Malta

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Past activities and new initiatives

Building on the impetus which had been established in the previous year, 2006 was a period of intense activities related to the digitisation of Malta's cultural heritage. The efforts made were many and varied, ranging from the continuation of old projects to the birth of new initiatives, from short- to long-term projects, from small local projects to national and international initiatives.
The main actors and stakeholders in this field still consisted mainly of governmental entities/agencies and non-governmental organizations although sparks of interest in this aspect of technological and cultural development could be seen also in the private sector primarily in the development of relevant expertise and promotion of specific services. The projects themselves spanned a wide range of aspects of culture which included art, archaeology, history and IT amongst others.
The aim of this report is not to provide an exhaustive list of these major and minor efforts in the field. Considering the growing importance of digitisation in an increasingly IT-centered world, such a list is destined to give only a partial and biased view of what is actually happening, even for a country the size of Malta. This report will focus instead on outlining those achievements or initiatives which have contributed, or can contribute, to digitisation as a process, as a standard or as a means to preserve a record of our heritage. As much as possible, it will take into consideration the endeavors of public, private and voluntary organizations.
The report will be divided into three distinct sections according to the type of results or deliverables obtained from the activity. These sections will illustrate the activities related to:

- Cataloguing, which is generally defined as the process of creating a descriptive record of an object.
- Digital Documentation, which in this context is being used to refer to the capture of new data in digital format as in the case of three-dimensional scanning or photography.
- Standards Development, which refers to activities aimed primarily at the development of standards for both cataloguing and documentation.

Cataloguing

The objective of any digitisation activity is to improve accessibility to resources by providing information on an object to a wider audience than would normally be possible. This objective is particularly applicable to digital catalogues and inventories of cultural heritage objects as they provide the wider public with information on objects for which accessibility depends on a variety of factors which include state of preservation, security, physical location and museum opening hours, to mention but a few. It is therefore not surprising that, as in 2005, the main thrust of digitisation activities in Malta once more centered around cataloguing.
As the main agency entrusted with the management and promotion of Malta's cultural heritage, Heritage Malta was actively involved in a number of activities in a systematic effort to digitize the national collections. For obvious reasons, emphasis is being placed on the stock-taking and cataloguing of the movable items as they are the ones which are less well known and, in most cases, not immediately or easily accessible by the general public. An organization-wide effort was made to digitize the old inventory card system of each museum in a format which will, in the near future, enable transfer of the information to a more appropriate system.
A particularly significant contribution to this effort was the cataloguing of the reserve collection of the National Museum of Archaeology. With the help of archaeologists and consultants, an inventory of the entire collection was created and a selection of over six thousand artefacts dating primarily

to the Bronze Age, Phoenician/Punic, Roman and Byzantine periods were fully catalogued. During the process, reference was made to the guidelines compiled and published by the EU-funded IKONOS project in 2005 as well as standards published by other authorities in this field. In parallel, and as a complement to this activity, a photographic campaign aiming to collect images of specific items of both movable and immovable elements of our collections was being carried out by Heritage Malta's Documentation Division. A long and labour-intensive process, both campaigns were supported technically and financially by Heritage Malta and its various divisions.

A local sponsorship enabled Heritage Malta to continue another important project, the digitisation of a collection of antique maps of Malta belonging to Dr. Albert Ganado. Digitisation of this collection included both visual documentation of the maps and the creation of a catalogue which provides information on the producer and the history of each map, thus creating an important and accessible source of information for the academic community whilst ensuring that the maps suffer no further physical damage from use.

The Superintendence of Cultural Heritage was also actively involved in digitisation of cultural heritage at various levels as part of its Heritage Data Management and Processing functions. Apart from the launch of the national Cultural Heritage Inventory Management System (CHIMS), which will be described in greater detail in section 3 of this report, the SCH also took an important step towards the creation of a national inventory with the digitisation of over eight thousand of the old records on Malta's artistic heritage. The SCH intends to continue with digitisation in various cultural areas over the coming years.

Governmental organizations were not the only ones to recognize the value of digitisation and cataloguing, as evidenced by the activities of a number of NGOs. A noteworthy feat was the cataloguing, incorporating both textual and visual information, of the forty-five collections, which includes an extensive library of 4500 books along with numerous paintings, pieces of furniture and armor, housed in a 14th/15th century palace in Mdina, Malta's old capital city. This activity was carried out by the Fondazzjoni Patrimonju Malti during its restoration of the palace itself (N.A., n.d.,

The restoration of Palazzo Falson, `<http://www.patrimonju.org.mt/palazzo.htm>`). International funding has supported a number of digitisation activities with the aim of promoting Malta's cultural heritage abroad. A case in point is Heritage Malta's photographic and textual documentation, supplemented by extensive research, of buildings in the Grand Harbour area which are linked to Malta's mercantile and maritime past which started off in 2006 and which is expected to be finished by the end of June 2008. The end result of this activity will be a physical and a virtual heritage trail highlighting the domestic and commercial premises of merchants and their mercantile activities covering the period from 1600 up to the late 19th century. The physical trail will be enhanced by information panels which will be placed in the area to guide and inform the visitor about the importance of each site. The virtual trail, consisting of information and pictures of the various sites, will be placed on an online portal, along with similar trails from seven European and Mediterranean regions. The research being carried out will enable the visitor to go beyond the simple description of sites to be able to experience in its historical context with references to old photos and paintings, plans and geographic location. The portal will soon be publicly accessible from the project website. Another example is the collection and digitisation of data, and the creation of an online archive of seventy Maltese and one hundred thirty Sicilian contemporary artists for the *Isole ed Identitá in Movimento* (IsIdeM) project in which Heritage Malta is collaborating with several Sicilian partners. The archive will be completed and published by the end of the first quarter of 2007.

The progress made in the digitisation of cultural objects such as archaeological artefacts, paintings and other collections was also reflected in the field of archival material and other records. In fact, the National Libraries and the National Archives of Malta were each members of two important EU-funded initiatives, the "The European Library: Modular Extensions for Mediating Online Resources" (TEL-ME-MOR) project and the *ARISTHOT* project respectively. Between 2005 and early 2007, TEL-ME-MOR provided the funds necessary to allow the National library of Malta to contribute all the records of the period 1995-2002 of the Malta National Bibliography to the European

Library, an online, searchable pan-European collection of resources from a variety of subject areas. Similarly, the ARISTHOT project, will enable the National Archives to digitize and preserve archival records related to the sciences from the Mediterranean region so that by the end of the project a pan-European virtual library with a multilingual interface can be created. Launched late in the year, October 2006, the bulk of digitising activities will take place in 2007.

Digital Documentation

Apart from the cataloguing of objects, several of the main actors in this field were also, at one point or another, involved in digital documentation of objects. From basic photography to remote sensing to three-dimensional modeling, the tools available are many and carefully chosen according to the objective of the documentation being carried out. In 2006, some major projects were carried out by Heritage Malta as part of its long-term objective of creating a visual portfolio of all its sites as tools for better heritage management and monitoring. Not surprisingly, the preferred output is the creation of a three-dimensional model of the site as this provides a visual record which is closer to the real-world object than a two-dimensional image and, as a result, a better tool for management and analysis. Among its major achievements is the completion of the 3D models of the temple sites of Hagar Qim and Mnajdra, which formed part of the groundwork for a much larger project which aims to build shelters to protect the temples from natural and man-made causes of deterioration. At the same time, Heritage Malta commenced preparations for the three-dimensional modeling, using laser scanning technology, of three other sites. In fact, 2006 saw the launch of two internationally funded projects that will allow Heritage Malta to document the temple sites of Ta' Hagrat and Skorba as well as the interior of the Hypogeum.
Three-dimensional modeling is also being applied to other structures of historical importance as shown in 2005 with the laser scanning of the Lazzaretto Quarantine hospital and chapel as a tool for the development of the Manoel Island Project. Preparations were in fact being made for the scanning of Fort St. Elmo in Valletta which will take place in early 2007.

In a project promoted and implemented jointly by the Department of Archaeology of the University of Cambridge, UK, and the National Museum of Archaeology of Heritage Malta and funded by the Templeton Foundation, emphasis was placed on the digitisation of archaeological artefacts and sites related to Maltese prehistoric figurative art. Digitisation was carried out in three phases. The first phase consisted of the illustration and cataloguing of selected objects followed by an analytical study of the objects. The second phase of documentation utilized advanced Close Range Laser Scanning to create three-dimensional models of these objects, most of which did not exceed sixty or seventy centimeters in height. Close range laser scanners is a technology developed primarily for the scanning of small movable objects and is capable of reaching extremely high resolution thus enabling the documentation of even minor details such as fine cracks in the material. The third phase of documentation focused on creating a three-dimensional model of one of the temple structures from which some of these objects originated. Unlike many of the existing projects, this model was created through the mosaicing of photographs taken from all angles of the temple, a low-cost but highly effective solution for the kind of study required. The study itself will utilize innovative approaches such as the use of a Geographic Information System (GIS) in order to explore aspects of spiritual creativity present in the prehistoric period of Maltese history as indicated by the remains of artistic manifestations of this period in relation to the physical, historical and geographic context in which they were originally located
In a smaller but no less important project, Heritage Malta utilized three-dimensional modeling technology to facilitate understanding and interpretation as well as to digitize the internal and external mechanisms of the eighteenth century windmill at Ta' Kola in Gozo, the second largest island of the Maltese archipelago. Produced by an SME specialized in this field, the three-dimensional model was created using mesh modeling, a widespread method which utilizes existing plans and photographs of the object in question to create a three-dimensional graphic representation. The model portrays the exterior of the structure as well as its complex interior as a cross-section of the former. Although less accurate than three-dimensional scanning, this low-cost solution is an excellent tool

for interpretation and was in fact produced as part of the upgrading of the museum display at the windmill itself. (See fig. 1)
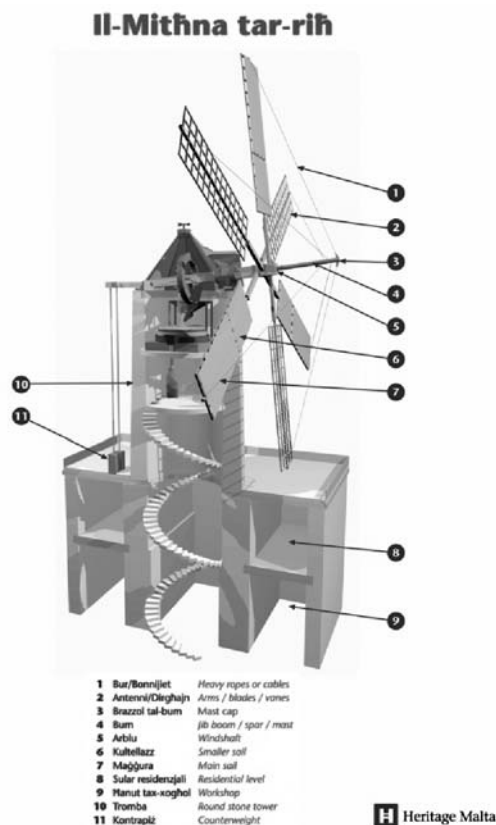
Il-Mitħna tar-riħ

1	Bur/Bonnijiet	Heavy ropes or cables
2	Antenni/Dirgħajn	Arms / blades / vanes
3	Brazzol tal-bum	Mast cap
4	Bum	Jib boom / spar / mast
5	Arblu	Windshaft
6	Kultellazz	Smaller sail
7	Maġġura	Main sail
8	Sular residenzjali	Residential level
9	Ħanut tax-xogħol	Workshop
10	Tromba	Round stone tower
11	Kontrapiż	Counterweight

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Fig. 1 - Three-dimensional representation of Ta' Kola Windmill used to aid interpretation of the site

Standards

Certainly one of the most significant achievements of 2006 with regards to the development and/or implementation of standards in digitisation of cultural heritage is the development of the national information management system, the *Cultural Heritage Inventory Management System* better known by its acronym, CHIMS. Respecting the definition of cultural heritage given in the Maltese Cultural Heritage Act published in 2002, the CHIMS is an extensive and exhaustive cataloguing system for movable and immovable cultural objects of "artistic, architectural, historical,

archaeological, ethnographic, palaeontological and geological importance" (Cultural Heritage Act 2002). The true innovation lies in the use of advanced mapping technology as its foundation, an approach which ties the object to its geographic/spatial location. This not only enhances the potential of the system by adding onto it the wide range of functions and abilities of a GIS, but also introduces the concept of a cultural landscape into the national inventory. This web-based solution will be publicly available, although with differing levels of accessibility according to the type of user, via an online interface designed to facilitate the adding, editing and querying of both spatial and attribute data. An ideal tool for public dissemination thanks to the linking of object information to both maps and images, CHIMS is also being developed as a heritage management tool to complement the functions and activities of the Superintendence of Cultural Heritage. The system will be completed and officially launched in early 2007. A second major initiative, this time at an international level, is Heritage Malta's participation in MICHAEL Plus, a project partly funded by the European Union within the e-Ten framework. An extension to the successful MICHAEL project which focused on the promotion of interoperability between national digitisation initiatives through their integration onto a common portal using the internationally-recognised standards of the Open Archive Initiative, this project aims to enhance the MICHAEL portal with results from an additional eleven countries of which Malta forms part. Throughout 2006, Heritage Malta's efforts in this project were dual. As explained earlier, an extensive effort was made towards the creation of inventories and catalogues of the collections and sites for which it is responsible. At the same time, its IT specialists were working towards the installation of the MICHAEL Plus platform, with its separate modules for data capture and presentation/query, and the implementation of a pilot project to test the inclusion of sample data onto the platform. Research and activities such as the ones described throughout this report may in future be aided by the development of expertise in this sector which is being fostered in the private sector. A particularly significant event was a seminar held jointly by St. Martin's Institute of Information Technology and the University of London on the 18th November

in Valletta. The seminar, titled "Research and Development in Computing and New Media Technologies with Applications to the Cultural Heritage of Malta and beyond", included presentations with guest speakers from major British universities such as Goldsmith College (University of London), Leeds Metropolitan University and the Open University on a variety of digitisation topics such as Multimedia database indexing, Metadata and Digital Archaeology and Cultural heritage applications of computing. The seminar culminated in the signing of an agreement for the establishment of a Malta-based research institute in IT between Goldsmith College and St. Martin's Institute of IT.

Conclusion

Although this report focused primarily on the description of the direct results of the digitisation in Malta throughout 2006, it is important to note also that an effort of this magnitude can also have indirect results which are equally, if not more, important than a physical catalogue or model. A valuable by-product of all these activities, the capacity building within the various organizations through training and experience of its staff in a variety of tools such as cultural heritage Management, laser scanning, data model design and GIS amongst others, is creating the necessary foundation for future digitisation efforts. A second important effect is the generation of greater awareness of the benefits which digitisation offers to cultural institutions and the general public alike along with a greater recognition of its potential in various fields. This is clearly indicated by that fact that over the past decade digitisation has become a priority not only at the level of individual organizations and stakeholders such as the various governmental agencies and NGOs but also at national level with the entrenchment of such duties in national legislation. All of the activities described are a clear indication of the progress which Malta has made towards the digitisation of its cultural heritage and yet it can only be considered as a first step towards the digitisation of the resources of a country as historically, archaeologically and artistically rich as Malta. Thanks to the contribution of all participants, it is hoped that similar, if not better, progress will be made in 2007.