



Proceeding Paper

MUSE360: Integrated System of Analysis and Museum Planning [†]

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Abstract: MUSE360 intends to offer a powerful open tool for the overall analysis of cultural reality, involving actors and receptors of the cultural message, capable of providing a valid indicator of the state of the museum art, of bringing students—future professionals in the sector—closer together, solving many problems in cultural heritage management, assisting in the timely and satisfactory design and implementation of solutions linked to the cultural needs of a complex and diversified user, as well as bringing out new ideas and possibilities for the sustainability of the cultural heritage.

Keywords: museum analysis; audience development; heritage management



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1. Introduction

Museums are experiencing a period of great change; the relationship between museums and the public changes in the direction of greater sharing of initiatives and strategies between the museum, the public and the territory. In recent years, a progressive growth in cultural demand has led an increasingly diverse and heterogeneous public to deal with an offer that is often not able to respond adequately or promptly. Knowing the requests of the public is becoming a theme of fundamental importance; to be able to define, specify or adapt a cultural project—whether it is a permanent exhibition, a temporary exhibition, or an educational project [1]—becomes necessary in order to identify more effectively and with more knowledge the means by which the offer can be optimized. It can be put in value, presented, and made legible and attractive to different types of visitors. The goal of research on the public, well beyond the quantitative data on turnout or satisfaction percentages, must necessarily focus on the quality of the service and experience offered [2]. The analysis of the available quantitative sources, in fact, only partially allows us to relate the characteristics of a very extensive, territorially widespread heritage of great consistency and importance (economic and historical-cultural), and the dynamics of a demand segmented and stratified, driven by different motivations, needs and behaviours. It is therefore necessary to start from an in-depth knowledge of the strengths and weaknesses regarding quality, which already allows for the optimization of improvement interventions, and—in the case of museum circuits—to relate resources, also leading to the integration of the overall offer [3].

Analysing the characteristics and structure of the cultural and museum heritage appears to be a very complex exercise, even more so if one intends to identify specific qualitative elements useful for defining strengths, potentials, criticalities, problem areas, identifying solutions and setting up enhancement policies (targeted interventions on the management of the structures and on the support functions) [4]. An articulated and

punctual system of surveys is needed, concerning both the self-evaluation of the museum or the museum system in its entirety, and the evaluation by homogeneous sectors of the public.

2. The Project

The MUSE360 platform was developed on the basis of the guidelines developed following a multi-year analysis by the Observatory on the quality of the management of cultural heritage by the Interdepartmental Research Center DigiLab of Sapienza University of Rome, in collaboration with Archeo&Arte3D Lab and with the degree course in Communication at the University of Cagliari.

Based on a benchmarking that examined the best museum institutions at an international level, the survey—accompanied by a specific guide during the implementation phase—is divided into different areas of analysis for the museum or archaeological site in question:

1. Survey on the web and/or the museum
 - General information
2. Survey of the museum
 - Reception—What services are offered to the public from an introductory point of view to the structure.
 - Branding—The perception of the museum and the ability to communicate to the public its structure, its heritage, and its intrinsic cultural relevance.
 - Accessibility—The possibility of fruition and use of services by the disabled.
 - Equipment for the visit—Includes the items concerning the tools to support the visit.
 - Exhibition—Preparations, technologies and management of museum itineraries proposed to users.
 - Bookshop—Offer of sales services, on site or available in e-commerce.
 - Catering—The possibility for the user to entertain himself during, before or after the visit on site, and take advantage of the gastronomy services of the structure.
 - Training and research—Research activities conducted by the museum, of autonomous derivation or through national and international projects, the ability to create or collaborate in a network of professionals and the type of dissemination and training offered to the public, as well as to the surrounding area.
 - Storytelling and gamification—Presence of playful activities aimed at learning, whether they are virtual or physical, and the ability to involve users of all ages, social and cultural backgrounds.
 - Relationship with the territory—The ability to interact, involve and communicate the museum body to its territory and the citizens' response to the museum initiatives adopted for them.
3. Web survey of the museum, the archaeological area/usability survey
 - Macro areas:
 - Information on the site
 - Exhibitions and events
 - Digital assets
 - Digital services
 - Interactivity and community
 - Digital storytelling/gamification

3. Application

The project involves the development of a web app for collecting data from museums and archaeological areas. The information is saved in a database on which various statistical analysis operations will later be performed. The web app provides a first page where

the surveyor can register, or, if he has already registered, access the real system; the registration form, when the contribution to the evaluation will extend beyond the two levels of the curators and of the students, does not ask for personal fields capable of identifying the natural person, but only some fields useful for subsequent analyses, including the possibility of choosing whether the cataloguer is external or internal to the cultural property. Based on the selection, a parallel path begins, but with its specificities; the results of which then flow into an analysis that intertwines the information provided by the internal user with that provided by the external user. The user also has the ability to register through social networks; the system only saves the data strictly necessary to maintain anonymity in the evaluation.

Once in the system, the detector must choose whether to analyse a museum or an archaeological area. Based on the choice made, a second form appears for entering general information. If the museum has already been analysed in previous years or by another person, the general information form will be completed, but can be modified to allow the data to be updated or completed. In the mask, among the various elements, it is possible to select the type of museum, divided into small and large, the type of exhibition and whether access is free or paid. These choices influence the type of questionnaire on which you then go on to answer.

The actual filing begins with the third phase; for the student level, the surveyor fills in various entry forms relating to the website as a whole. Each mask contains a set of questions referring to the same argumentative theme, for example, the services provided by the site. Only after completing the questionnaire relating to the website is it possible to access the fourth phase, structured with different masks divided with the same criterion as the previous point, but in this case the questions will have as their subject the museum structure or the archaeological area.

Since the application allows you to return to the system at different times, it is not necessary to complete all the phases in a single moment, so the surveyor can, for example, fill in the forms on the museum structure during and after the visit.

The evaluation will follow a balanced criterion through an estimate proportional to the functionality of the item within the session and contextualized according to the type of museum; each item will therefore enjoy a degree of priority for the weight of the vote within the general calculation. The evaluation of a small or medium-sized museum will tend to marginalize those items which, in terms of logistics and function, are not strictly linked to the use of the place.

Currently still in the testing phase, the code and the results of the investigations, where obviously permitted by the institutions involved, will be released under a open MIT and CC-by-SA license (for the problem of open licenses applied to cultural heritage, see also [5,6]).

MUSE360 is therefore able to offer a powerful tool for the overall analysis of cultural reality, involving 360-degree actors and recipients of the cultural message, capable of providing a valid indicator of the state of the museum art, of bringing future students closer to professionals in the sector. It also offers solutions to the problems of cultural heritage, will assist in the timely and satisfactory design and implementation of solutions related to the cultural needs of complex and diversified users, as well as bring out new ideas and possibilities for the sustainability of cultural heritage.

References

1. Ferrara, V.; Lella, F.; Malatesta, S.G. Tools to re-use museum resources in educational environment. In *H2PTM'15—Le numérique à L'ère de L'internet des Objets, de L'hypertexte à L'hyper-Objet*, 1st ed.; ISTE Group: London, UK, 2015; pp. 363–372.
2. Ilardi, E.; Capaldi, D. Lo storytelling dei beni e luoghi della cultura: Teoria e pratica. In *Transluoghi. Storytelling, Beni Culturali, Turismo Esperienziale*; Calabrese, S., Ragone, G., Eds.; Liguori: Napoli, Italy, 2016.
3. Malatesta, S.G. Il caso mAppiaM! Progetti di crowdsourcing per conoscere e valorizzare il patrimonio archeologico: Problematiche, processi, strumenti wiki e prospettive. In *Verona e le Sue Strade. Archeologia e Valorizzazione*; Basso, P., Bruno, B., Cenci, C., Grossi, P., Eds.; Soprintendenza archeologia, belle arti e paesaggio per le province di Verona, Rovigo e Vicenza: Verona, Italy, 2019; pp. 215–222.

4. Ragone, G.; Capaldi, D.; Ilardi, E. *Comunicare la Memoria. Le Istituzioni Culturali Europee e la Rete*; Liguori: Napoli, Italy, 2008.
5. Malatesta, S.G.; Milella, M. Wiki Loves Monuments e archeologia: Condividere la conoscenza. In *Atti del VII Workshop Open Source, Free Software e Open Format nei processi di ricerca archeologica*, «Archeologia e Calcolatori»; Serlorenzi, M., Ed.; 2013; 24 (Suppl. 4), pp. 53–59.
6. Malatesta, S.G. Open data e patrimonio culturale: Lo scenario italiano. In *Archeologia e Calcolatori*; 30; Edizioni del Giglio: Sesto Fiorentino, Italy, 2019; pp. 451–454.