SOCIETIC
SOCiety as Infrastructure for E-Science via technology, innovation and creativity

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SUMMARY

The evaluation plan sets the basis for the further activities related to assessing the project's achievements and potential impact. SOCIETIC aims to advance the concept of citizen science, which can be understood as a process of involving the general public in scientific processes. A set of concrete activities from the development of a central portal that offers access to a series of experiments for citizens to specific targeted dissemination and networking activities will be conducted to reach this aim.

In order to monitor the success of the project objectives and assess their potential impact a framework has been developed based on three axes, namely, the target group, the expected output and the means of verification or methods of measurement. The target groups are evaluated on three levels, the first level covers the internal perspective of project participants and users of the SOCIETIC services, the second level gives an expert view from the external advisory board and other related experts and the third level integrates the external perspective of people addressed via broader dissemination means, such as events.

The expected output has been defined along seven core objectives related to the impact that have been developed in a collaborative process within the consortium. After a joint weighting exercise these objectives were transferred into specific questions to be addressed during evaluation. For each of the objectives a certain set of indicators has been defined.

Regarding the measurement of the indicators a set of qualitative and quantitative methods are applied. The evaluation instruments include focus group discussions as well as questionnaires and structured interviews. In addition, monitoring data collected continuously during the project execution will feed into the assessment process. As common in innovative projects SOCIETIC is also facing a series of risks, such as the complexity of certain technologies that need to be considered.

Finally the results of this evaluation will be transferred into a draft white paper first and later on towards the end of the project result in the final version of the white paper. This white paper is intended to give recommendations for future implementations of citizen science based on the experience in SOCIETIC.

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1. INTRODUCTION

The aim of this document is to work out an evaluation strategy for SOCIETIC for assessing the implementation of the overall concept of citizen science and addressing specifically the success criteria and indicators from the Technical Annex section 3.2. The results of this evaluation will be compiled into the following upcoming reports:

- draft white paper (month 12)
- evaluation report (month 22)
- white paper (month 24)

The whole evaluation process is mainly taking place on three levels in order to collect data from different stakeholder perspectives:

- First Level Evaluation – Societic participants like volunteers, scientists, artists/visualization experts and companies (internal perspective)
- Second Level Evaluation – External experts from related fields and projects (e.g. fold.it, zooniverse, xtremweb...) and the External Advisory Board (expert perspective)
- Third Level Evaluation – Participants of the SOCIETIC conferences and dissemination events (external perspective)

The described evaluation strategy is therefore a reference document for SOCIETIC for developing a future strategy and policy recommendations for c-infrastructure operations and deployment. Success criteria, best practices, requisites and interoperability will be compiled in the white paper and disseminated in the respective community.

The proposed mixture of quantitative and qualitative evaluation instruments should ensure the collection of as much experiences and feedback as possible from participants/target groups/users, experts and participants of conferences. The questions to be addressed by these instruments relate to 7 core objectives regarding the potential impact of the project.

The following figure 1 gives an overview of the planned evaluation activities leading towards the white paper compilation. A more detailed description can be found in the next chapter 2.

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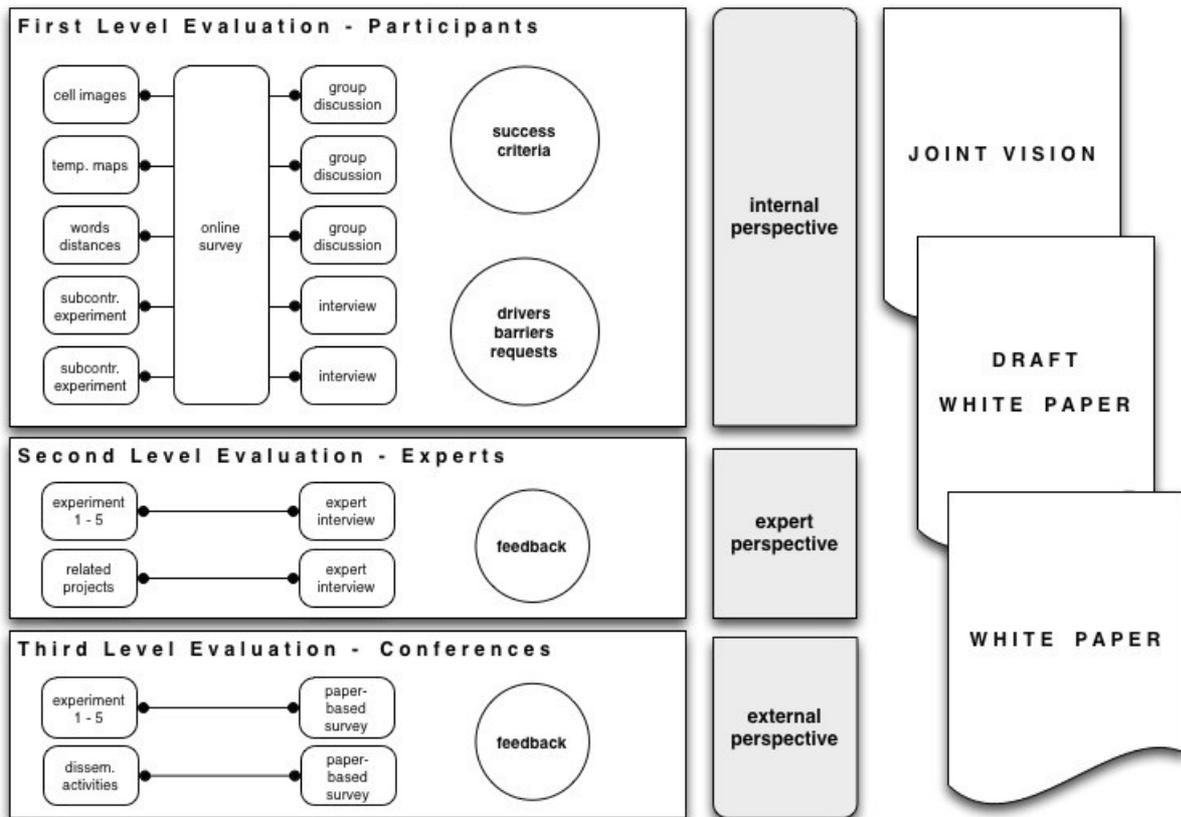
Figure 1: Overview of planned evaluation activities and white paper compilation

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2. MONITORING CRITERIA AND IMPACT METRICS

The main objective of the evaluation activities in WP5 is to monitor the performance of the project and to gather data, which help in assessing its impact. With this aim, a set of monitoring criteria and impact metrics has been developed and a set of quantitative and qualitative data collection instruments elaborated which will help to evaluate the project's performance at different time-points of the project.

The evaluation activities aim to validate the strengths and weaknesses of the Societic project according to the initial goals set up by the project. First, WP5 will investigate the impact that comes from the involvement of the broader public on the Societic platform and the selected citizen science experiments. The main questions to be answered are: How did this involvement influence the broader public's interest and attitudes towards science? and How did this involvement contribute to the creation of valuable scientific results?

Second, WP5 will evaluate the Societic platform and assess the dissemination activities, which target the divers stakeholders of the project. The aim of these activities is to continually improve the Societic approach and to collect lessons learned on how to successfully reach and motivate the broader public as well as scientific institutions to get involved in citizen science projects.

The results from these evaluation activities will on the one hand feed the further development of the Societic platform and help to continually improve and adapt the conducted dissemination activities. But the main outcome from the assessment is the White paper, which will gather, analyse and present the project's lessons learned together with the experiences and lessons learned from related citizen science projects aiming at the provision of a strategy and policy recommendations on how to enhance citizen science for all stakeholders involved.

With these objectives in mind, the project developed a set of quantitative and qualitative monitoring criteria and impact metrics, which will help to monitor and understand in how far the aims of the project are reached. The following table shows an overview of the objectives related to impact, main impact assessment questions, involved target groups for evaluation, evaluation instruments and output.

Table 1: Overview of objectives, research questions, stakeholders, evaluation instruments and outputs

Questions	Involved stakeholders	Evaluation instrument	Output
Objective 1: Demonstrate capabilities and restrictions of citizen infrastructures			
• What are the benefits from citizen infrastructures for researchers? • What are the barriers encountered and how can they be addressed? How	• Researchers involved in Societic experiments • Researchers	• Guided interviews • Expert inter-	• Evaluation report (D5.4) • White paper (D5.3,

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to deal with issues like IPR and standardisation? • Which are the main functions of the Societic platform?	involved in related projects	view Call for participation • Internal monitoring indicators	D5.5) • Report on use of infrastructure (D3.3.1, D3.3.2)

Objective 2: Approach the broader public and present science in attractive ways

• Which dissemination activities help to reach the broader public? • What is the impact of these dissemination activities?	• Broader public at dissemination events • Artists/ Visualization experts	• Event evaluation questionnaire / broader public • Guided interviews • Internal monitoring indicators	• Annual dissemination report (D2.31, D2.3.2) • White paper (D5.3, D5.5)

Objective 3: Increase involvement, interest and knowledge in/about science of the broader public

• What are the motivators for the broader public to participate in citizen science experiments? • What are the benefits from this participation? • What are the barriers encountered and how can they be addressed? • Which are the main functions offered by the Societic platform? • How can citizen science be better communicated to the broader public?	• Citizens involved in Societic experiments • Companies involved in Societic experiments	• Focus group discussions • Online questionnaire with open and closed questionnaire • Guided interviews • Internal monitoring indicators	• Evaluation report (D5.4) • White paper (D5.3, D5.5) • Report on use of infrastructure (D3.3.1, D3.3.2)

Objective 4: Improve involvement of educational institutes in citizen science

• How can citizen science be successfully involved in todays science teaching? • What are the benefits and barriers for educational institutes from the cooperation with citizen sci-	• Teachers involved in Societic experiments • Teacher communities/Network of teachers	• Online questionnaire with open and closed questionnaire • Internal monitoring indicators	• Evaluation report (D5.4) • White paper (D5.3, D5.5)

ence projects?	• Educational policy makers		

Objective 5: Raise the awareness and interest of researchers (eInfrastructure providers, scientists, related projects)

• Which dissemination activities help to reach researchers? • What is the impact of these dissemination activities?	• Researchers participating in dissemination activities	• Event evaluation questionnaire / researchers • Internal monitoring indicators	• Annual dissemination report (D2.31, D2.3.2) • White paper (D5.3, D5.5)

Objective 6: Establish a network of citizen science stakeholders

• Did the project succeed in building living citizen science communities	• Related projects and initiatives	• Internal monitoring indicators	• Evaluation report (D5.4) • White paper (D5.3, D5.5)

Objective 7: Create common tools and workspaces for researchers, resources providers, system administrators, and volunteers from the society

• Did the project succeed in developing a modular and generic platform, which operates existing components and infrastructures? • Did it an open framework for distributed multi device tasks-oriented applications?	• Internal	• Internal monitoring indicators	• Evaluation report (D5.4) • White paper (D5.3, D5.5)

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The following chart shows the overview of main objectives with regard to impact:
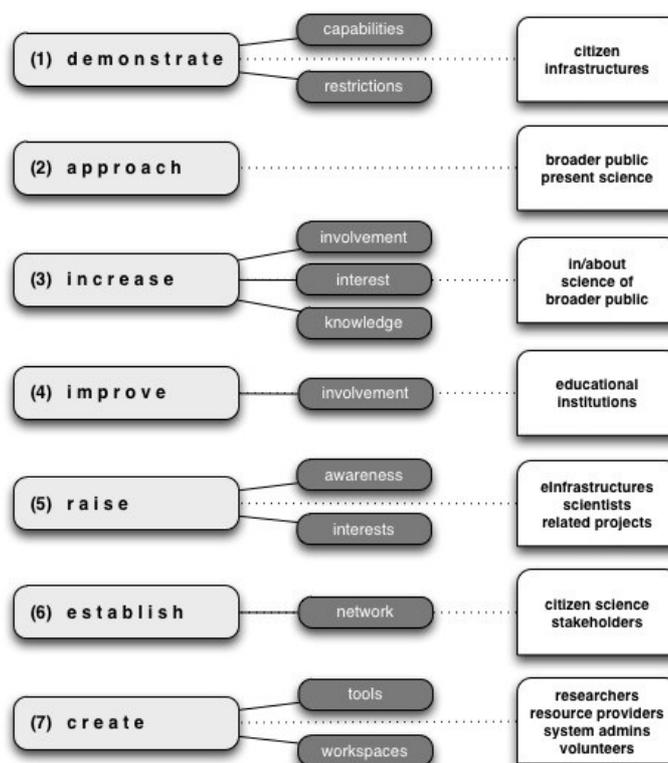
Figure 2: Overview of project objectives related to impact

In the following paragraphs and tables the detailed measurement indicators per objective are presented. Each objectives has a 1) quantitative indicators which support the internal monitoring, 2) quantitative indicators for feedback and impact assessment, and (optional) 3) qualitative questions to get deeper insights.

2.1. Objective 1: Demonstrate capabilities and restrictions of citizen infrastructures

2.1.1. Quantitative indicators monitoring performance (internal):	Envisioned target number
Publishing of a set of specific experiments to test the citizenship concepts, ideas and tools. Perform interoperability between technical components.	At least 5 experiments published and communicated
Contribution to cognitive and linguistic research and science through providing larger data sources	40.000 data patterns received
Contribution to medical research by external non-specialized people	50.000 of image parameters analysed
Contribution to climatological and environmental research by external non-specialized people	10.000 meteorological data received

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2.1.2. Quantitative indicators for feedback and impact assessment:

Target group: Researchers involved in citizen science experiments (Societic and others)

Instrument: Questionnaire distributed at two time points (at month 9 and month 20)

- Perceived usefulness of the citizens' contributions

- Number of dissemination activities due to this research (presentations, publications, …)

- Number of created jobs and involved researchers

- Number of involved PHDs

- Number of projects (actual, or in planning) related to citizen science

- Estimated of saved costs and efforts due to citizens' contributions

2.1.3 Qualitative questions for feedback and impact assessment:

Target group: researchers involved in experiments (on Societic or in related projects)

Instrument: Guided interviews with researchers involved in Societic (around month 20), Expert interviews (around month 9), interactive workshop (around month 22) and call for contributions for researchers involved in related projects (around month 9 and month 18)

- How did researchers get attracted to Societic?

- What were the contributions from citizens to the research?

- How useful were these contributions?

- What is the specific benefit for research?

- What were the barriers encountered during these collaboration?

    o What kind of experiences were made with translating scientific projects into a language understandable by the broader public?

- What are potential other motivators and benefits to participate in citizen science experiments? How could they be fostered?

- What are potential other barriers and problems that make the involvement in citizen science projects more difficult? How could they be addressed?

- What would it need to successfully spread citizen science amongst the research world (infrastructure, facilitation, knowledge …)?

- What are the most important open issues or lessons learned concerning technical issues?

- What are the most important open issues or lessons learned concerning IPR issues?

- What was the most important support function of the Societic platform (a related platform if the experts come from a related project)?

- How could this platform be further improved?

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2.2. Objective 2: Approach the broader public and present science in attractive ways (society-pull research) to raise awareness and interest

2.2.1. Quantitative indicators monitoring performance (internal):	Envisioned target number
Public events organized	6
Press releases	12
Publications in general media.	6
Reach to institutions that recognize participants (unemployed people, risk-of-exclusion groups, rural environment...)	5 institutions
Contests about creativity arisen from volunteers.	4
Artistic visualization of results.	4

2.2.2. Quantitative indicators for feedback and impact assessment:

Target group: Participant at Societic dissemination event (broader public); User of the Societic platform and experiments (broader public)

Instruments: Event questionnaire continually collected at events; Online questionnaire on Societic platform;

- Increased interest in citizen science
- Perceived usefulness of Societic event (event questionnaire only)
- Perceived attractiveness of Societic event (event questionnaire only)
- Perceived attractiveness of the visualizations (event questionnaire only)
- Perceived information quality
- Attractiveness of the experiments
- Perceived joyfulness of Societic platform (online questionnaire only)
- Perceived ease of use of Societic platform (online questionnaire only)

2.2.3. Qualitative questions for feedback and impact assessment:

Target group: Semantic game participants

Instrument: Focus group (around month 20)

- How do you like game-approaches in general?
- What do you think about the game-approach of the semantic game, what did you experience?
- Did the fact to play a game, which delivers research results influence the participants' motivation to get involved in Societic?
- If research would be designed in the form of games to involve the broader public, would this increase your willingness to participate?

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Target group: Involved Artists/Visualization experts

Instrument: Guided interviews (around month 20)

- Did the visualization experts experience that presenting research data in an artistic way can attract attention of the general public?

- What were the challenges when using the research data for artistic representation?

- Why was it interesting for the artist to get involved and what were the benefits?

- Would they intend to further work with citizen science data and why?

2.3. Objective 3: Increase active involvement, interest and knowledge in/about science amongst the broader public

2.3.1. Quantitative indicators monitoring performance (internal):	Envisioned target number
Dissemination activities in which volunteers learn about topics such as linguistics, cognitive research, biotechnology, pharmacy or climatology as well as to see what their efforts have been dedicated to and the results obtained from them.	15
Contributions to science done by the citizens in their interactions with the scientists.	15 new ideas or suggestions from citizens
Impact on creating Citizen's Science promoters.	50 citizens asking for deeper information or research collaborations.
Publications of end-users referring to the SOCIETIC environment	5 publications of end-users referring to the SOCIETIC environment.
Level of involvement on Societic platform	Number of visits to the platform, time spent on the platform, contributions done, comments left etc.

2.3.2. Quantitative indicators for feedback and impact assessment:

Target group: Participant at Societic dissemination event (broader public); User of the Societic platform and experiments (broader public)

Instruments: Event questionnaire continually collected at events; Online questionnaire on Societic platform;

- Perceived knowledge increase about research in general

- Perceived knowledge increase about the specific topics under investigation

- Intention to promote citizen science in one's own social network

- Perceived barriers for involvement in citizen science

- Perceived benefits for involvement in citizen science project

- Increased motivation to get actively involved in citizen science projects

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- Perceived value of one's contribution (online questionnaire only)

- Community as motivator (online questionnaire only)

- Researchers dialog as motivator (online questionnaire only)

2.3.3. Qualitative questions for feedback and impact assessment

Target group: Users of the Societic platform (broader public)

Instrument: Focus group (around month 20)

- How did participants get attracted to Societic?

- What were the motivators to participate in one of the Societic experiments?

- What were the barriers that the participants encountered when approaching or being involved with Societic?

- How did the involvement in Societic increase the participants' knowledge about research in general and the topics under investigation more specifically?

- Did participants have the impression to give some valuable contributions to research? If, yes, what were these contributions? And if not, why do they think that their contribution was not valuable?

- How could the concept of citizen science be better promoted amongst the general public?

- How did participants experience the presentation of the science content concerning quality and also appearance on the Societic platform?

Target group: Companies involved in the Societic platform

Instrument: Guided interviews (around month 20)

- How did the companies get attracted to Societic?

- What were the motivators to participate and the benefits from participation?

- What were the barriers that the organizations encountered when approaching or being involved with Societic?

- Did the organizations have the impression to give some valuable contributions to research? If, yes, what were these contributions? And if not, why do they think that their contribution was not valuable?

- How could the concept of citizen science be better promoted amongst companies?

2.4. *Objective 4: Improve involvement of educational institutes in citizen science*

2.4.1. Quantitative indicators monitoring performance (internal):	Envisioned target number
Educational centres accessing e-infrastructures and involved in citizen science	15

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| Didactical units created. | 6 |
| Students using didactical units for learning process. | 250 |

2.4.2. Quantitative questions for feedback and impact assessment

Target group: Teachers involved in Societic experiment

Instrument: Online questionnaire for teachers with open questions

- Increased interest in citizen science amongst teachers and students

- Perceived knowledge increase about research in general amongst students

- Perceived knowledge increase about the specific topics under investigation amongst students

- Student's motivation

- Fit with curricula

- Intention to promote citizen science in the teacher's community

- Perceived barriers for school's involvement in citizen science

- Perceived benefits for school's involvement in citizen science project

2.5. Objective 5: Raise the interest of researchers, universities, e-Infrastructure providers in citizen science projects

2.5.1. Quantitative indicators for monitoring performance (internal):	Envisioned target number
Project Conferences for researchers.	2
Group Specific Events for researchers	6
Co-organized events with other linked projects or initiatives.	4
Meetings with stakeholder representatives.	10
Publications in science or technology related journals or scientific conferences proceedings referring to volunteers' participation.	4

2.5.2. Quantitative indicators for feedback and impact assessment:

Target group: Researchers participating in Societic dissemination events

Instrument: questionnaires continually distributed at events

- Increased interest in citizen science
- Increased motivation to get actively involved in citizen science projects
- Perceived usefulness of citizen science for one's research
- Number of planned or conducted citizen science projects
- Intention to share the idea of citizen science with colleagues
- Perceived usefulness of Societic event
- Perceived quality of information received
- Perceived attractiveness of Societic event
- Perceived barriers for involvement in citizen science

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- Perceived benefits for involvement in citizen science project

2.6. *Objective 6: Establish a network of citizen science stakeholders*

2.6.1. Quantitative indicators monitoring performance (internal):	Envisioned target number
Portal's users	12.000 visitors (IP unique) a year
Forum users	150 registered users
Facebook followers	600 followers
Twitter followers	600 TWT followers
Population of SOCIETIC community	2.000 users, volunteers, donors etc. participating in SOCIETIC.
Population of active citizen scientists in SOCIETIC	10.000 performed tasks by the Societic community
Population of active technical donors to SOCIETIC	7.000 donors connecting their ICT resources
Links to existing Citizen's Science communities	8 existing communities (both international and local) connected to SOCIETIC
Links to related projects	6 exchanged website references 4 MoUs signed 4 collaborative dissemination and knowledge exchange activities

2.7. *Objective 7: Create common tools and workspaces for researchers, resources providers, system administrators, and volunteers from the society*

2.6.2. Quantitative indicators monitoring performance (internal):	Envisioned target number
Publication and support of a set of open services for scientific users, infrastructure providers and citizen scientists.	Actual publication and support of the services.
Development and promotion of an API for scientific users for their own experiments.	5 scientific users groups using the API for their own experiments.
Promoting the API for citizens or communities for their own experiments	3 citizens or communities using the API for their own experiments.
Developing an open framework for distributed multi device tasks-oriented applications.	Framework deployed
Set of standardization requirements for an application to become an open standard Licensing.	APIs and web services, data management plans to be open and shared

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3. EVALUATION INSTRUMENTS

3.1. *First level evaluation with the Societic community*

For the first level evaluation, the evaluation team collects quantitative and qualitative data from the users of the implemented Societic portal, which provides access to the citizen science experiments. These users are on the one hand the volunteers, who come from the broader public, on the other hand it comprises the group of companies, artists and researchers involved in the Societic citizen science experiments. The data collection instruments for these target groups will be described in detail as follows:

Online survey for each experiment/application for the volunteer participants

First, the five SOCIETIC experiments will be evaluated by an online survey in order to assess the impact metrics defined in chapter 2.3.2 and 2.4.2 of this document. This online survey will be set up with LIME survey and will be accessible via a weblink. All volunteers registered to the Societic platform will be invited via e-mail to participate in the survey and only invited respondents have access to the questionnaire. At least a total number of 40 respondents for each experiment are expected.

The online questionnaire contains items to be answered on a response scale that are quantitatively analysed using SPSS, carrying out descriptive analysis on frequency distributions. The questionnaire also contains open questions providing space for written statements. Respondents are asked to answer in English. The answers are analysed with content analysis methods, identifying the most relevant aspects and, their frequencies are visualised with word clouds.

Focus group discussions for each experiment/application

For each of the five SOCIETIC experiments a focus group discussion will be organised in order to gain qualitative insights on the motivators and benefits as well as problems encountered when participating in the citizen science experiments. The moderated discussion groups will help to understand open questions resulting from the online questionnaire beforehand and reveal the main issues related to the volunteer participation in science via eInfrastructures. For the selection of the 8-10 participants for each experiment's focus group, the interaction profile from the portals are used and analysed as follows:

- approx. 3 power-users
- approx. 3 intermediate users
- approx. 3 users, who do not consume the portal often

With the mixture of power-users, intermediate users and users, who did not often use the portal, the evaluation team wants to identify the main drivers and barriers for using and not-using the portal.
Considering that the volunteers of Societic are coming from different countries, the focus groups will be held online using existing tools developed in related e-infrastructure projects, e.g. mashme.tv from Global Excursion project.
The discussion language of the focus group will be English. Thus a basic knowledge of English language will be another selection criterion for focus group participants. Nevertheless to support the participants, during the focus group discussion project partners from the main participating countries (Spain, Portugal, Brazil, Austria) will be present as well to help out with translations

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whenever it is required.

The method of focus group discussion (Mayring 2002) is used as an explorative approach to reveal opinions, interests and experiences of the participants of the c-infrastructure experiments. In SOCIETIC 5 focus groups rounds will be organised after heaving deployed and run the experiments for at least several months. The discussion will take approximately two hours. The moderators of each focus group will prepare protocols of the focus group discussions and forward them to the SOCIETIC evaluation team for an aggregated analysis. In order to make the five protocols more comparable, a semi-structured interview guideline will be provided for the moderators.

Guided interviews with involved researchers, artists/visualization experts and companies

For the guided interviews the evaluation team will prepare interview guidelines, which help to answer the questions defined in chapter 2. Guided interviews permit the interviewer to keep the interview within in the parameters traced out by the evaluation objectives. Nevertheless this approach gives a certain flexibility and allows the interviewer to explore, probe and ask questions which might not be part of the question guidelines but deemed interesting for the project.

Three different question guidelines are elaborated for each of the three target groups, researchers, artists and companies (for details on the questions please see 2.2.3, 2.3.3 and 2.4.3). The interviews will be organised either via telephone or face-to-face, by the project partners who are situated in the countries of the interviewees. After each interview protocols will be elaborated for the further analysis. The collected data from these interviews will mainly contribute to the evaluation of objective 2, 3 and 4.

Analysis of focus groups and guided interviews

For the analysis of the focus group discussions and guided interviews, the SOCIETIC evaluation team will conduct qualitative content analysis of the protocols as proposed by Mayring (2008). The applied method is a technique of summarisation, whereby categories are created in an inductive procedure by reducing, paraphrasing and generalisation relevant text passages with a content analysing tool. The central aspect of the employed technique is to develop categories as close as possible resembling the original data without formulating theories or concepts in advance. The interviewees for the focus group discussions are participants of the c-infrastructure experiments, but no experts.

The analysis will be conducted in three steps (Mayring 2008): 1) Summarisation, 2) Explanation and 3) Structuring. At least two researchers will be involved in the analysis of every protocol. Only those codes and respective sub codes which all agreed upon will be introduced or retained. This method of co-analysis guarantees improvements of objectivity. The results do not depend on one specific person and are reproducible independently of the individual researcher. As anonymity is guaranteed to the participants, each person is given an unique code instead of revealing their names. The findings consist of a systematisation of the relevance of codes a generalisation and an interpretative framework.

The derived main categories identified by the SOCIETIC evaluation team will give more insights

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about the drivers and barriers for using the c-infrastructure experiments. In addition, new aspects and improvements for further development and recommendations are expected.

3.2. *Second level evaluation with advisory board members and external experts*

For the second level evaluation, the evaluation team will collect and analyse additional qualitative feedback from the SOCIETIC External Advisory Board and external experts from related e-Infrastructure and citizen science projects. This second level evaluation will integrate the experts' perspective to our evaluation.

Expert interviews and online working session

The feedback of the experts from the SOCIETIC External Advisory Board and related projects is understood as a "complementary unit of action" to the target groups (Meuser & Nagel, 2005). These experts will be advisors for the SOCIETIC project team and should work out together with the evaluation team the relevant aspects from an external perspective. Their insights in internal structures and policy processes are essential for the sustainable deployment of the introduced experiments and will give valuable aspects for future actions and refinements.

Collecting input from the experts will be organised in two steps. First expert interviews will be conducted via telephone or Skype with each of the experts. Interviewees will be provided with question guidelines and a short briefing before the interview takes place to optimise the preparation of all participants. The interviewee will create a protocol immediately after each interview for further analysis. In addition the interviews will be recorded to have access to the original data in the case of open questions.

In a second step, after having analysed and summarized the main outcomes from the interviews an interactive session will be organised, where the experts will meet online to reflect on the outcomes of the interviews and elaborate on the core questions related to citizen science that came up during the interviews. A second round of an interactive workshop will be organised as well to discuss the outcomes of the Societic evaluation at the end of the project. For this interactive session supportive tools, e.g. distributed mind mapping, will be used.

EAB members and experts will be key players from related projects. They will come from the fields of eInfrastructures, citizen science and science communication and will bring extended scientific and practical knowledge into the project. For the selection of the experts the consortium has already started to create a list of key players in these fields based on their existing contacts and amend this list with results from literature research (e.g. authors of important articles related to citizen science, key note speakers at related conferences etc.). Finally, interviewees and contact persons from our organisational network will identify other relevant experts (snowball approach).

The main criteria for choosing experts are the thematic relevant reference of the expert, but also their self-estimation about being expert in at least one of our research focuses. Due to our restricted timetable the reachability and availability of the experts will be further factors, which influence the sample.

Expert interviews will be conducted in the first half of the project to collect input for the draft version of the white paper, which is due in month 12 from around 8 experts (including the three EAB members). These interviews will serve to collect the experiences from related projects on how to best foster collaboration between scientists and the broader public via innovative online tools.

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In a second round the same interviewees together with a larger number of experts are invited for an interactive working session, which will be organised online. In this workshop not only the experts' proper experiences will be collected, the discussions will also serve to get external feedback on the SOCIETIC project activities and outcomes. The outcome from this discussion will feed the White paper in month 24.

Analysis of expert interviews and online session

For the analysis of the expert interviews and online session, the transcripts and protocols will be analysed as proposed by Meuser & Nagel (2005). The applied method will reveal commonalities and differences by comparing the experts' experiences and points of view. The main aim of this method is to receive common aspects beyond the individual opinions out of the focus group discussion of the target groups. Single cases and typical statements are documented and summarised in thematic units. The results are based on systematisation of relevancies, a generalisation and an interpretative framework. Abstract categories are structured at least by two researchers of the evaluation team in order to improve the objectivity and make the results more reproducible and complementing the results of the first level evaluation.

The analysis scheme of the content analysis according to Meuser & Nagel (2005) consists of four main steps:

- paraphrasing of relevant aspects by summarising content

- headlines, finding meaningful and significant headlines for the summarised aspects

- compare topics by looking for similar categories and criteria in each expert interview

- conceptualisation of the defined categories and defining main concepts

The derived main concepts identified by the SOCIETIC evaluation team will give more insights in determining aspects of the implementation of the c-infrastructure experiments and complement the compilation of the white paper.

3.3.   *Third level evaluation with event participants*

For the third level evaluation, the evaluation team will collect feedback from the participants of the organised conferences and dissemination events. This feedback will not only evaluate the projects' dissemination activities but also provide some valuable recommendations from an external participants' perspective.

Paper-based survey during conferences and events

For the paper-based evaluation of the conferences and events, a questionnaire will be included in the conference hand-outs for the participants of the conference. The participants will provide their feedback and recommendations to the SOCIETIC evaluation team anonymously. Questions will related to the general public perception of citizen science and related topics as presented in section 2. At least a total number of 30 respondents for each conference are expected.

The answers are collected after the conference and transferred to SPSS for a further quantitative analysis by carrying out descriptive analysis and frequency distributions. The questionnaire will also contain some open questions for written statements, which are analysed with content analysis.

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3.4. *Compilation of a white paper*

For stimulating discussions on specific topics the method of a white paper has been used by various organisations like the European Commission, the United Nations and governments of various countries' governments. This method is based on a broad consultation process, where relevant parties like representative bodies or individuals are invited to participate and debate on the basis of proposals. In the following sub-sections, the generation of the SOCIETIC white paper is described and an overview is illustrated in figure 2: overview of SOCIETIC white paper creation process.

Figure 3: Overview of SOCIETIC White paper creation process

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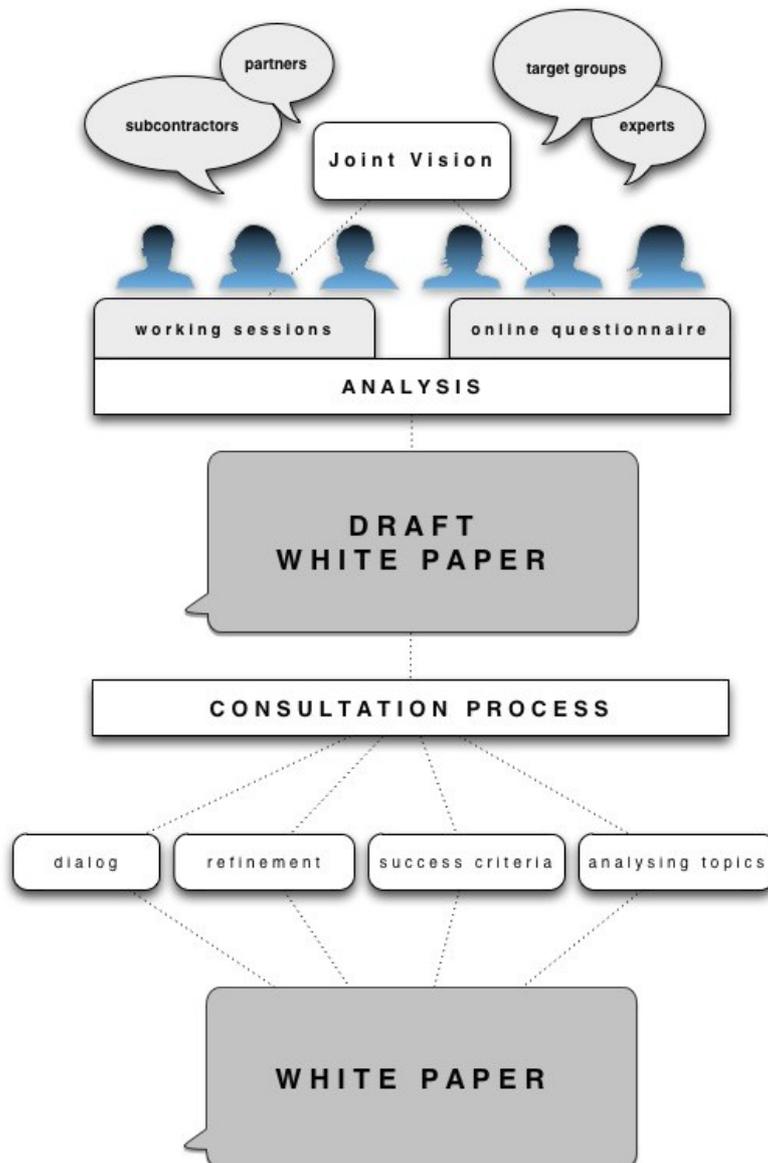RI-312902   21/30   D5.1 Evaluation Plan

3.2.1. Generating a joint vision

At the beginning of the white paper elaboration, a joint vision will be created by the project partners, subcontractors, participants/target groups/users and external experts (e.g. EAB) of SOCIETIC.

This joint vision will be based on internal working sessions of the project partners, the first round of expert interviews with external experts and first data collection with involved end-users (e.g. broader public, artists, organizations).

During this phase the core questions concerning citizen science will be elaborated, integrating experiences, recommendations and emerging ideas from the involved stakeholder groups, and a work plan for the further steps towards the white paper will be set up.

3.2.2. Compilation of a draft white paper

The analysis of the working sessions and expert interviews will be the main contribution to the first draft of the white paper. In addition, we want to integrate the experiences from a larger number of external stakeholders, such as scientists, eInfrastructure providers, science communicators, etc. Input from this extended group can also come from short written statements or articles. Further researchers will be invited to contribute to the white paper via the project partners' networks.

From all these inputs first recommendations and central aspects are generated and discussed in the SOCIETIC draft white paper.

3.2.3. Consultation process and white paper

For the final version of the white paper, the continuous dialogue with all involved stakeholder groups, which takes place during the first, second and third level evaluation as well as at SOCIETIC dissemination events, will result in the generation of the final version of the white paper.

This phase will include activities like the:
- continuous dialog with partners, subcontractors, participants/target groups/users and experts
- refinement of future strategy development and policy recommendations for c-infrastructures
- compiling success criteria, best practices and potential risks, requisites and interoperability

In this phase the objectives and their measurement indicators defined in Section 2 of this document will all feed into one strategic publication, which should serve as a basis document for future deployment of any technical work in this area.

4. TIMELINE

The following chart shows the main data collection instruments and involved target group along a timeline.

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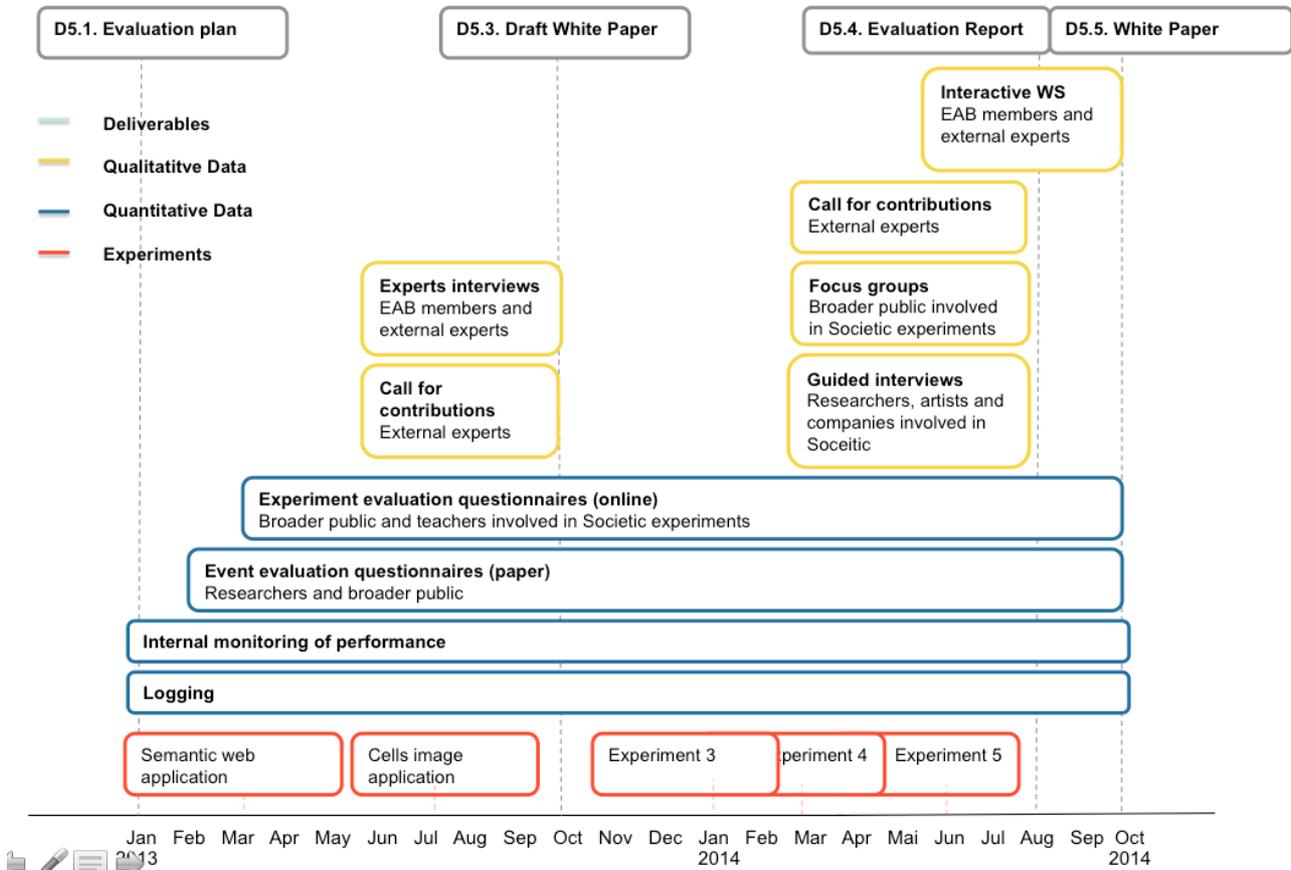RI-312902
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Figure 4 Evaluation timeline

5. POSSIBLE RISKS

While risk monitoring is part of the continuous monitoring process performed by the project management there are also a few risks that should be mentioned in the context of this evaluation exercise. In the following we will discuss the main potential risks for evaluation identified so gar and propose actions to be taken to cope with the specific risk.

5.1. Number of participants

Risk: The experiments do not acquire the expected number of volunteers to participate.

We expect a number of 2000 people interacting with the SOCIETIC platform, mainly volunteers but also researchers and eInfrastructure providers. To collect feedback on the participants' experiences and do some proper data analysis, we aim at 40 respondents to our questionnaires per experiment. This would then make a number of 200 people who provide us with detailed information about the drivers and barriers of participation and would let us compare also between the different experiments.

Action: To address the risk of having lower number of participants we will carefully monitor the number of active users on the SOCIETIC platform and try to take corrective actions as early as

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possible in close cooperation with WP2 Communication and Citizenship.

A similar risk actually exists also for the other target groups such as researchers, external experts and participants at events. For each of these target groups the numbers will be closely monitored and incentives will be developed to raise the interest and motivation of the individuals to provide input for our evaluation instruments.

5.2. Involvement of experts and students in data visualization

Risk: Experts and students in data visualization do not want to get involved.

The project has the objective to visualize science results in more attractive ways through the involvement of visualization experts and the launch of art competitions. Involving these visualization experts might be a challenge, as they mostly depend on funding or being paid for their work. However, the budget for these kinds of activities is very restricted in SOCIETIC. This risk may also have an effect on the following risk, since the attractiveness of dissemination activities might decrease without the involvement of visualization experts.

Action: To address this risk we will try to elaborate on additional benefits for the visualization experts to be involved in SOCIETIC, e.g. visibility, access to another community, media coverage etc. In addition we will explore further sources of funding which might help to come up for material costs etc. of the artistic installations.

5.3. Reachability of broader public

Risk: SOCIETIC dissemination material and activities are not attractive enough to reach a broad public.

One of the main objectives of SOCIETIC is to reach and successfully involve the broader public in citizen science experiments. This idea is new for a large proportion of the broader public and needs to be properly communicated, using dissemination channels that reach those that could not be reached yet by science. These kinds of dissemination activities require budget for dissemination material, the preparation of stands at science fares etc. In addition, extended media partnerships require substantial budget. However, the dissemination budget is rather restricted in this project, especially when compared to the marketing budgets that private companies would have at their hand to involve and get the attraction and interest of the broader public.

Action: The SOCIETIC project works with a professional designer to prepare attractive dissemination material targeting the broader public. When preparing the dissemination material we pay special attention to the language we use, translating our objectives and ideas from the "scientific jargon" to a language adapted to the end-users and include visual elements that attract attention.

In WP2 we created an extensive list of the partners' existing contacts that could be used to specifically reach out to groups of volunteers. Having prepared dissemination materials with clear benefit descriptions for our target groups we will use these existing networks to reach out for the broader public. In addition we aim to get specific promoters of our ideas on board, e.g. patients organisations, teachers etc. who will support us in passing our objectives on to their network of potential volunteers.

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5.4. Technical problems

Risk: The technological infrastructure does not work as expected

We develop technically complex systems and the success of the volunteers' involvement depends on the proper set of functionalities, which need to be easily accessible and easy to use for people of all age groups who also show low affinity for technology.

Action: The SOCIETIC consortium can base its development work on a large set of experiences from former eInfrastructure projects involving volunteers. The SOCIEITC platform and all experiments will be tested in detail before being deployed to the broader public, also involving end-users into these initial testing. Volunteers will be provided with facilitation material on how to use the SOCIEITIC experiments and support will be given in the case of problems via an e-mail hotline.

6. ETHICAL ISSUES

In order to achieve the goals defined within the research task in WP5, the project partners of SOCIETIC have to collect personal data from the SOCIETIC participants and external experts, like the interaction data with the provided experiments and platform, basic demographic data and responses to questionnaires as well as group discussions. This data is essential for validating the project's success criteria for citizen science and dissemination activities undertaken during the project lifetime. During the data collection the data protection issues involved with handling of personal data will be addressed by the following strategies:

Volunteers to be enrolled will be exhaustively informed, so that they are able to autonomously decide whether they consent to participate or not. In an informed consent (see Annex 1), the purposes of the research, the procedures, potential discomforts or benefits as well as the handling of their data (protection, save storage) will be explained. In order to make the SOCIETIC research transparent, participants will have to sign the informed consent in Annex 1.

The data exploitation will be in line with the respective national data protection acts. Since data privacy is under threat when data are traced back to individuals – they may become identifiable and the data may be abused – we will anonymise all data.

The data gathered through logging, questionnaires, interviews and focus group discussions during this work package will be anonymised and therefore the data cannot be traced back to the individual. Data will be stored only in anonymous form so the identities of the participants will only be known by the partners involved and will not even be communicated to the whole consortium. Reports based on the interviews and focus groups discussions will be based on aggregated information and comprise anonymous quotations respectively.

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7. CONCLUSION

Since SOCIETIC is a complex project with interventions planned on various levels and with a very heterogeneous set of target groups the evaluation is likewise a very complex task. With the presented approach we believe that we have prepared the ground for an in-depth project assessment with regards to objectives and potential impact.

Although not specifically covered in this document, it should be mentioned that SOCIETIC has implemented also a number of quality assurance measures, such as a peer-reviewing process and monitoring procedures that shall guarantee high quality of SOCIETIC outputs and identify potential bottlenecks at an early stage. This work is performed in very close cooperation with the management team.

Overall, SOCIETIC has defined a number of challenging objectives for itself and the role of the evaluation exercise is now to focus on the achievement of these objectives and their potential impact. On the other hand challenging situations and lessons learned need to be documented and analysed likewise. With the basic infrastructure set-up and the main evaluation instruments defined we are confident that we can manage an effective evaluation and monitoring process and come up with enough evidence for the success of SOCIETIC at the end of the project.

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ANNEX 1 – INFORMED CONSENT

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SOCIETIC
SOCiety as Infrastructure for E-Science via technology, innovation and creativity

European Commission Seventh Framework Project
(Coordination and Support Action – Grant Agreement No. 312902)

Declaration of Consent

</div>

:name of participant

Fermin Serrano Sanz (fserrano@unizar.es)   :name of contact

Instituto de Biocomputacion y Fisica de Sistemas Complejos
C/ Mariano Esquillor s/n Edificio I+D Despacho 2.2.09
50018 Zaragoza   :name of institution

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Executive Summary

Dr. Joana Namorado from the Directorate Health-DG RTD – European Commission, responsible for Ethics and Gender Issues, provides good guidance on informed consent (Namorado 2011, page 28). An informed consent has to answer and consider following questions:

- What is the research? Purpose, duration and description of project aims.
- foreseen risks and benefits, are there alternatives
- confidentiality, treatment/ compensation and information
- contact for rights and claims; injury to the subject
- voluntary participation or Condition of participation
- no penalty or loss on stopping

The following informed consent of Societic gives detailed answers to the above mentioned questions to make sure, that the rights of each participant are ensured.

1. Project aims

Citizen science is an innovative concept to involve the general public in scientific processes. One of the best ways to help people understand science is by letting them participate in scientific research and experiments. This is what citizen science tries to achieve.

The project SOCIETIC (SOCiety as Infrastructure for E-science via Technology, Innovation and Creativity) will coordinate all agents involved in the citizen science process, setting the basis for this new open science paradigm. The project will promote the usage of science infrastructures composed of dedicated and external resources, including professional and amateur scientists. SOCIETIC will set-up a network where infrastructure providers and researchers will recruit volunteers from a general public to perform science at home.

Individual citizens will contribute to scientific studies with their own knowledge and resources participating in an active way. Citizens will be donors by connecting their own computing resources, such us smart phones, desktop computers or other devices to science infrastructure. But, citizens will also be actors when they actively participate in the scientific process, in different phases: from short and easy activities to the inception of new research lines, leading people driven developments or in the development of software components, similar to open-source communities. We propose to open e-science to the people, even considering the knowledge and the time of the citizen scientists as part of the resources that constitute the e-infrastructures, and call this enhanced citizen-based infrastructure "c-infrastructure".

The main objectives of the project:
- Foster interaction and coordination between all citizen-science actors: researchers, resources providers, system administrators, and volunteers from the society. Offering common tools and workspaces for all of them, by deploying society-pull research and presenting results in an attractive way, including artistic will create a common interface and innovation oriented

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features.

- Promotion of the capabilities of the c-infrastructures, not only in general terms but also presenting concrete results. Our aim is to convince other research infrastructure providers and users, specialized researchers and people at home that it is possible to make top-level science by opening the labs and easing interaction and contribution from amateur scientists.
- Integration of existing solutions and users communities that aim to share experiences and innovate creating common solutions. Apart from existing citizen science practices this project will also deploy a set of concrete experiments that focus on specific topics and will add new resources to the available research infrastructures.
- Compilation and sharing of best user practices oriented towards research infrastructures users and providers, as well as policy-makers recommendations for implementing citizen science.

Storage of personal data

During the course of the project, personal data will be collected a number of times by means of observation, interviews and group discussions. This data is used to develop and to evaluate the success criteria for citizen-science and dissemination activities undertaken in the project SOCIETIC.

The data will be used only within the project framework of SOCIETIC, and will not be made accessible for any third party. It will not be stored after the end of the project.

The data do not contain the names or addresses of participants and will be edited for full anonymity before being processed (e.g. in project reports).

Audiovisual material

Videos and photographs taken during the course of the project may contain the pictures of participants. SOCIETIC may use these videos and photographs in public forums, on websites or in conferences in order to inform about the project. Each participant allows the project SOCIETIC to use the said materials.

Each participant may demand removal of photographs or videos from public forums and websites by simple request. Subject to technical feasibility, SOCIETIC agrees to remove the requested items without delay.

Instructions and advice

An identified contact person will be available for project-related instructions and advice. Each participant may gladly discuss questions and problems with the contact person at any time.

Code of Conduct

Participation in SOCIETIC is meant to be as agreeable and pleasant as possible for all those involved. Therefore, all participants agree to respect the following rules:

- Racism and discrimination: racist comments, discrimination on the basis of sex, age, or disability, publication of racist or sexist pictures and insulting persons are strictly banned.

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- SOCIETIC may not be abused for political, religious or advertising purposes.

- Infringements of copyright laws are not permitted.

- It is only allowed to publish one's own texts and pictures. Publishing pictures from the account of another person is not permitted without this person's consent.

All participants' conduct towards other users should always be appropriate and never offensive or depreciating.

Consent

After having stated these general conditions and rules, we are looking forward to a good cooperation and positive project results. We would like to thank you in advance for your participation in the project SOCIETIC.

The undersigned declare that they understand and consent to the conditions and rules of SOCIETIC.

Both parties receive a copy of this declaration of consent.

Participant's signature:

Zaragoza, day/month/year

Contact's signature:

Zaragoza, day/month/year   Fermin Serrano Sanz

Instituto de Biocomputacion y Fisica de Sistemas Complejos
C/ Mariano Esquillor s/n Edificio I+D Despacho 2.2.09
50018 Zaragoza

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