

Participatory Citizen Curation in the VAST Project Framework^{*}

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Semantic web technologies are an important contribution to large-scale digitisation projects where catalogues of artistic, historical, and cultural artefacts are selected to be transformed into digital repositories with the aim to reach new online audiences [1, 2, 5]. The construction of *knowledge layers* based on semantic-web-compatible representations, namely ontologies, allows to further increase the visibility and the capability to share and reuse the contents of such digital archives. Typically, these ontologies are designed by a selected team of scholars who use their expert understanding to represent the considered domain [3]. This presents several open challenges, namely i) the co-existing representation of multiple and sometimes conflicting viewpoints, ii) the involvement of “non-expert” contributors to ontology creation, and iii) the support for a continuous and transparent process of ontology enrichment. There is a tendency of cultural heritage institutions investing in the promotion of a “participatory culture” where citizens are actively engaged to share their experiential feedback and stories when they interact with any form of cultural artefact (e.g., written work, museum exhibition)[6, 7]. Web tools and social media platforms are already employed as popular means to collect and share the contributions created by this audience [2]. This, in turn, gives rise to the need for integration of such a wealth of material in the expert-driven, ontology-based knowledge representations built so far.

In this paper, we present a participatory approach to citizen curation developed in the framework of the EU H2020 VAST (Values Across Space and Time) project (<https://www.vast-project.eu/>). VAST focuses on the transformation of values across space and time, with particular emphasis on the core European Values, that are human dignity, freedom, democracy, equality, rule of law, and human rights. The VAST project studies how values are communicated and perceived today, by collecting, digitising, and analysing narratives and experiences

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of both value communicators, such as artists, museum curators, educators, and their respective audiences, like spectators, museum visitors, and students[4].

The VAST data model is based on a knowledge graph conceived to represent different and potentially conflicting interpretations provided by users, either expert or non-expert ones, about values. We promote two different modalities for feeding the graph called *design-by-collaboration* and *design-by-engagement*.


In design-by-collaboration, a team of domain experts (e.g., scholars, museum curators) creates a reference knowledge representation of the domain of interest, in our case, the European Values, within specific contexts. To this end, we followed the *UPON Lite* methodology with the aim to “*shift responsibility for ontology building toward a community of end users through a social, highly participative approach supported by an easy-to-use method and tools*”[3]. As such, activities like vocabulary definition and resource annotation are performed through digital web tools – developed or enhanced according to the unified methodology developed within the project – to support the team in collaboratively defining a shared representation of their domain understanding. The VAST *Ontology Design Tool* has been developed within the project to support the experts in creating statements to be inserted in the knowledge graph while using artefacts and annotations previously created. The notion of *context* is defined in the Ontology Tool, so that it is possible to describe the situation in which a certain knowledge modeling, namely a set of statements, is provided (e.g., in terms of space and time constraints). A VAST context is featured by a designer, namely a user with a certain background and expertise, and the corresponding set of ontology statements she/he supported according to her/his own personal interpretation. This way, multiple and possibly conflicting knowledge representations can co-exist in the graph by employing distinct contexts provided by different contributors/designers. Furthermore, exploiting contexts makes it possible to compare and analyse similar and dissimilar perspectives provided by the ontology contributors involved in the design process. To further strengthen the collaborative aspects, the contributors can vote (either upvote or downvote) on statements already stored in the Ontology Tool, thereby providing (expert) community feedback.

In design-by-engagement, a potentially-wide audience of contributors (e.g., visitors, students, citizens) is involved with the aim i) to express a feeling w.r.t. the reference knowledge provided by experts, and ii) to enrich knowledge graph in the form of new elements or relations. The Ontology Design Tool of VAST is employed also in design-by-engagement, where the contributors are asked to consider a portion of the VAST knowledge graph, either a single statement or a set of statements about a certain value, and to express a feeling in terms of a positive reaction (i.e., *I agree, I support* this modeling) or a negative reaction (i.e., *I disagree, I do not support* this modeling). The feedback collected from the audience represents the perception of values in today’s society and it is the input for further design-by-collaboration stages, where experts will be called to integrate such visions in the VAST knowledge.

For design-by-engagement, a set of possible activities have been defined in VAST and they are characterized by different modalities and tools for interaction with the final users. In this respect, the VAST partners, namely Athens Epidaurus Festival (<https://aefestival.gr/>), House of Classical Greek Ideas (HoGI – <https://www.houseofclassicalgreekideas.com/>), Museo Galileo (IMSS – <https://www.museogalileo.it/>), and Fairy Tale Museum (FTM – <https://www.fairytalemuseum.org.cy/>), were tasked with collecting and analyzing end users’ experiences and values perceptions. They engaged students and their teachers through educational activities related to their specific mission and collections and the general public through theatrical performances. The inspiration and starting point for all activities were the texts previously selected and annotated by experts. Regarding the educational activities, Primary School children were engaged through storytelling and games (e.g. choice game, race of values) to assess both their ability to recognize values – for example in fairy tales or in narrations inspired by museum collections – and their preferences among predefined sets of values. Teenagers were trusted with more challenging tasks that required them to use critical thinking and creativity, such as producing mind maps, logos of values, or free texts focused on specific values. Additionally, older participants answered questionnaires that asked them to annotate the same expert-annotated texts, recognize certain values in known contexts or collections, and share their thoughts on the importance of these values in the current world. At the same time, both teachers and experts in child psychology were involved through ad hoc questionnaires and interviews. To date, about 340 students and more than 100 adults participated in these activities and many more are expected to contribute until the end of the project. In addition, theatrical performances were employed to assess how the general public perceives the transformation of values from ancient to present times. About 1200 people attended the performances and around 200 completed the questionnaires that were submitted to them.

As a partner of VAST, the Museo Galileo in Florence, Italy, created four different educational activities for students at different education level and one original theatrical play. In particular, for high schools, the activity “*Galileo, Bacon and Kepler: Travelling in Science between Reality and Imagination*” – using excerpts from Kepler’s *Dissertatio*, Galileo’s *Letter to Christina of Lorraine*, and Francis Bacon’s *New Atlantis* – focuses on values subsumed under the idea of “journey” and “dialogue with others”, encouraging students to reflect on the current challenges of the society they live in, while being engaged in hands-on demonstrations. At the end of this interactive work, students collaborate on filling in mind-maps based on core values such as *freedom of thought, dialogue, progress, experimentation, cooperation, science for the public good, equality among peoples*. The students are also expected to link values by using predefined semantic properties (i.e., *equivalent to, opposite to, consequence of*) or by defining custom relationships to express their perception of the topic. The resulting mind maps are merged in the VAST knowledge graph through a specific digitisation service.

Design-by-engagement activities are currently ongoing in VAST. Preliminary results have been collected and some considerations about the effectiveness of the proposed activities can be provided. As a main contribution, we stress the importance of specifying a unique, comprehensive knowledge model that enables creation and population of a corresponding graph containing feedback and experiences provided by the project audience. In this respect, the compatibility of the adopted knowledge model with conventional Semantic Web formalisms represents a valuable feature for ensuring interoperability and sharing with external knowledge repositories (e.g., Europeana, Linked Open Data). About design-by-engagement, the nature of the promoted events and activities mainly depends on the profile of the audience to involve, as well as on the kind of input that the project aims to collect from the participants. As a general remark, we stress the importance of a disciplined methodology to activity organization, so that all the relevant aspects about planning, preparation, implementation, assessment, and self-reflection are properly addressed. A VAST booklet describing a possible methodology to follow for the co-creation of activities with a selected target audience has been published (<https://tinyurl.com/2p8fb4br>). The booklet aims to show how to address activity management for possible application and re-use also in frameworks that are similar to VAST on intentions, but different on domain.

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