achieving a real integration of CS in the Area.

Timeline

Step	Activity	Responsible	Timeline
1	Formalization of the Open Science Team	Management	September 2021
2	Building the knowledge base on CS	Core team, Open Science Team	2022-2023
3	Preparation of the information materials.	Core team, Open Science Team	2022-2023

7.4.6 GA6 – Adopt evaluation criteria for researchers' evaluation that consider CS

Intervention Area

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This GA falls under “Policy and Assessment”.

Description and aims of the GA

As the current criteria for the evaluation of researchers are based mainly on traditional bibliometric indicators which includes closed and proprietary data and number of publications in high ranked journals, the process for opening up science through adequate open scientific practices is still far from achieving positive results. For this reason, UniSR has already integrated Open Science practices within the evaluation criteria for researchers. The core team would like to achieve wider results, including specific references to CS as a scientific practice in the evaluation criteria.

This GA mainly aims at improving the academic system, enabling researchers, especially at the junior level, to understand Open Science and CS practices, integrating them in their research activities without limiting their careers. This action will allow to attract the interest of researchers in Open Science and CS, encouraging them to apply OS and CS practices in a systematic way.

Implementation plan

1. Activity 6.1: Definition of specific evaluation criteria for CS

Under this activity the core team, together with the Open Science Team and the Research Integrity Office, will elaborate potential criteria to be included in order to make CS evaluated in the researchers’ careers.

2. Activity 6.2: Adoption of specific criteria for CS

This activity will be mainly focused on the formal approval of the new evaluation criteria by the institution, including them in the evaluation process for researchers.

3. Activity 6.3: Ad-hoc communication

The adoption of the new evaluation criteria for researchers will be properly communicated to the research community (see GA1).

Stakeholders & Co-creation

The main stakeholders of this action are researchers, in particular young researchers to be motivated and encouraged. The relevance of this GA (i.e. the adoption of specific evaluation criteria for researchers focused on CS practices) will be properly communicated during the training and information events which will be organized and through a proper communication campaign. These communication activities will be detailed in the communication plan expected in GA1.

Potential Obstacles

The main obstacle we can face in implementing this GA is the researchers’ reluctance in accepting this change of mind-set.

Timeline

Step	Activity	Responsible	Timeline

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1	Definition of specific evaluation criteria for CS	Core team, including the Research Integrity Office	June 2022
2	Adoption of specific evaluation criteria for CS	Director of Research Development Area, Management	December 2022
3	Ad-hoc communication of the new evaluation criteria	Core team	December2022

7.5 Planned Timeline

Month	GA1. Participation in a CS network	GA2. Changes in the organizational structures/functions	GA3. Information sessions and training programmes	GA4. Informal interactions	GA5. Contact point for CS	GA6. Evaluation criteria
2021						
July-September	The Core team prepares a survey to be shared with the research community	Formalization of the Open Science Team		First meeting with the identified researchers	Formalization of the Open Science Team	
October	A draft of the survey is shared with some top-level researchers			Co-creation meeting for delivering the first version of roadmaps		
November						
December	The survey is shared among researchers.					
2022						

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January						
February						
March						
April						
May						
June	Communication activities related to CS will be planned through a communication plan UniSR joins ECSA as member (beginning 2022)	Building the knowledge base on CS. Preparation of the information materials for research community.	Communication plan for raising awareness (see GA 1). Planning of information sessions.	Keeping the WG on CS active as a consultancy body.	Building the knowledge base on CS. Preparation of the information materials for research community.	Definition of specific evaluation criteria for CS.
July						
August						
September						
October						
November						
December	Engaging our WG on CS in the activities organized in the ECSA Working Groups. Including information and ideas coming from ECSA into	Building the knowledge base on CS. Preparation of the information materials for research community.	Implementation of information sessions. Monitoring and assessment.	Keeping the WG on CS active as a consultancy body.	Building the knowledge base on CS. Preparation of the information materials for research community.	Adoption of specific evaluation criteria for CS Ad-hoc communication of the new evaluation criteria

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	raising awareness activities which we will implement in our organization.					
2023						
January						
February						
March						
April						
May						
June	Engaging our WG on CS in the activities organized in the ECSA Working Groups. Including information and ideas coming from ECSA into raising awareness activities which we will implement in our organization.	Building the knowledge base on CS. Preparation of the information materials for research community.	Design content of and planning for training activities.	Keeping the WG on CS active as a consultancy body.	Building the knowledge base on CS. Preparation of the information materials for research community.	
August						
September						
October						

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November						
December	Engaging our WG on CS in the activities organized in the ECSA Working Groups. Including information and ideas coming from ECSA into raising awareness activities which we will implement in our organization.	Building the knowledge base on CS. Preparation of the information materials for research community.	Implementation of training activities. Monitoring and assessment.	Keeping the WG on CS active as a consultancy body.	Building the knowledge base on CS. Preparation of the information materials for research community.	

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