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Conservation Digital Report: standard documentation in Cultural Heritage

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Abstract

The 'documentation', in general terms, is the need to gather informations collected for a specific topic so they can be available now and in the future. Obtaining the information is a process that involves many steps: the study, the analysis and the elaboration of the information; all these processes expand and transform the common conception of the term, as not only a mere recording of a phenomenon. In this sense, the documentation becomes an operation 'dynamic, as the basis for further considerations on the object analysed. The documentation of an artwork before restoration can be summarized in three sequential steps:

- *preliminary documentation to identify the problem and guide the next steps;*
- *systematic and comprehensive documentation, to provide both global and detail vision on the artwork;*
- *additional documentation, with further investigation and checks to be developed over time.*

The documentation needs, therefore, the correct setup of a systematic structure of informations into a system of classification to store the acquired data, and this process depends on the correct understanding of the theme. In order to standardize the acquisition and disclosure of information, it is therefore necessary to standardize the process of documentation as a whole, from the earliest steps of collection to the presentation of results. 'ConditionReport.it' software system allows the drafting and completion online of an actual 'condition report' for many different kind of artworks, thanks to a flexible and interactive software that can be adjusted according to the different public or private requirements, creating personalized documents. Some examples will illustrate the potential of the system as a standardization of the documentation process for conservation and restoration of different types of cultural heritage, and also as management system for data from different sources.

1. Documentation: standardization issues

The 'documentation', in general terms, is the need to gather information collected for a specific topic so they can be available now and in the future. Obtaining the information is a process that involves many steps: the study, the analysis and the elaboration of the information; all these processes expand and transform the common conception of the term, as not only a mere recording of a phenomenon. In this sense, the documentation becomes an operation 'dynamic', as the basis for further considerations on the object analysed.

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A documentation for the conservation and the restoration has to analyse the different aspects of the work of art to be 'complete':

- its metric and technical characteristics,
- its historical evolution,
- the aspects of deterioration and conservation.

The documentation is indeed the preliminary fact-finding moment in preparation to the fulfilment of the intervention but this does not mean that it has to be completed fully before the start of the restoration work. Part of the documentation starts before the intervention in order to set the guidelines to follow through a preliminary analysis of the work of art, but most subsequent operations need further in-depth analyses, essential parts of the final draft of a project.

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The documentation must, first of all, meet the needs to know the material and artistic consistency of the artwork; the possibility to plan restoration and conservation work and finally the assessments for its future safeguard.

2. The conditionreport.eu system

2.1. Introduction

The `www.conditionreport.eu` system has been developed starting from a clear requirement: creating an operating tool to support the handling of the documentation in order to satisfy protocols of filing, documentation and condition report; as these protocols are related to specific works of art for several purposes through time, they are subjected to updates and integrations, thanks to the capacity of the system to adapt to the new needs in order to ensure also an historical accuracy of the information and of their modalities of indexing. Such historical accuracy is guaranteed by a system of clonation of data that are each time deemed necessary for the ongoing compilation.

From the technical point of view the systen is based on Open Source tools (php, javascript, MySQL), which ensure a wide flexibility of planning and a total compatibility with the main operating systems; moreover, the choice to publish it in Cloud modality makes it particularly suitable for all the situations where it is becessary to get information 'worldwide', when more users can have access to the information at the same time irrespective of location or workplace through their own account.

Another advantage of the Cloud system is the guarantee of protection of the data: indeed, dedicated backup systems make sure that the information are always replayed, thus relieving the users from expensive and sometimes badly-implemented D.I.Y. backup systems.

From the operative point of view, two main areas are identified:

1. Area of management and definition of the structure of the information: in this area the user manager can create the structure of the information by following the guidelines of standard protocols or according to specific requirements: this structure will in turn be used by the operating users (those who enter the information) and will become the index according to which the information are handled and displayed.
2. Operating Area: in this area the user in charge of the collection and the entry of the information (text, images, documents) will be guided by the interface of the system when entering such information following the structure defined by the manager of the previous area.

This system set-up has two great advantages: on one hand it helps, through an intuitive software interface, to create an information 'sheet' based on an accurate and structured logic and on the other hand it binds the individual who operationally compiles the information to follow a strict logic, thus creating a coherent file of documents which can be shared by all the users.

2.2. Integration of 3D models OBJ format

One of the main innovations of the developed system is the capability of integrating one or more 3D models (encoded in the standard OBJ format) by binding/assigning/matching them to a particular artwork.

Another very important aspect is that the visualization of the model doesn't require the installation of dedicated software. Models can be viewed directly through the web browser: which allows users with limited IT skills or 3D modelling knowledge to be able to visualize the artwork from any point of view.

For complex artworks, or for those made by several pieces, more 3D models can be associated with their corresponding piece or, eventually, to a 3D model of the artwork as a whole (Figure 1).

In addition to the 3D view of an artwork, the user will be able to turn these 3D models into 2D 'canvases/snapshots' by identifying the most suitable point of view (the mouse will be used for controlling rotations, zoom and pan operations). Above these canvas a drawable layer will allow the user to highlight areas of particular interest or to indicate where a picture of a particular area of a model was taken (Figure 2, 3).

Another very important innovation of Our software is that all the information about the artworks are stored into a structured data system, which allows the elaboration of detailed sheets about the current state of conservation/degradation of even complex 3D artworks.

Specific indexes are used to link together 3D models, descriptive texts, 2D 'canvases/snapshots' with their highlighted areas and pictures, which allow for ordered cataloging , easy searching and exporting to multimedia documents such as web pages or PDFs. All the above will be available even for the user with no experience with 3D modelling thanks to the use of a common web browser without the installation of dedicated software.

Figure 1: *Example of 3D models attached to an artwork.*

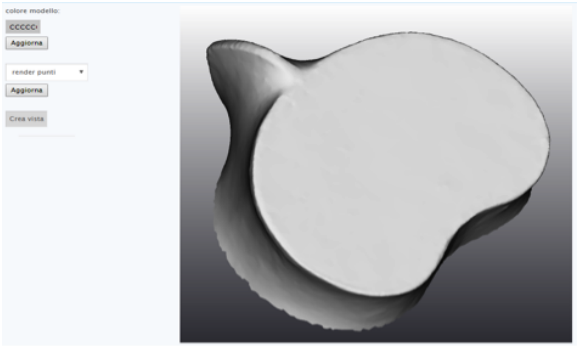

Figure 2: *Selection of a model and rotation to produce a view on which to draw layers to highlight areas.*

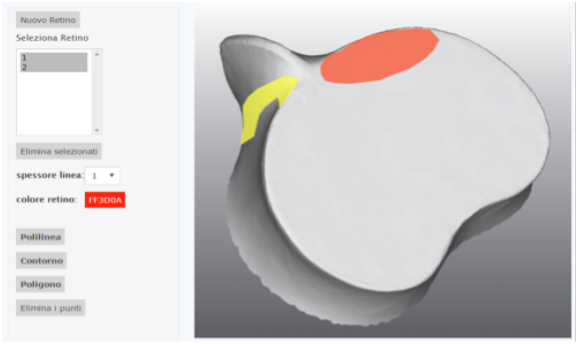

Figure 3: *Drawing of two layers on a view produced starting from a 3D model of the artwork.*

2.3. Historical accuracy of the information

The system allows to manage multiple and historicized surveys (information sheets): for each artwork it is possible to manage several information sheets, each one defined by a period of validity. This ensures the creation of an historical file for each specific artwork, with information coming from different compilers but still keeping a coherent structure: the advantage is an easier way to read and to compare the information sheets compiled by several professionals.

2.4. Information in many languages

For each information data, the interface of the system gives the chance to work with many languages simultaneously without the need to change the page one is working on (Figure 4): this allows to compile and compare the information entered with the relative translations quickly and efficiently.

Figure 4: *Selection of language of compilation of the information for a specific field: it is possible to change language simply by clicking the keys (it, en, de, fr or sp).*

2.5. 'Collaborative' operativity

The Cloud structure of the system allows a 'collaborative' operativity with different levels of access to the information: the manager can identify Collaborators and Guests, the former capable of compiling and intervening on information assigned to them for the compilation, the latter only for consultation: both guests and collaborators do not need to install software on their workplaces as the whole system can be used through a web browser and an internet connection.

2.6. Graphic functionality in support of the documentation

For each artwork it is possible to manage several 'views' (images from different point of view: i.e. left side/right side, behind, Top/Bottom, etc) of the artwork with the possibility to identify the holding points of images/photographs in detail (Figures 5).

Figure 5: *Example of identification of holding points of specific attachments.*

Besides, it is possible to draw personalised layers to graphically highlight deteriorations and/or areas of intervention (Figure 6)

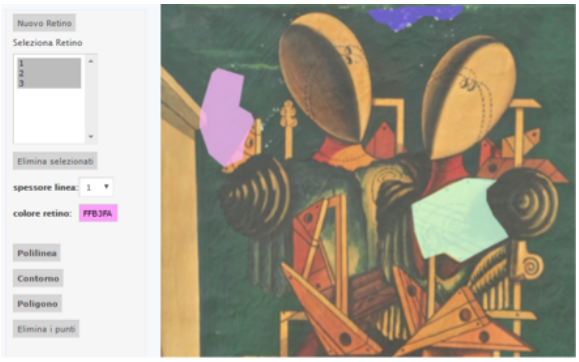

Figure 6: *Example of layers highlighting a deteriorated area on a view of the artwork.*

All these operations are possible directly online without using further graphic software. These graphic 'maps' can be exported in a PDF format and can contain different types of highlights, even current ones, to underline different sets of problems (Figure 7).

Figure 7: *Example of PDF document with the indication of point of view and relevant images of details.*

2.7. Documentation Output

The documentation can be consulted also in HTML format, and can be visualised also through mobile devices (Smartphone and Tablet) optimised in responsive mode. Besides, it is possible to produce documents in PDF format from the sheets with interactive index produced automatically (Figure 8).

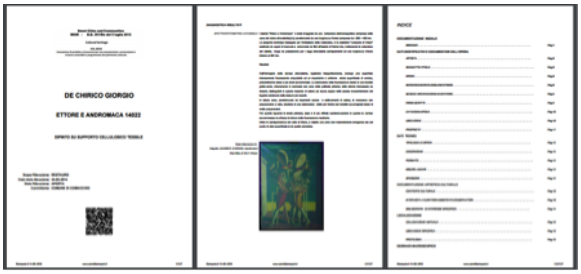

Figure 8: *Example of PDF document with automatic index produced starting from an information sheet.*

2.8. Conclusions

The information for the conservation of an artwork can be presented in many different ways, always trying to offer a clear interpretation; the selection of the elements to combine is based on the functions of the presentation; in the same way, the graphic symbols and the colours are not standardised but are chosen to facilitate readability and to reinforce the message. It would be necessary to have a 'protocol' or 'specification' which defines the guidelines of the graphic documentation as well as a proper method of detection, just like the conservation sheet defines the documentation of the descriptive data. Various attempts have been made in this direction, taking inspiration from normative processes of building and cartographic activities, but within the field of the documentation related to restoration this is still an open sector. The results can be diversified according to the requirements and the methods employed, but the objective today must be to provide a 'digital sheet of the artwork' inserted in its context and able to develop, within the restoration work, the different contents from the check to the monitoring of the transformations the artwork is subjected to through time, to the simulation of the interventions based on tridimensional models and, if necessary, on possible virtual reconstructions.

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