



Participatory Collection and Dissemination of Architectural and Urban Heritage Information: P@trimonia Platform

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Abstract. New ways of accessing heritage information are emerging to promote local histories and connect communities with their heritage. In this study, a group of actors gave feedback about our newly developed platform P@trimonia to contribute information to the architectural and urban heritage for public use. The objective of the study is twofold. First, it aims to assess the role of participation and Information and communication technologies ICT platforms in promoting the heritage, the credibility of information different actors can provide, and their interest in information shared by other actors. And second, it demonstrates the technological output of the ICT platform P@trimonia itself. The methodology in the study covers focus group survey, literature reviews and analysis of the survey results. The participants in the focus group are academics, scientists, and experts. The overview of the results allows us to validate the role of participation and the importance of using ICT in promoting cultural heritage. Analysis results emphasize that the credibility provided by the actors depends on the type of information, their knowledge level, and their interest in collecting and sharing information related to architectural and urban heritage. The discussion is based on the influence of the actor participation and ICT use on the stages of patrimonialization.

Keywords: Participation · ICT · Heritage · Participative mobile systems · Collaborative research · Feedback

1 Introduction

Information and communication technologies (ICT) are defined as technologies used to collect information, store information, edit, and pass on information in various forms [1] between different actors regardless of their disciplines. Other studies [2] used the UNESCO definition for ICT as the combination of different informatics technology, especially communication technology, to process and communicate information of a

particular organization. According to the UNESCO, ICT is progressively more incorporated into the cultural and creative sectors although the accessibility challenge remains especially for developing countries [3]. Hence, with the advent of mobile and ubiquitous technologies, new ways of accessing heritage information are emerging to promote local histories and connect communities with their heritages. In this context of participatory cultural systems [4], our study aims to validate the role of participation and applying ICT in collecting information for promoting architectural and urban heritage, based on a focus group and a survey with experts. It also aims to present the technological output of the ICT platform P@trimonia developed by the project. The article first presents the research background of the P@trimonia project, its partners and its phases. It then describes the research issues with the theoretical framework that we used to carry out our study and the research questions. The overview of the results allowed to validate the objective of the project. We also discuss the influence of actor participation and ICT on the different stages of the patrimonialization.

2 Research Background

This study is part of the research project P@trimonia funded by Wallonie-Bruxelles International to encourage the cooperation between Belgian and Tunisian institutions. The objective of the research project is to establish active collaboration, adopting technology for the collection and dissemination of information about different aspects of architectural and urban heritage. To do this, the LUCID¹, PAE3C², Edifices & Mémoires³, and BATir⁴, propose to create a platform for participatory management of spatial-semantic information related to architectural and urban heritage. The first phase of the project (P@1) (2016–2018) was focused on the interface design process. The contribution of the first phase of P@trimonia includes how historic sites are visited using mobile digital tools, such as using mobile phones to personalize the visit, offering an intellectually and aesthetically rich and attractive visit [5]. The first version of the platform emphasized an immersive exploration in Points of Interest POI rather than a linear narrative, in the form of a journey where everyone builds their own version of the site discovery. The POI are generated differently in the system based on the user's location, the time of day, events (such as festivals and exhibitions), and prior visit history allowing for new experiences each time. The weakly oriented experience involves the visitor in the design of their visit scenario and retains the natural aspect of navigation in the site, thus offering the opportunity to interact with the physical environment and discover new and little-visited heritage elements.

The second phase of the P@trimonia project (P@2) (2019 – 2023) concerns the implementation of a pilot operation to access during site visits the data collected via any

¹ LUCID is a research laboratory attached to the Faculty of Applied Sciences, University of Liege, Belgium.

² PAE3C is a research unit attached to the University of Carthage, Tunisia.

³ Edifices & Mémoires is a registered nongovernmental organization aiming to value and appropriate built heritage, Tunisia.

⁴ BATir a multidisciplinary engineering department in Belgium attached to the Ecole polytechnique de Bruxelles, Université libre de Bruxelles, Belgium.

mobile terminal (smartphone or tablet). Further, thanks to the participatory aspect of this second phase, it is possible to technically consider that any person (whether expert or not) collect and share through the platform, data related to the POI. The chosen theme for the implementation tests of P@ 2 is the architecture of the 19th and 20th century heritage in Tunis. Therefore, the new challenge brought is the development of a participative mobile system, while maintaining the visit experience previously developed within the framework of the first version of P@trmonia.

Over four years, the P@trmonia 2 research project consists of three main phases: launch phase, activation phase and consolidation phase. The first phase (2019–2021) was the launch phase, composed of different steps: the inventory and diagnosis step, the simulation and co-reflection step, and the development, testing, and feedback.

The inventory and diagnosis step involved identifying partners and establishing connections with institutional actors, researchers, and users. Two events allowed to make the first contact with the actors. The first event was the launch meeting on the partners' level followed by a second event in the form of participatory workshop with a wider group that brought together about fifteen participants with different profiles: architecture and heritage specialists, a representative from the Tunisian ministry of tourism, a representative from the municipality of Tunis and one person who didn't have a specific expertise in heritage. All the participants said they use mobile technologies frequently in their daily lives. This workshop made it possible to conduct a test of the first version of the platform. The data collected at the end of this workshop allowed us to obtain feedback on the usefulness and usability of the platform and to define the modalities and motivations of visit of each of the testers. Several POI were prepared to allow the testing.

The simulation and co-reflection step was made concrete by the setting up of meetings with the partners to define a common vision and the possible levers that allow long-term change. During a workshop which took place in January 2020, the partners conducted a new test of the platform on the site of the Sart Tilman Open Air Museum in Liège, with the participation of the curator of the museum. The aim was reflecting on the process schemes, roles, and modalities of use of the platform with a broader notion of heritage. The system of POI corresponded to the nature of the site where a variety of architectural and artistic works are spread throughout the site and which, considering their diversity, cannot be presented in a predefined route.

The development, testing, and feedback step has been the transformative step of the platform from its first design to the implementation of the participatory aspect of it. Unfortunately, and because of the COV-19 pandemic, a major part of this step has been implemented remotely. A serie of meetings in remote mode (videoconferences) between the project members allowed to (1) develop the process diagrams, (2) continue the design work of the mockups of the client and admin interfaces and (3) establish a first inventory of the POI in the Sart Tilman Open Air Museum. Among the activities of the development, testing, and feedback step, we organized a pooling workshop with external guests, mainly researchers and academics. During this workshop, we first presented the objectives of the second phase of P@trmonia research project, then the application context of the European neighborhood of downtown Tunis and its architecture of 19th and 20th century and finally the reflection work on the question of participation based on

personas and scenarios of use, alongside the discussions and sharing experiences. In this context, it seemed important to us to question the legitimacy of knowledge in relation to the legitimacy of information and its relevance for the promotion of heritage. It is on this last part of the participatory workshop with the experts that our article focuses.

3 Research Problem

3.1 Theoretical Framework

In an earlier work based on a non-exhaustive literature review about the actors of participation [6], we presented the actors of participation in cultural heritage as three groups of actors according to legitimacy: actors by action, actors by knowing and actors by knowledge. To frame the notion of legitimacy, we base our study mainly on two definitions “the community’s perception that an actor’s actions will be acceptable and useful for the community” [7] and “the capacity for an actor to interact with other members of the ecosystem depends on the actor’s acknowledged legitimacy within the ecosystem itself” [8]. In this context, we define:

- Actors by actions are mainly financial actors and political actors who have the political and financial power and legitimacy. Actors by action are the ones who are most likely to change (or not) the situation(s) of the cultural heritage.
- Actors by knowing get their legitimacy from knowing their immediate context because they live in it permanently or temporarily. The actors by knowing are most likely have the non-institutional knowledge or non-institutional action of the cultural heritage.
- Actors by knowledge get their legitimacy from their expertise, or knowledge, whether it’s technical and scientific, acquired from institutions. The knowledge of this group of actors is institutional and allowed to take institutional action, if allied to the actors by action, in the cultural heritage. Yet, actors by knowledge collaborate with the actors by knowing in a way that allow them to value both institutional and non-institutional knowhows.

This results in two main challenges that the actors face while interacting with each other. First, the democratic challenge is present in the interactions requiring participation in democracy practices, mainly the representation and governance processes and partially spaces and territories planning process. In this challenge, the most legitimate actors are actors by action, then actors by knowledge, then actors by knowing. The democratic challenge is to consider the actors by knowing non-institutional action is as acceptable and useful for the community as the other actors’ actions. The scientific challenge is present in the interactions requiring participation in science practices, mainly research projects and partially spaces and territories planning process. In this challenge, the most legitimate actors are actors by knowledge, then actors by action, then actors by knowing. The scientific challenge is to consider the actors by knowing non-institutional knowledge is as acceptable and useful for the community as the other actors’ knowledge. Hence, we tackle in this study the scientific challenge, by setting up a focus group bringing together mainly academics, scientists and experts in heritage, in ICT and in participation.

3.2 Research Questions

In this study, the main objective is to assess the actors by knowledge views on participation and ICT use. Since we were tackling the scientific challenge, the notion of credibility of the information is as important to evaluate as the participation and ICT approaches. The fourth element to study, is the interest of the different groups of actors in participatory information related to heritage shared by other actors. Therefore, the paper is articulated around 4 stakes:

- use of participatory methods > RQ1: To what extent do actors by knowledge consider that participatory methods can be adequate in valuing architectural and urban heritage?
- use of ICT > RQ2: To what extent do actors by knowledge consider that the use of information and communication technologies, such as P@trimonia mobile application, can be adequate in valuing architectural and urban heritage?
- credibility of information > RQ3: How much credibility is given to information provided by different actors?
- interest in others' information > RQ4: To what extent different actors can be interested in information provided by other actors?

4 Research Design




A methodological and organizational shift has been taking place within the project in response to the global pandemic. The impact of COVID-19 since March 2020 (6 months after the launching of the second phase of the project) required all physical interactions, ranging from project partners meetings to participatory workshops with different participants, to cease, thus affecting the major in-person opportunities for user-centered inputs the project originally relied on. All parties had to adapt and realign expectations to the new mediums and methods being implemented. This change required a different approach to facilitate co-creation sessions and framing feedback specifically to bridge this new digital gap between participants. After developing the mockups of P@trimonia platform based on the results of the theoretical review relating to the actors of participation in cultural heritage, it was important to define scenarios of use based on persona. A Persona is a representation of the most common users, based on a shared set of critical tasks [9]. The persona allows to focus design and optimization efforts squarely on the user and their needs, reducing any opinion-based or subjective decisions about the design, functionality, or features [9]. The use of personas allowed us to present to the participants of the focus group possible scenarios of the platform use to give a better understanding of the platform. Providing clear scenarios was critical to get insights in the focus group and to avoid biased answers in the survey.

4.1 Usage Scenarios

We defined different scenarios with different personas to replace the in-situ experiences. Nevertheless, this step made it possible to define the first basis for structuring the new participatory platform before its implementation and the direct field test by the actors

by knowing concerned by this heritage. The scenarios created in these sessions were concerning 3 personas: students in architecture school, a neighborhood inhabitant, and a tourist guide. Each of the personas has a specific usage of the application that we imagined and created. We presented potential information which can be collected by the personas. This information include POI, like explained in the table below (Table 1).

Table 1. Scenarios of information related to architectural and urban heritage collected and shared by the different personas

Personas contributing to P@2 mobile application				
		Students in architecture school	Neighborhood resident	Tourist guide
				
Elements of the scenario	POI	A public institution on which they work in the classroom	A building in the neighborhood	Monuments or tourist attractions
	Location	A city center, a public domain, or a museum	A private property of the family, a primary school where he was educated	A city center, a public domain, or a museum
	Themes	Themes related to architecture, history, urban planning	Themes related to personal or family history	Themes related to tourism and culture
	Photos	Surveys or sketches they have made	Old photos on the street or in primary school	Photos of festivals or attractions during the high tourism season
	Text/sound	School lectures	Legends told by grandparents	Tourist or cultural documentaries

4.2 Focus Group and Survey

While group discussions can be the main tool for qualitative data production, they are more typically used to complement other qualitative research methods. In focus groups, insight is generated both through observation of interaction between participants and through analysis of their reflections and discussions. When used as a complementary research method, the focus group method can be valuable early in the research process, as forums for initial exploration of a theme [10]. In this study, the focus group was used as a complementary method in quantitative research, to bring out contextual information that can inform the discussion of findings generated through the survey and as a tool for initial exploration for the theme of actors' participation and ICT in heritage. The participants of the focus group and the survey were 13 members of French, Moroccan, Belgian and Tunisian organizations with professional expertise in architectural and urban heritage. While three participants have scientific expertise in heritage and historical monuments, one participant has scientific expertise of the context of 19th and 20th architectural and urban heritage of Tunis. Three participants have scientific expertise in ICT systems and

five participants have expertise in both participation and ICT, plus one participant who has expertise in participatory projects.

5 Results and Discussion

5.1 Experts Feedback on Research Questions

Based on the participant answers to the survey and on the discussions that took place, we present in this section the results to the research questions around 4 stakes: use of participatory, use of ICT, credibility of information and the interest in others' information.

Participatory Methods to Promote Architectural and Urban Heritage

To the question⁵ “to what extent you think that participatory approach can an adequate tool to promote heritage?” more than 78.6% of participants answered more than 7/10. To explain their appraisal, we asked the participants to explain the helping and hindering factors for participation use to promote architectural and urban heritage. Among the top encouraging factors, the participants of the focus group identified the senses of “involvement”, “communication”, “diversity” and “awareness”. A participant mentioned that “In such an application, we will not be able to reach everyone, and it is always the challenge of raising awareness to motivate citizen participation: it is the fact of accessing all social strata”. When it comes to the hindering factors to use of participation in the valuing of heritage, participants identified “Lack of resources”, “citizens disinterest” and “complicated regulations and policies” as the most present obstacles (Fig. 1).

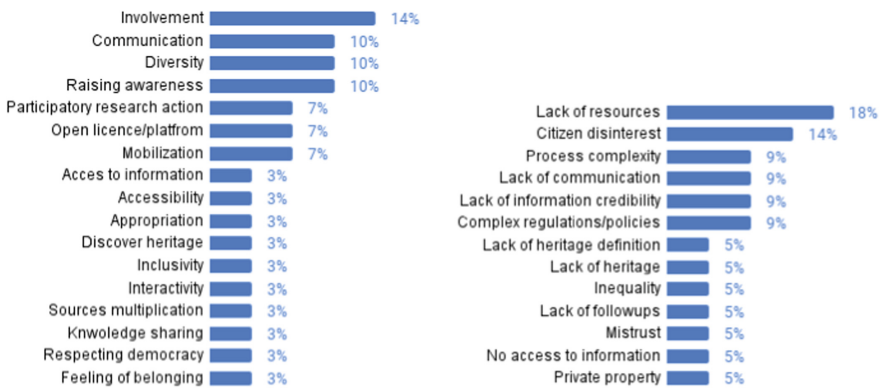


Fig. 1. Encouraging factors (left) and hindering factors (right) of participation use in architectural and urban heritage promotion

Using ICT to Promote Architectural and Urban Heritage

To the question “to what extent you think that technologies, such as P@trimonia mobile

⁵ In all the question about rating 1 is corresponding to a very weak adequacy while 10 is corresponding to a very important adequacy.

application, can be an adequate tool to promote heritage?” more than 85,7% of participants answered more than 7/10. To give more details about their evaluation, we asked the participants to explain the helping and hindering factors for participation use to promote heritage. Among the most cited encouraging factors to the use of ICT, results of the survey show inclusion, technology attractivity and access to information. While in top hindering factors we find interface complexity, limited access to information and lack of use experience follows ups (Fig. 2).

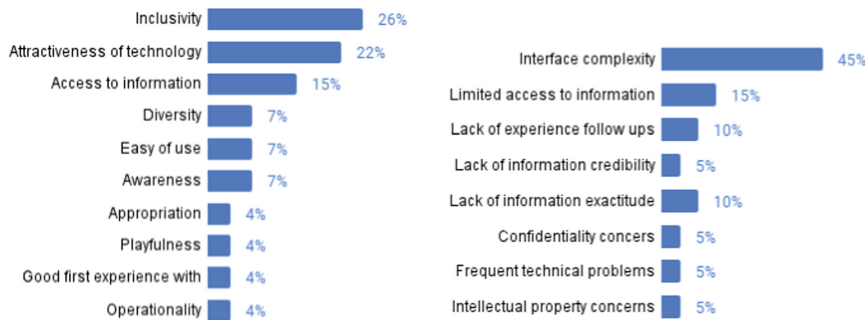


Fig. 2. Encouraging factors (left) and hindering factors (right) of ICT use in architectural and urban heritage promotion

Both hindering factors of participation and ICT use in architectural and urban heritage promotion go along with recent literature review results [11] on the obstacles of participation such as information deficit and attitude of public officials analogous respectively to the survey results about the hindering factors such as limited access to information, lack of resources and complicated regulations and policies. Furthermore, the encouraging factors go along with the theoretical solutions suggested to overcome the obstacles of participation. Involvement, communication, diversity, awareness, and inclusion can be improved with the participation solutions such as: allowing for long-term interaction, involving participants in research, favoring diversity and representativeness in participants’ selection, institutionalizing participation, and using multiple participatory methods.

Interest of Information Provided by Non-expert Actors According to the Actors’ Profiles

According to the participants of the focus group, spatial planning actors seem to have fewer interests in consulting and encoding data in P@trimonia 2 compared to the interests that heritage actors and social actors could have, which raise the question about the possibility of considering them as target users of the platform. The question of interest in other actors’ contribution can be linked to the legitimacy of actors. In fact, it seems that actors legitimate to act, have less interest in other actors’ information. While actors by knowing, since they have the less institutionalized legitimacy, they seem to have

higher to interest in collection and sharing information related to heritage, according to the survey.

Credibility of Provided Information According to the Actors' Profiles

Regarding the credibility of the information collected, there is no real difference between data collected and added by architecture students or those collected and added by a tourist guide or, again, by an inhabitant if the information in question is part of the persona area of expertise. Indeed, inhabitants know better about information related to their personal or family history, tourist guide know better about information related to culture and tourism, and architecture student know better about information related to architecture, history, urban planning. The credibility of every actor is almost the same but highly depends on the type of information and the level of detail of the information. According to our experts, the criterion "credibility of the data" seems to give rise to a lot of debate: this criterion is also perceived as a central element in the way in which to structure, organize, display information in the application P@trimonia. Failure to guarantee this criterion also appears as a hindrance to the success of this project.

5.2 Technological Development: From the First Version to the Second Version of the Platform P@trimonia: Integrating Participation

The theoretical results allow us to validate our research questions about using participatory approaches and ICT in the promotion of architectural and urban heritage. The discussions of the focus group not only allow the participants to share ideas about how they see the interface, but also their concerns about the scientific validity of information. Based on this highlight, a series of mockups was developed after the workshop to separate the two types of contributions.

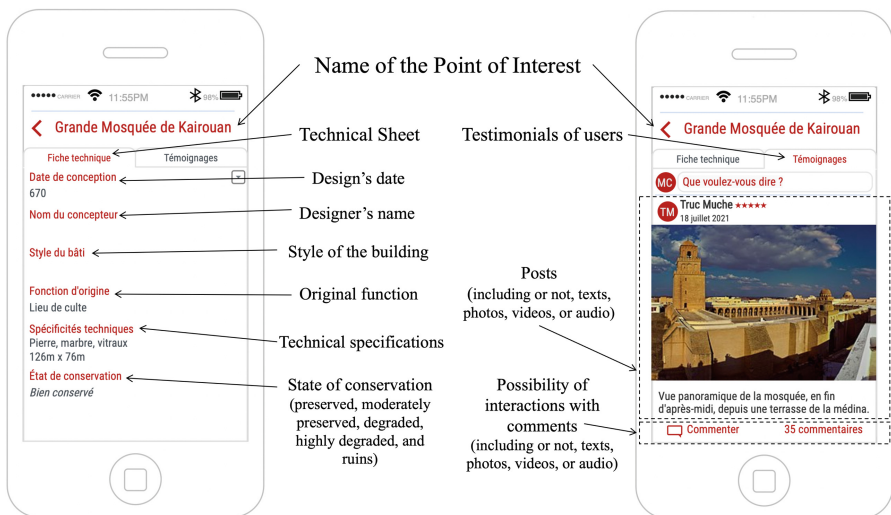


Fig. 3. Mockups of consulting existing technical sheet (left) and existing testimonials (right)

The current participatory version allows the user to contribute to the technical sheet (left from the start point) or to the testimonials (right from the start point). In the testimonials section, users can either post a new testimonial or comment on an existing testimonial. In the technical sheet section, the interactions possible are (1) to see existing sheets, to (2) validate or (3) add or modify information. Consulting existing technical sheets doesn't require any expertise, so the interaction is allowed to all users. Validating information requires an actor by knowledge (here called a recognized expert). In the validation scenario, there are two possibilities. The user is called to validate existing information by changing its status from not validated (represented with a question mark ?) to a validated status (represented with a green V). This interaction is possible through choosing one of the possible choices: ? or V). The final interaction is to add or modify. While adding is open to all users, whether they are actors by knowledge or actors by knowing, the status of the information added or modified is displayed differently. Information added or modified by actors of knowing displayed with a question mark waiting for scientific validation. Meanwhile, information added or modified by actors of knowledge displayed with a V sign as an already verified scientific contribution. The possible scenarios to add or modify information in the technical sheets are choosing between existing options or adding short text. In the testimonials section, adding text, image, video, or audio is possible to all contributors since the medium of the information cannot be limited to text, which is the case of the technical sheet. The rest of the mockups are available in French language in Appendix.

5.3 Promoting the Heritage or Raising Awareness Toward the Heritage?

We presented the P@trimonia mobile application to the participants of focus group as a tool to promote heritage. During the focus group discussions, several participants used terms such as “awareness” and “sensitivity” as goals themselves and not only promotion. One of the experts participating in the workshop even affirmed that “If it cannot achieve the promotion of heritage, it could reach the stage of heritage awareness, which is a range on which we work a lot at the association for the safeguarding of the Medina⁶. With the daily contact with the inhabitants of this historic site, I can see that through this application, the heritage awareness component could be open to a wide range of people”.

A complementary literature review about awareness and valuing of heritage allowed us to place them in the process of patrimonialization. The term “patrimonialization”, which has been initially used in Francophone studies, refers to the historically situated projects and procedures that transform places, people, practices, and artifacts into a heritage to be protected, exhibited, and highlighted [11]. Parallely, in the Anglo-Saxon studies, the term commonly used to refer to the same phenomena is “heritagization,” to refers the process in which heritage is used as a resource to achieve certain social goals [11]. In architecture and urban studies, patrimonialization describes a complex process

⁶ The Medina of Tunis is the Medina quarter of Tunis, the capital of Tunisia. A Medina (in Arabic “the old city”) quarter is a distinct historical city section found in several North African cities, and in Malta. The Medina of Tunis has been a UNESCO World Heritage Site since 1979 and it contains some 700 monuments.

by which an architectural object or an architectural or urban ensemble acquires, over time and a certain consensus, a value of memorial representativeness for any human group [12]. It has been described as a linear process that consists of three main phases: identification, conservation, and exploitation. Each phase is composed of two steps in the following order: awareness step, then selection, then protection, then conservation, then exhibition then valorization, as the final stage of an element becoming patrimonies or heritage [13]. In this process, actors by action and actors by knowledge are present from the beginning to the end, while actors by knowing are only involved at the end of the process. Our hypothesis is that the involvement of the actors in the awareness stage would launch the patrimonialization process for architectural and urban heritage. In the context of the European neighborhood of downtown Tunis, the involvement of actors by knowing and actors by knowledge may launch the process of patrimonialization for this architectural and urban ensemble to acquire the value of memorial representativeness. We emphasize in the hypothesis an important role for the collaborative action research to create a real link and dialogue between the points of view of experts on the heritage and citizens' views on their own heritage. This role of collaborative action research can allow tackling not only the scientific challenge in the architectural and urban heritage promotion, but also the democratic challenge that comes with all the complex dynamics between the actors.

6 Conclusions

This study summarizes the feedback based on a focus group of different experts expressing their points of view on actor participation and using ICT platforms in heritage promotion. The roles of participatory approaches and ICT tools in promoting architectural and urban heritage have been validated. The credibility of the information provided by different actors has been analyzed. The interest of actors in the information provided by other actors has also been evaluated.

The major limitation of the study is that it is within a small group of one category of actors. Thus, we need a much more in-depth and wider area study with a bigger number of participants. Since the contribution is only based on a small group of actors, we aim to answer the same questions with a bigger and different group to understand if there are similarities or differences between them. The P@trimonia platform is in the process of development with the objective of collecting and disseminating the heritage information of a given community. We are considering broadening the actors' categories: by action, by knowing, and by knowledge. We will include a fourth group: actors by usage who are not part of any of the three actors' categories presented. As the goal of the project is that information of the heritage is perceived and processed by the users, we recognize that some of the users will not be included in any of the previous three groups. They may in fact detect inconsistencies, political biases, as well as any quality enhancement of the information provided by the platform or the way the information is presented. We consider that inclusion of such "actors by usage" would represent the final stage of democratization. In the next phase of the project, we will follow the method of the survey, to avoid the limitation related to a small number of participants. We will organize a survey campaign in the study zone, the European neighborhood of downtown Tunis.

This survey campaign will help to form theoretical answers of the actors by knowing about participation and the use of ICT tools in their heritage. This can be for the further use within the collaborative research project of P@trimonia 2.

Appendix

Link to mockups of P@trimonia 2, version of September 2021:

<https://drive.google.com/file/d/14B97Re-UP17n-iHCHrbg-PsHTQI0n1yn/view?usp=sharing>.

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