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# Design for All in multimedia guides for museums

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ABSTRACT

The Design for All principles define the characteristics which a device should possess in order for it be utilised by every type of user, independent of his or her sensory disabilities or technological competency. These principles are realised in the current work as an integrative tool with which to facilitate universal access to museums via multimedia and portable guides, making access available to all. Based on these principles, this article describes the main findings of the design and use of the MGA (Multimedia Guides for All) approach proposed in this paper. This approach involves a series of recommendations for the selection, application, preparation of content, and maintenance of this type of computerized device, in order to achieve these principles. Firstly, a comparative analysis of the principal types of electronic guides available in museums which incorporate accessibility criteria is provided. Subsequently, a real case study case is presented which conforms to the MGA approach. The MGA approach can be applied to other domains, which should be explored in further research. The conclusions in this article have been drawn from two R&D projects financed by the Spanish Ministry of Industry, Science and Technology supported by the EC FEDER R&D Program.



## 1. Introduction

Different electronic guides with sign language videos and audio descriptions are beginning to be introduced in museums (Santoro, Paternò, Ricci, & Leporini, 2007; Tellis, 2004), with the aim of allowing disabled visitors to explore them in a more independent and adaptable way, encouraging the inclusion of citizenship in the information society (Kaitavuori, 2008; Lytras, Damiani, & Ordóñez de Pablos, 2008; Lytras & Garcia, 2008; Lytras & Ordóñez de Pablos, 2007, 2009; Ordóñez de Pablos, 2002; Rodriguez Pérez & Ordóñez de Pablos, 2003).

Furthermore, many museums have set up initiatives to create portable devices which make museum visits accessible to visitors with distinct types of needs. These devices are of a diverse nature and they enrich the visitor's experience, some of which will be mentioned in the current work.

The MGA (Multimedia Guides for All) approach is designed to provide universal access to mobile contents by including sufficient configuration and adaptation features, enabling people with or without disabilities to make equal use of them. As a result of the development of these features, the applications in museums have the potential of becoming an essential tool in museographics.

Section 2 discusses museographics in relation to the use of multimedia guides. The approach, MGA is demonstrated in Section 3 and compared with similar devices. Section 4 describes the case study, GVAM (Spanish acronym of Accessible Virtual Accessibility Museum Guides). Finally, some conclusions and areas for future research are outlined in Sections 5 and 6.

## 2. Museographics and virtual guides

Museography is the science that studies the construction of museums, as the exhibition holds very special importance as a system for presenting pieces, as well as the arrangement of the pieces for presentation to the public (Salas, 1980). This science involves the application of the museological requirements of the project, taking into account the architecture, the collection, the financial and human resources, and other factors limiting "how" the museum is presented to its visitors. In this context, traditional human guides are a resource in short supply. They are employees who are experts in the content and narration of the pieces on display, their social or human historical context. They give life and vigour to the museum and even entertain visitors, making their visits stimulating rather than boring, and of course, educational, given that they are capable of responding to any situation, question, type of audience, emergency, among other elements.

This requirement for training in content, social skills, language, and other aspects and the growing number of ever-increasingly demanding visitors implies that museums must develop educational resources to complement the services of this traditional guide.

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Additionally, visitors' behaviour has changed and they now avoid forced human contact and predefined routes. Faced with the linear nature imposed on the experiences and social interactions taking place in museums and in other cultural exchange areas, many visitors prefer to be free to explore the depths of the museum on their own, and place great value on the ability to participate in the experience of scientific discovery, whether it is archaeological, biological, technological, or any other type of scientific exploration.

On the other hand, museums have been changing their approach to visitors and their social function of teaching and preserving knowledge and heritage, however, this transformation has not been rapid enough to keep up with the changes demanded by the external environment.

A museum is most likely one of the clearest examples of an environment which requires a universal design approach. As previously mentioned, visitors like to walk and learn at their own pace, ask rather than listen and identify themselves with the contents. In other words, they fulfil their social need to participate rather than observe from the outside. Museography techniques attempt to solve this major problem without losing other traditional virtues such as preservation or objectivity.

It is also fundamental to consider new habits in cultural consumption, where people are reticent to any information that is not relevant to their immediate mood, planning time, spatial position or social recognition needs. New technology has accustomed citizens to a personalized protection membrane where interactivity provided at a rapid pace is expected. Museums must adapt their interfaces to comply with this reality.

### 2.1. New technologies as tools at the service of the visitor

It is evident that the use of new reference and exhibition media based on information technology has been very helpful to museums when it comes to attracting and satisfying large numbers of visitors. However, it is less certain that they have become part of the actual educational process resulting from the contact and the participation in the cultural item in its original state (the piece on display), and which should be initiated by this type of system.

The traditional purpose of museums has been to acquire, preserve, communicate and exhibit the pieces and contents of their collections or the field of knowledge in which they specialise. Although the focus is on people and their interests and preferences, obvious solutions always need to be avoided in favour of an approach supported by the orderly, balanced development of these aspects (Chinchilla, 2002).

Therefore, these new technologies must be applied from the perspective of the value they contribute to these traditional functions and with the objective of developing new ones, taking into account the three basic characteristics of new museums, as stated by Santacana and Serrat (2005, p. 640): "The inexistence of any earlier requisites for understanding any type of exhibition, the educational factor applied to all types of audiences and the preference for open visits as opposed to closed circuits. Only then will real innovations be possible that do not pervert the essence of the museological project itself".

According to Rico (1994), there are four forms of exhibiting museum content with respect to the museum building. These classifications will be outlined below, including the factors which must be considered with respect to influential elements, such as the type of public, the resources available, and most essential, the use of new technological media.

#### 2.1.1. Traditional arrangement

This type of methodology involves the arrangement of the pieces according to aesthetic and didactic criteria, without taking any account of adaptation to the environment or the visitors. These types of exhibitions represent an extremely conservative approach to museum exhibitions, however unfortunately they are still evident in many of the world's most prestigious museums. The use of new media is nonexistent, and any proposals for their incorporation are viewed with suspicion. Rather than threatening the quality of the pieces on display, the aim of such proposals is to preserve the pieces' originality, the technology being available to the visitor at any required moment without overshadowing the significance of the piece itself. The use of virtual guide systems is recommended for these types of museum exhibitions.

#### 2.1.2. Harmonization

This strategy refers to the integration of the piece displayed with the architecture of the building. The objective of such a methodology is that the arrangement forms a superimposed architecture, whose aim is to function as a connection between the interior space and the pieces displayed, in such a way that any visual inconsistencies are eliminated. A typical example of such a strategy is that of the Orsay Museum in Paris. In these types of designs, the devices for providing information function as query points representing the characteristics of the pieces, even though the general application is much more focused on shapes and objects, therefore the central focus is not on such types of devices. The result is that the visitor views the layout in a passive fashion while visually absorbing the architecture and exhibition. If new technologies are well applied and used they could easily be integrated into these types of displays, acting as a superimposed part of the structure which enables the explanation and relation of the piece based on the architecture of the space. Multimedia guides have a secondary and limited presence and should not interrupt the contact of the visitor with the museum environment as a result of connection with these devices.

#### 2.1.3. Asepsis

Museums which adopt such a strategy are frequently new buildings which display modern works of art, for example, the Pompidou Centre of Modern Art in Paris, the Guggenheim museum in Bilbao and the Costume Museum (Museo de Traje) in Madrid. The works are not adapted or conceived for any specific space. The fundamental aim is aesthetic freedom with a minimum number of elements. The computational and audiovisual systems should be museum pieces in themselves, that is, the justification for their presence stems from the essence of the piece, in such a way that if the piece is not used, then its presence is not visually obstructive. Guide systems are justified in such scenarios in situations where the visitor requires immediate and personalized explanation of the piece when he or she encounters it.

#### 2.1.4. Independence

The methodology employed in these types of museum projects is that which is most receptive to future technologies. The exhibition halls are structured in such a way that separate spaces are taken into account for each piece, eliminating conflicting relationships or leaving the pieces open to any area of the museum according to the visitors' viewing. This type of structure may be seen in the Hans Hollein Mönchengladach Museum. Thus, virtual guide systems would fit in such a scenario in a similar way to that described above, but extending their possibilities in the museum layout, as they can be integrated from the beginning. Thus they create new experiences which transform the museography itself.

### 2.2. Virtual and personal guides

There have always been human guides in museums. Guides are the people who act as a bridge between the visitor and the knowledge hidden in the pieces, impenetrable for many without the help of the friendly, personalized explanations of these employees.