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# CIVIC EPISTEMOLOGIES – Development of a Roadmap for Citizen Researchers in the Age of Digital Culture

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**Abstract.** The CIVIC EPISTEMOLOGIES project investigates citizen science and crowdsourcing in the domain of the research in Digital Cultural Heritage and Humanities (DCHH). The ultimate aim is to produce a validated Roadmap indicating the suggested direction that the deployment of services and infrastructures should take, in order to support the participation of citizens in the research processes and the participation of creative industries in the exploitation of digital cultural content. The case of DCHH is particularly relevant because of the major cross-cutting role that the humanities play in European research and innovation, recently acknowledged in a clear way in the Horizon2020 Community Programme for Research and Innovation. Cultural heritage and humanities also represent a subject area in which citizens are particularly active, counting several – still spread – experiences of their involvement in recording, annotating and cataloguing activities on an individual or group basis, as volunteers and amateurs. The case of broadening e-Infrastructure deployment to support the participation of citizens to DCHH research, even if holding a strong impact potential for social cohesion and job development, is not yet fully explored. The paper discusses about the multidisciplinary approach to citizen science and how this method can contribute to the benefit of many scientific domains, research communities, and technology advancements as well as delivering novel social and economic impact.

**Keywords.** Civic Epistemology, research, DCHH, Citizen Science, Digital Cultural Heritage, Digital Humanities, e-Infrastructures, creative industries, roadmapping.

## 1. Introduction

The term Civic Epistemologies was introduced by Sheila Jasanoff in ‘Designs on Nature’ [5] in which she defines civic epistemologies as “the institutionalized practices by which members of a given society test knowledge claims used as a basis for making collective choices.”

The CIVIC EPISTEMOLOGIES project (FP7 Coordination and support action, 2014-2015 [1]) is about the participation of citizens in research on cultural heritage and humanities. The participation of Europe’s citizens in scientific research development has just started to be exploited, while it represents a big potential for improving European competitiveness. ICT are powerful drivers of creativity and can open

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interesting opportunities to support the participation of citizens, but specific technical know-how is still generally lacking in the creative industries sectors, and, in addition, humanities scholarship is not yet taking full advantage of ICT to engage with wider audiences. New skills are needed to enable the cultural sector to grasp employment and commercial opportunities; and on the other side e-Infrastructures need to broaden their deployment with new services and access policies targeted to this scope.

The research on DCHH can play an important role in the development of the European Research Area, and can be leader in the discovery of new directions of cross-disciplinary research, and opening this research to the civil society can provide new perspectives, which are demonstrating very interesting results, but are not yet fully part of the current research practices.

The proposed solution endorsed by CIVIC EPISTEMOLOGIES is to empower the existing e-Infrastructures with new services, targeted to the needs of specific research domains, in order to broaden the communities of users, including citizen scientists as an integrated part of the communities. It should be possible to tailor the new services to the requirements of each research community; at the same time, it should be necessary to identify common layers and standards that can be shared among different domains. This scalable and modular approach to the e-Infrastructures deployment will allow to serve better the research and to reduce costs of development.

The major outcome of the project is represented by its Roadmap, where pilot experiences, case studies, focus group activities and workshop results will be integrated into a unique product, designed with a very multidisciplinary approach.

## **2. Co-producing and Co-creating Knowledge**

In many areas, Cultural Heritage (CH) may exist in a fragile or degraded condition, may be rendered vulnerable by economic development such as urbanisation, or may simply be lost through neglect. But, there is considerable interest among the general public in exploring, recording and cataloguing their own CH or that of their community or locality. CH digital content is massively increasing. This data may be held within a dedicated online archive or it may be collected and form a contribution to an aggregated database or archive.

At the same time, an increasing number of citizens are engaged in and with online discussion fora, and social networking platforms. But the outcomes are not always easy to predict and are sometimes negative and undesirable. The danger is that, without the establishment of a civic epistemology, separate communities develop as exclusive and even elitist and, as a consequence, the range and scope of a common set of civic values and understandings related to CH is thereby diminished.

The project aims to investigate how the phenomenon of citizen science can be encouraged and facilitated in a way that a shared or common CH discourse develops, knowledge is advanced and the exchange of ideas remains open and participatory. Cultural institutions and academies should welcome and embrace the opportunities implied in citizen science, as it offers occasions to be closer to citizens who are actually their publics. Next to this, a participatory and co-creative approach is positive and benefitting for cultural institutions as it adds to the knowledge-base of their collections, and opens up new ways for their collections to be used. But it does also create challenges for institutions, raising issues about curatorial authority over interpretation and on skill development for making citizens satisfactorily participate in research. First,

the citizen who is a culture consumer has to realise that he or she can become a producer, taking a more active role. This calls for a broad awareness campaign, where cultural institutions as well as platforms such as Europeana and specialized research infrastructures can make users aware of their shared responsibility to become caretakers of the cultural practices they engage in. Being conscious that one is a stakeholder in what happens is a first requirement in order to feel the need to intervene, to contribute, to have a voice. This is of utmost importance since in many instances of Cultural Heritage data part of the knowledge is not with the institutions but with the general public, in the stakeholder communities that have a relation to the subject matter (e.g. in the context of Orphan Works).

Participation however also means having the skills to do so: this requires partly a rediscovery of dormant, forgotten skills (such as painting, drawing, creative writing) and activation of consumer-oriented skills (such as using a smartphone) into more active forms of creativity (such as making street photography). On a third level, there are needs on specific training on the technical and digital skills involved to participate in online culture: understanding the Web language (HTML, CSS, XML), having notions of metadata and the Resource Description Framework, learning about digital formats and documents, and learning how to code small apps.

Finally, citizen authorship skills need to get the right visibility and recognition. By stimulating knowledge and use of Creative Commons licensing models and a deeper understanding of IPR issues it is possible to tap the hidden economic power of citizen cultural activities.

### **3. New Services, New Deployment, New Skills**

The design of new services for the research, tailored on the needs of each research area, should be planned with a concrete approach, based on practical case studies and pilots with real users who should provide experimental proofs of the concepts defined in the theoretical sphere. It is also necessary to consider a shift of mentality in the cultural heritage sector, in order to accept the participation of non-professional curators in the development of new knowledge and for this purpose, naturally, design appropriate procedures and guidelines to be applied by the different subjects.

The new deployment should be carefully planned by indicating the steps that each stakeholder must take: decision-makers, policy-makers and programme owners to make available the necessary financial resources, research communities to identify the protocols of interaction with citizen scientists, citizens to associate and organise themselves into representative bodies, e-Infrastructure providers to plan for the future deployments. These steps and the concerned communities should be described in a sound and shared Roadmap.

New skills are needed in our changing society. Underinvestment in skills renewal and knowledge / technology transfer and the loss of traditional skills leads to the risk of innovation deficit and of a general lack of diversity and choice across design, production and markets, resulting in missed employment and commercial opportunities. A Roadmap which offers new understandings and ways of grasping opportunity can also lead to economic as well as social benefits. CIVIC EPISTEMOLOGIES is a project which shares its commitment to the values of openness, collaboration and wide participation.

The project's over-riding strategic objective is to support the development of a policy on the role e-Infrastructures can play in encouraging and facilitating the mediation process of citizen science in the area of DCHH, in order to bring about a closer alignment between the private and public spheres. It seeks to identify and deploy new services and protocols enabled by e-Infrastructures, which will in turn support Europe's citizens, its creative enterprises and its wider cultural industries to enter into productive technology-enabled dialogue with cultural heritage institutions and Humanities research. CIVIC EPISTEMOLOGIES is engendering dialogue, which is still relatively infrequent, between the different actors in the Cultural Heritage (CH) and DCHH sectors – research bodies (creativity, digital humanities, digital libraries), e-Infrastructure providers and citizens' associations, all of which seldom share their specialist knowledge outside their immediate groupings, whether professional or interest-based. Larger industries in the cultural sector, including the owners of industry archives as well as national public heritage bodies, will be supported to open up their innovation potential through informal dialogue with interested volunteer users and experts.

#### **4. Understanding Stakeholders Requirements**

One important aspect is the establishment by research institutions of clear protocols for citizens' engagement, and shared research goals where these are achievable, thus not only enhancing their roles within communities of interest at local, national and potentially global levels, but also greatly increasing the reach and impact of their research. Similarly, the role of heritage institutions should enter into a phase of change, looking for becoming both content providers and service providers, and to explore new audiences and markets for DCHH.

In order to understand better the requirements of different stakeholders from both DCHH and citizen science communities, the CIVIC EPISTEMOLOGIES project applied a mixed methods approach to understand the different demands and expectations of citizens and stakeholders from the citizen science domain (cultural institutions, academic institutions, activist organisations, infrastructure providers). The project explored the existing body of knowledge featuring general examples of citizen science work as well as examples of citizen science integrated in the DCHH context; one of the areas of particular interest was the link to the concepts of impact and value of digital cultural resources, an area of considerable interest as discussed in Hughes et al. [4].

The project also undertook specifically designed user studies which were aimed to investigate the similarities and differences in requirements of various stakeholders. The methodology adopted was mixed methods combining a web survey with expert consultations within the project consortium with focus groups aiming to capture the opinions of different stakeholders/users (policy makers with a focus group held in Malta; citizen activist organisations with a focus group held in Sweden, and citizen scholars with a focus group held in Spain). The web survey gathered 85 responses mostly from European countries. The initial analysis of these user studies is presented in Dobрева [2] and Dobрева, Azzopardi [3].

The CIVIC EPISTEMOLOGIES project supports the Horizon2020 strategy, in which the research on cultural heritage and on social sciences and humanities is embedded in cross-cutting initiatives. Critically, the CIVIC EPISTEMOLOGIES

Roadmap will offer practical support for improved social cohesion arising from the sharing across all DCHH sectors of common and individual European cultures.

## 5. The CIVIC EPISTEMOLOGIES Roadmap

The Roadmap will permit the implementation of an e-Infrastructure to enable creation, access, use and re-use of DCHH content, to provide learning resources, to provide communication services to multidisciplinary research teams located in different geographic places, and finally to enable citizens to participate in a range of research goals established at European level together with cultural institutions and universities.

The ultimate aim is to address the scientific processes in DCHH and to bring citizens, through their associations, into the process of planning research.

The Roadmap is organized in building blocks addressing the following questions:

- WHY – overall objectives for making a roadmap
- WHO – who to address: target groups and/or user groups, stakeholders in general, members of society
- WHERE – where to go (specific objectives and goals for the roadmap to be a basis for requirements like improving access, enhance quality of holdings/collections, social enclosure or...?)
- WHEN – when shall these specific objectives and goals be reached (time line for implementing the roadmap)
- WHAT – what to produce: a roadmap, but what are the basic drivers and the added values of citizen research and crowd sourcing as a method and what are benefits of using distributed e-infrastructure
- HOW – how shall the roadmap be structured (address each targets groups and/or user group or be structured on general level)

The CIVIC EPISTEMOLOGIES Roadmap should make it possible for each institution in the DCHH domain to define its own practical action plan with a realistic timeframe for the implementation of its stages. The purpose of proposing a short-term action plan (2014-2015) is to initiate the development of e-infrastructure services on a level that will be self-sustainable and continue to progress on its own. This further progress is defined in terms of two further proposed time spans:

- Medium-term (2017-2018), i.e. two years after the end of the Civic Epistemologies project), and
- Long-term (2019 and beyond) for the logical continuation of the work.

The main components of the Roadmap can be summed up as follows:

- Empowering existing e-Infrastructures with new services: targeted to the needs of specific research domains;
- Tailoring new services to the requirements of each research community;

- Improved interoperability: includes better integration of internal and external digital resources within the overall workflows for handling research data; in a way this is a set of measures to avoid building ‘digital silos’ within the organisation;
- Establishment of conditions for cross-sector integration: a key condition for maximising the efficiency of successful solutions, transferring knowledge and know-how; a scalable and modular approach to the e-Infrastructures deployment is needed that will allow serving research better and reduce costs of development.
- Governance models for infrastructure integration: a necessary condition for successful institutional participation in larger e-Infrastructure initiatives, and aggregation and re-use of digital resources.

For each area a set of prioritised actions will be suggested (this is currently under development) and the current version of the Roadmap cannot be considered as a final step. It has on the contrary to be considered as a living document that needs to be continuously maintained, updated and improved as time passes, technology changes, new requirements have to be taken into account, and so on.

Therefore, the CIVIC EPISTEMOLOGIES project has created a dedicated webspace where it is possible to download the last version of the Roadmap, but also where it is possible for everyone to provide feedback and comments, a kind of Forum dedicated to the use of e-infrastructure services and facilities for citizen science and crowd sourcing targeting the DCHH domain. The webspace is already online<sup>2</sup> and feedback is extremely welcome.

## 6. Conclusions

A ground breaking part of the concept that the CIVIC EPISTEMOLOGIES project is aiming to introduce, is the possibilities to customise the citizen science focus services provided by e-Infrastructure, i.e. tailoring the service portfolio and characteristics to the actual tasks and requirements. However, even if the e-Infrastructure resources, on a general level, seems to be allocated in ways that could support citizen science activities quite well, the general conclusion must be that the market for that kind of distributed services is still in its infancy.

E-infrastructure services for citizen science and crowd sourcing are normally structured around development of tools, but need also to involve policy instruments necessary to achieve efficient intervention in the DCHH sector. Another important issue is the level of maturity in the DCHH domain to handle distributed services for citizen science and/or crowd sourcing, increasing technical know-how.

E-Infrastructures can reach their maximum potential in serving the DCHH domain in practice only if the domain is prepared to exploit the opportunities offered by using e-Infrastructures. From contacts with different stakeholders it is seems that parts of the DCHH domain is not yet taking full advantage of technologies to engage with wider

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<sup>2</sup> <http://www.civic-epistemologies.eu/outcomes/roadmap/>

audiences. Services for supporting citizen research and crowd sourcing have not only to be flexible, but also easy to adapt and utilise, and address several areas. This is a clear message from most stakeholder groups.

The adapted infrastructure as outlined in the CIVIC EPISTEMOLOGIES project, including active user participation into professionally maintained cultural heritage knowledge systems and skills learning materials and community knowledge exchange platforms, should transform the current, web 1.0 information-dissemination platforms in the cultural heritage sector into 21st knowledge hubs that foster creative reuse, interaction and innovation from consumers that become more and more pro-sumers and active determinators of the cultural practices they participate in, and its collective memory.

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