



PROCEEDINGS OF THE INTERNATIONAL CONFERENCE ON SUSTAINABLE CULTURAL HERITAGE MANAGEMENT

SOCIETIES, INSTITUTIONS AND NETWORKS

Edited by
Lucia Marchegiani



AI3

Proceedings of the International Conference on Sustainable Cultural Heritage Management

Societies, Institutions and Networks

edited by

Lucia Marchegiani

Ababneh A., Akimova O.S., Alfaré L., Amitrano C.C., Antonaglia F., Arbak H., Arcese G., Artese M.T., Aslan G., Bagnara Milan S., Barnett B., Basili K., Bianco S., Bifulco F., Biondi L., Bottoni P.G., Boztaş F., Broz D., Campanella L., Campolmi I., Can Ö., Ciocca G., Corbo L., Corolla A., Corradini E., De Felice G., De Masi A., De Stefano F., Del Barrio M.J., Di Pietro L., Dossena C., Dryjanska L., Elgammal I., Epstein M., Francesconi A., Gagliardi I., Gasparini F., Guarnera G.C., Guglielmetti R., Gursu I., Herrero L., Hilgersom J., Khuluzauri N., Kol O., Kovaleva A., Labella A., Lord B., Lucchetti M.C., Maggi F., Maino G., Marchegiani L., Meparishvili N., Mutlu E., Nikitina O., Ozer Sari F., Parik I., Parthenios P., Pellacini F., Pirnar I., Pirolo L., Refaat H., Ruoss E., Santacesaria V., Santos D.C., Sarti D., Scarano V., Schettini R., Senol P., Toni M., Tregua M., Tuccilli D., Varra L., Venuti E., Vicidomini L., Weber A., Zagumennaia E.



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ARACNE editrice S.r.l.

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via Raffaele Garofalo, 133/A-B
00173 Roma
(06) 93781065

ISBN 978-88-548-6430-6

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Ist edition: October 2013

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Preface

The value and potential of the cultural heritage, if adequately managed as a resource, is the key element for the lasting development and for the quality of life in a society in continuous evolution

Faro Convention

Culture is at the basis of a symbolic world full of meanings, believes, values, traditions and as such it holds a fundamental role in human development. Cultural Heritage, tangible and intangible, includes a wide variety of artistic and cultural forms of expression like, *inter alia*, literature, the visual arts, architecture, music and theatre and may provide important benefits for society and the economy. The cultural experience is not only a single event in the life of an individual, it can also contribute to the development of joint sense of identities in sparse population. The dissemination and valorization of cultural outputs requires new production and consumption modalities (ACRI, 2003). Also, the adoption of new technologies offers innovative opportunities and dynamic managerial perspectives. This has significant, yet often untapped, potential for stimulating jobs and economic growth, and fosters the development of other sectors in the economic system. Culture thus holds an essential role for the creation of national wealth through numerous implication of social, economic and political nature. In particular, to invest in cultural resources means contributing to improve the quality of life in a specific territory, attracting new economic, financial, and human resources, improving social and territorial cohesion as well as defining new types of artistic careers.

In light of the above, it is important to foster creative and innovative approaches, including development of new tools and methods, to the preservation of Cultural Heritage and its transmission to future generations.

This book collects the papers that have been presented during the first edition of The International Conference on Sustainable Cultural Heritage Management (SCHeMa 2013), which has been held in Rome at Roma Tre University on October 11-12, 2013. The papers collected here have been selected through a blind peer review process. As cultural heritage studies are rooted in diverse academic backgrounds and proliferate in different yet complementary streams of research, it is our profound conviction that interdisciplinarity is mandatory in order to reach a deep understanding of the value drivers that cultural heritage management can enact. The intersection between cultural policies, cultural industries, and creativity poses unprecedented challenges and yet opportunities to the broad field of cultural studies. Certainly, it opens up contamination between disciplines that have kept some distance from one another. Cultural economics, geography, management, clustering are but some examples of these disciplines.

Coherently, the International Conference SCHeMa 2013 embodied the spirit of multidisciplinary approach, as the tracks of the Conference had been conceived in order to gather diverse perspectives on Cultural Heritage. As a result, the papers presented in the following sections offer a multidisciplinary and complementary approach to the most recent challenges that cultural organizations, institutions, and policy makers face.

At times of economic crisis and uncertainty about the future, nurturing and valorizing the Cultural Heritage can constitute an appealing hope. Through the collaborations of academics from different disciplines and background and professionals with diverse sets of skills, it will be possible to offer new economic, organizational, technical, and sociological insights for a Sustainable Management of Cultural Heritage.

Lucia Marchegiani
Program Chair SCHeMa 2013

THE MULTIMEDIA TECHNOLOGIES AND THE NEW REALITIES FOR KNOWLEDGE, NETWORKING AND VALORISATION OF SCIENTIFIC CULTURAL HERITAGE. THE ROLE OF ITALIAN UNIVERSITY MUSEUMS NETWORK

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Emilia

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ABSTRACT

The framework program about multimedia technologies for the networking and the valorisation of scientific cultural heritage in the Italian University Museums among thirteen Italian Universities (Bari , Cagliari, Chieti-Pescara, Ferrara, Florence, Modena and Reggio Emilia, Parma, Perugia, Rome “La Sapienza”, Salento, Naple II, Siena, Tuscìa), with the coordination of the University of Modena, has been recently approved and financed by the Italian Ministry of Education, University and Research. It aims at activating a network that by multimedia technologies wish contribute to knowledge and valorisation of cultural heritage through the collaboration of UMAC University Museums and Collections International Committee of ICOM.

The final target will be a bilingual web portal realized, on purpose for the project, in an innovative perspective considering the peculiar features of the different University Museums collections, the experiences of each, their interdisciplinary characterization and the possible uses in a contemporary historical, social and cultural context. The first step is to monitor the cultural heritage of the thirteen University Museums, in order to complete the already existing databases and align them to catalogue standards released by the Central Institute for Cataloguing and Documentation of the Italian Ministry of the Culture within the General Informative System for Cataloguing SIGECWeb.

KEYWORDS: university museums; scientific heritage; cataloguing; web portal; multimedia technologies; educational strategies,

INTRODUCTION

The museums, museum centers and systems of the thirteen historical Universities (Bari , Cagliari, Chieti-Pescara, Ferrara, Florence, Modena and Reggio Emilia, Parma, Perugia, Rome “La Sapienza”, Salento, Naples II, Siena, Tuscia) taking part in the project aim at contributing in creating a national system of museums and at valorizing cultural historical-scientific and naturalistic heritage of their Universities.

The agreement represent Universities a fundamental opportunity to take part in the creation of a first “real and virtual” network of Italian University Museums in order to activate the project synergies envisaged by the application [1].

The creation of a first national network of scientific University Museums, thanks to their ability to collect a huge amount of data preserving the differentiation of the provenance sources, represents a necessary measure to allow scientific University Museums to develop an incisive educational and social action, also promoting a stronger general coordination of their activities and a strengthening of cultural exchanges among different structures that operate within the diffusion of scientific culture. Such contacts will allow to plan and organize wider reach cultural activities, also at multi-regional, national or international level, to address different issues in a multidisciplinary way and with respect of specific competences of a single structure and/or operational area.

METHODOLOGY

The aim of the project is to increase the knowledge and the fruition of the University Museums heritage starting from a first group of twelve Universities. Generally citizens are more familiar with art and history museum than with science ones, in particular University Museums are considered as belonging to research fields so of very limited interest to not advanced education people.

The project can be considered as articulated in difference proceeding steps:

1) Choice from each participating University of a defined number of objects of his heritage able at the same time of well representing its cultural vocation of giving a meaningful contribution to the national project.

2) Inventory and classification of the chosen objects.

3) Cataloguing of the chosen objects according to national standard of the Central Institute of Cataloguing and Documentation - ICCD- of the Ministry of the Culture.

4) Contribution of the chosen objects to the cultural itineraries by which the project want to activate the participation of visitors. The itineraries were established preliminary after an open discussion among the thirteen local coordinators and their themes are landscape, histories, environment, scientific instrumentation.

5) Creation of a web portal to which visitors can be addressed in view both of a virtual of a real visit [2].

The web portal created within this project will allow to design a new image of the museums conceived as laboratories and places for the promotion of a critical interdisciplinary dialogue, close to topicality issues, as garrison for scientific and technological lifelong learning during and after school, as places for intellectual meetings, for social solidarity, to strengthen civil society, to promote local territorial and virtual systems and to activate national and international synergies to plan lifelong learning activities addressed to different audiences [3].

The designing project for the portal of italian University Museums is based on the fact that the web does not have to be a mirror of what already exists within a museum: the web is the tool to create e different museum, close to but different from the real one, a digital space that through the interaction with users and the production of new contents aims at spreading the knowledge and improving the services that University Museums as public bodies are supposed to provide.

The objects of the thirteen Universities will be classified, catalogued and inserted within the four thematics itineraries: landscape, histories, environment, scientific instrumentations that will be described in the web portal with the aim to allow a virtual visit and to stimulate a real one.

Cataloguing was reached through two different phases: the first one is based on the monitoring the collections through detailed lists of the objects (tables nn.1, 2).

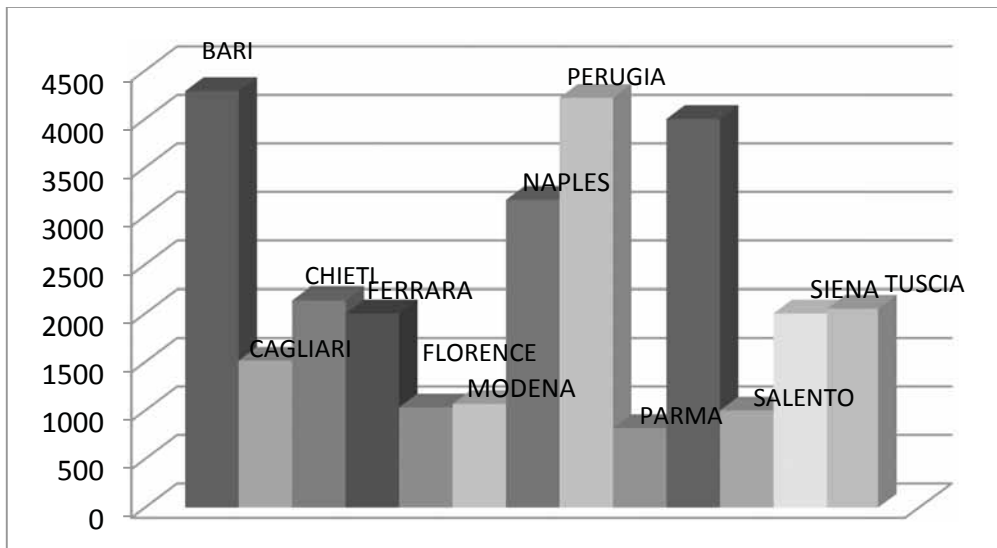


Table 1: Number of objects of University Museums collections involved in the project

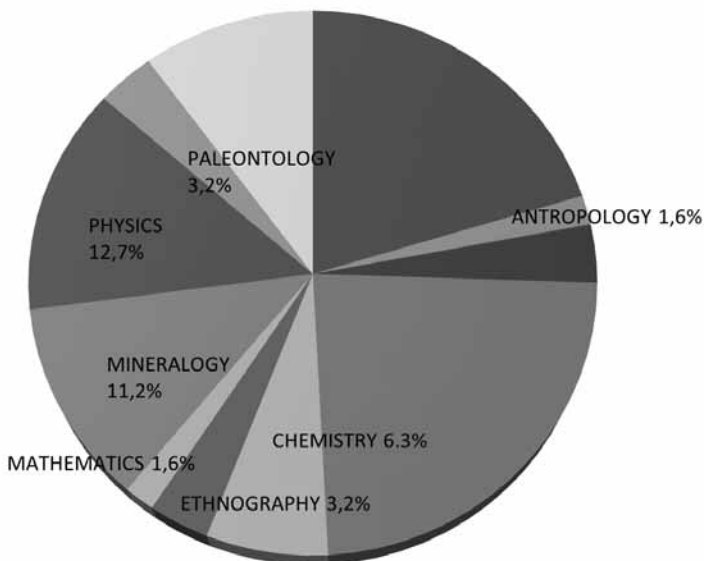
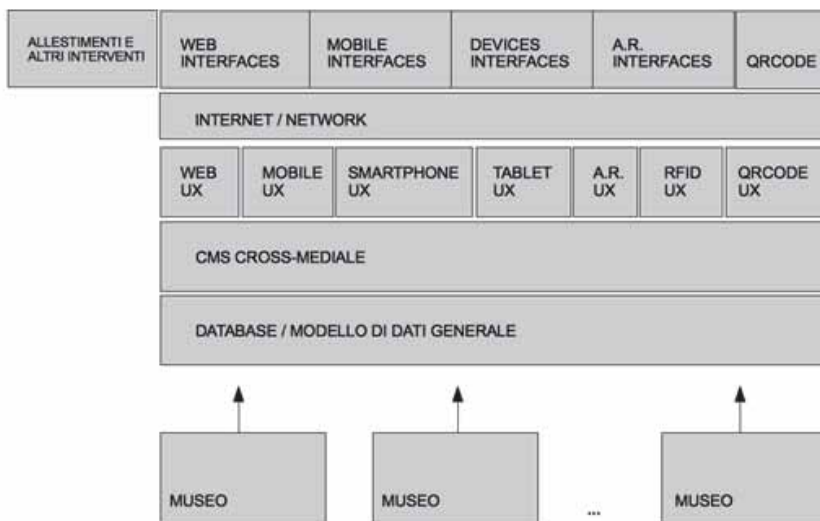


Table 2: Collections typologies of the objects of University Museum involved in the project

The second phase is based on detailed cataloguing through a coded Central Institute of Cataloguing and Documentation -ICCD software method, the SIGECWeb, the General Informative System of Cataloguing [4], to which in each University a cataloguer will be educated in collaboration with Central Institute of Cataloguing and Documentation -ICCD by a suitable education training.

Computer cataloguing of scientific and naturalistic cultural heritage, as an activity of registration, description and classification of all kinds of cultural heritage according to catalogue regulations, technical-scientific criteria and standards release at national level, is a fundamental activity to find out, get to know, document scientific and naturalistic cultural heritage and to store collected information according precise criteria, to valorize such an important cultural heritage through the use of computer technologies. Moreover, databases will be useful not only to spread information on cultural heritage but also an important knowledge means to grant a correct preservation of cultural heritage and the opportunity of maintenance and restoration interventions.

The third phase of the project is to design, implement and then populate the general data model. This model will be composed of three integrated macro-areas: the data model for inventorying and cataloguing, the data model for scientific area; the data model for interactive experiences. The general data model, like the entire system, will be structured and integrated in compliance with SIGECWeb, the General Informative System for Cataloguing released by Central Institute for Cataloguing and Documentation - ICCD and a selection of the most important European standards (table n. 3).



INTERACTION

SHARING

EXPERIENCE MANAGEMENT

CONTENT MANAGEMENT

DATA MODEL-

DATABASE SIGEC WEB

CLASSIFICATION

/INVENTORY

/RFID

/ENRICHMENT

Table 3: General architecture of the system

A cross-media Content Management System will allow to manage all the information in the system, to integrate them with multimedia contents used for interactive experiences (images, sounds, videos, documents, etc) to prepare and optimize them for fruition on any kind of target platforms envisaged and to manage their administration, access, effective supply, characterized by good usability and accessibility level (with specific reference to L. 4/2004 and to regulations and guidelines

concerning public administrations, in particular the recommendation of the Web Content Accessibility Guidelines WCAG 2.0).

The CMS adopted to create the web portal will supply to other services with a series of sub-systems that can feed the experiences of users (UX, User Experience) accessing through multiple technologies:

- Websites and applications (HTML, XHTML, HTML5 and rich content applications based on web technologies)
- Mobile applications
- Advanced mobile applications for smart-phones, iPhones and Android
- Tablet PC applications (iPad and Galaxy)
- Augmented reality applications (marker base, viewport base, HUD Heads Up Display)
- RFID applications (based on devices to read RFID tags)
- QRCode applications (those in which contents are accessible starting from the acquisition of QRcodes, like for example the realization of catalogue or other paper materials with impressed QRcodes that allow users to access directly to cross-media contents).

User experiences will be accessible on the web (internet or dedicated), using interfaces created on purpose

The project will use interactive tools, virtual guides, augmented reality presentations, 3D reconstructions, intelligent environments, multimedia paths, and in particular:

- Interactive projections, that is to say integrated systems that allow the projection of interactive scenarios on the floor or walls that change at every visitor passing through it, but with all-in-all features so that they can be easily installed and managed, allowing to acquire a wide range of 2D and 3D effects, interactive systems integrated with touchless technology that allow the projection on plane surfaces (boards), for example like tables. A simple movement of the hand near the board, even without the direct contact, can select digital contents that can be visible on the surface or on devices connected, e.g. walls with retrospection or led.
- Creation of highly immersive environment, it means combining several interactive surfaces that act simultaneously together with additional components like dispenser of interactive and customizable fragrances

- Application of touch screens and multi-touch to implement different kinds of products like catalogues, books, interactive reading-desks that allow the user to select cultural multimedia contents, in-depths cards, as well as to see images and high-resolution details.

- Interactive surfaces can also be arranged for multi-player applications, like games and quiz, contents can be modified by users, sent via e-mail or shared on social networks. The multi-user and multi-touch interaction allow a realistic simulation of physical phenomena and the comparison between hypothesis and models, creating a participated and dynamic relationship between visitor and knowledge.

- Mobile interactive devices: the development of interaction projection systems on mobile devices that allow to experiment, particular tables that can recognize objects and therefore can dialogue with tools provided with smart tags: once they are laid on it, they activate responses and contents with which it is possible to interact, or to communicate via Bluetooth or smart-phone.

These products have a big potential: they can enrich the individual experience of visitors and allow to produce multimedia folders to which visitors can access even after the visit.

The proposal to use web 2.0 tools aims at marking the difference between the first stage of development of the internet, characterized by a relative inactivity, and a future development in which, also thanks to the diffusion of new platforms and communication frameworks, the idea of dynamism and interaction will acquire further and definite centrality.

The social tools and design interfaces typical of Web 2.0. contents constitute a new set of standard and services, represent an important change also in relationship with the way we use the internet. The emerging model can be defined as a multichannel models, where the web works as a conductor through distributed networks, and in particular social networks, connecting not only cultural institute and their users, but also persons among them [3].

The museum informative content can be integrated through linked data protocols with a project for the production of e-learning educational modules, differentiated according to students of any kind and level of schools, as well as for university training programs also post-graduate (master courses and Ph.D). These e-learning educational models will allow to integrate museum contents for the didactic of sciences, representing an innovative technological development to

create educational paths within the schools, considering that the use of external educational resources is one of the crucial points of the national indication of the Ministry MIUR for the school curriculum.

The availability of a wide range of data related to scientific collections in the web portal of the museum network will represent the necessary prosecution of what has been done until now and an additional tool for the valorization of collections, which will be accessible to the widest range of users, both professionals and curious persons. In fact museum appeal is closely related to their capacity of a constant re-thinking of educational activities linked to cultural heritage in order to renew them: considering the growing use of communication means, through computer and mobile devices, a further objective of the project is to design and develop thematic paths and cultural itineraries on the territory, starting from museum premises and specimens, objects and tools preserved in their scientific collections (museums and environments), conceived according to the most peculiar materials of the collections and in compliance with the topics addressed within educational activities.

The four thematic itineraries will be created in order to offer users the opportunity to range mentally – thanks to audio visual devices – on different information levels, from the local one to regional, national, and international level [5]: for that new multimedia technologies will be applied (in particular RFID-Radio Frequency Identification, Cross Media Content and Augmented Reality, and architectural Interaction design) to be used both on-site and online through the use of mobile devices to open wider and wider different horizons for cultural fruition, integrating the traditional direct fruition of cultural heritage.

Concerning the educational field, the use of appropriate languages and the use of a wide range of iconographic and audio materials, the development of innovative multimedia interactive paths, the augmented reality presentations, the 3D reconstructions to be used on-site and online, and an ongoing updating of contents according to the topics that daily animate the scientific debate at national and international level will allow to start educational project on cultural historical scientific naturalistic heritage for students of different kinds and level of schools in collaboration with regional and provincial School Offices, with headmasters, teachers and associations of teachers in order to design

different e-learning educational paths for students and teachers of any kind and level of schools.

A particular effort will be dedicated to build a strong collaboration with teachers of the schools on the territory, designing virtual educational activities to be enjoyed directly within the school and complementary to real activities to be carried out in the museum as a moment of high cultural interest, but also as amusing and interesting participation. The different initiatives to be organized will refer to the study and research activities that University Museums are developing in the different scientific domains that characterize them.

The availability of multimedia interactive information concerning cultural historic scientific cultural heritage represented by several specimens, objects and tools of university collection will allow the organization of initiatives to promote communication with the world of research to diffuse technical-scientific culture in the schools of different kinds and levels, contributing to the growth of a clear awareness of the importance of science for everyday life and the sustainable development of society.

The emerging multichannel model will be adopted, in which the web works as conductor: through distributed networks, and in particular social networks, it connects not only cultural institutes to their users but also persons among them. This model is completely innovative for the University Museums involved in the project, which use mostly an information distribution model typical of web 1.0, that is to say the *broadcast* model in which contents are created by the cultural institutions themselves and then distributed to users through the web.

The network will also allow University Museums involved in the project to create and test informal learning activities for different audience groups and will provide the cultural tourism operators with a useful working tool and a useful support to guided tours, and to create paths of touristic and cultural interest. Moreover, thanks to the collaboration of cultural associations of voluntary organizations it will allow to strengthen the activities aimed at social inclusion that have already been started by single museums, in collaboration with specific attention to migrants and all “new citizens” that bear cultural values and knowledge of various origin, by activating inclusion-aimed projects together with their associations and communities.

FIRST RESULTS

The project is running. At the moment a first result is an itinerary, "Optics of Sapienza", as a segment of one itinerary about scientific instrumentation. The aim of which is to show how during the centuries, scientific instruments evolved according to their shape, dimension, technical properties, ability.

Optics of Sapienza wants to contribute with a story of optical instrumentation present at Sapienza in eight of the participating museums. So a walking way was realized able to address visitors through different museums. The exposed instruments were of optical nature in the widest sense so that microscopes, spectrosopes, but also lenses, colorimeters and more complicated instruments such as x-ray analyzers, electronic microscopes, polar meters and so on, all well present in the heritage of Sapienza and exposed. Particularly a collection of microscopes obtained the common interest. The itinerary was enriched by exposed labels discussing the different fields of social life and science based on these instruments: medicines, monitoring service, cultural heritage, scientific research.

1) A second approach was also applied: to stimulate people's presence at museums by focusing on famous persons involved with the participating museums. So in this case of Sapienza Gian Battista Grassi appeared as very suitable in this direction. Obviously by this approach the itineraries are limited within only one university, the expanding vision being possible if different famous researchers linked to different museums are belonging to the same discipline or to the same application field.

2) Concerning the cultural itinerary dedicated to the stories the prevailing approach was to refer the story to the proposing museum describing it since its birth till today. A second way was to refer to the story of a discipline (chemistry, biology), of a scientific field (medicine, art), of a social event (fight against diseases as malaria or tuberculosis)

3) More problematic is the design of an itinerary about landscape. This was interpreted in a very different way: from environmental aspects to the industrial ones, from polluted great centres to smart cities, from urban planning to zero emissions.

4) Environmental itinerary was designed with particular attention to the effects of clean or polluted environment on health on biodiversity, on climate change.

So links to alternative energies to monitoring processes, to innovation of materials to European Directives are considered.

CONCLUDING COMMENTS

A heritage is considered as a social interest and must be enjoyed by citizens; this can contribute to raise the cultural level of country. To reach this aim it's necessary to ensure the knowledge of this heritage: knowledge requires instruments and tools stimulating the public not only from the students but from all kind of citizens. The present project wants to contribute to both the steps: a) knowledge obtained by classifying and by cataloguing the chosen objects of the University Museums heritage; b) enjoyment by the method of cultural itineraries as virtual or real visits. The chosen themes are landscape, histories, environment, scientific instrumentation and their developments are obtained according to different approaches, based on scientific, historical, social, cultural criteria.

Database of the Universities Museums collections will be created in the next months using the national standards into the Informative System of General Catalogue on the web-SIGECweb of the Central Institute of Cataloguing and Documentation-ICCD as well as the web portal of the network characterized by the use of interactive tools, virtual guides, augmented reality presentations, 3D reconstructions, intelligent environments, multimedia paths.

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