Handbook on cultural web user interaction

**edited by MINERVA EC Working Group
"Quality, Accessibility and Usability"**

First draft (June 2008)

[English translation under revision]

WP5

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"Quality, Accessibility and Usability"

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www.minervaeurope.org/publications/
handbookwebusers-firstdraft-june08.pdf

A special thanks to Giuliana De Francesco for her helpful contribution

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Foreword

"User needs" the keywords with which the MINERVA project has always dealt with the themes of the quality and accessibility of the web sites of cultural institutes, as if to highlight the main objective of a communication tool that, since 2002, has had users as its central reference point.

Since then, after a long process involving analyses, studies and research undertaken and carried forward thanks to the commitment of tens and tens of experts from many European countries and that represented all types of cultural institutions, a series of tools, handbooks, guidelines and recommendations have been produced.

These have all had the objective of helping and facilitating institutes in creating highly qualified and accessible websites that would be able to opportunely represent and communicate the quality and excellence of the European cultural heritage.

A prototype of the cultural web site "Museo&Web" was prepared on the basis of the first manuals. For institutes this forms a further concrete work tool that has put the contents of the first handbook into practice, enriching them with many examples and with a rational part on the tools for designing a website.

A further stage in the long process, achieved within the sphere of the new MINERVA EC project, is represented by the work that is presented with this handbook. It deals with the relationship between user and web application, in the light of the developments and new prospects that have emerged in recent years.

It is a practical manual focussed on interaction with users in the web, that also investigates the current tendencies of the net, strongly orientated towards collaborative functions, interaction with the user, sharing in social networks, the evolution of the Web 2.0 and the new challenge of the Web 3.0.

In presenting this work I wish to thank all those who have cooperated in the initiative, the authors of the texts and the many colleagues who wished to enrich the debate with suggestions, comments and proposals.

Rossella Caffo
MINERVA EC Project coordinator

Introduction

This handbook has its origin in three statements, often reasserted in past MINERVA activities:

- the quality of a digital cultural project implies decisions that must be dealt with from the earliest stages;
- most cultural digital projects should be available to the widest number of users. In 2001, the Lund Meeting conclusions identified the "lack of simple, common forms of access for the citizen" as one of the main barriers, while two years later in Parma digitisation was marked as an essential step in order to provide "improved access for the citizen to that heritage, enhancing education and tourism";
- to satisfy as much as possible the users' needs and to build products that can be easily used, digital cultural applications must be conceived as user-centred.

Since the beginning of MINERVA activities on web quality, we realized that relevant for these three aims is one main issue: the interaction with the users and their satisfaction.

In the first steps of MINERVA work we concentrated our attention in order to disseminate good practices and essential guidelines directed to cultural institutions about web as a *new* medium of communication and interaction: we suggested that websites shouldn't be separated from other activities of the cultural institution, that technical issues may be easily faced by using standard vocabularies and widely accepted rules, that quality must be conceived as a continuous intersection between cultural content and its use, and that quality can't be taken as a static question.

Thus, during the second extension of the project (MINERVA Plus), we condensed the issues on quality websites in ten essential principles, offering some tools to interpret and apply them.

But we were aware that we did not yet cover enough an essential factor of cultural web quality: the user.

The questions we mentioned but left without a satisfactory answer were: what do users want? How do users behave? How can we understand the use they make of our web applications? Do effective methods to ask users about their expectations (before) and their degree of satisfaction (after) exist?

World Wide Web has changed since 2002, and it is changing everyday, giving more attention to the client side of the game. New web (so different from that of the 90's to be named "version 2.0") has become far more participatory, and there are now many more opportunities for individuals, in additional to institutions, to make their own voices heard.

European cultural institutions started to test the new tools and to re-think some of their applications in the light of the changed scenario, even if most of their resources were devoted to build common platforms and cross-domain access points, identified as a core goal since the Lund Conference in 2001.

This handbook intends to be an additional tool for cultural institutions and companies, to be read together with the other MINERVA products: the *Principles for quality of a cultural web application: a handbook* and the *Handbook for quality in cultural Web sites: improving*

quality for citizens. The target users of the handbook are all the cultural subjects and projects concerned with tangible and intangible culture, planning to develop new web applications or to update and improve their existing applications, taking into serious account the users point of view.

First of all, we wanted to start the handbook with a synthetic and up-to-date panorama of users and cultural content providers on the web (chap. 1), with a distinction between the state of the art of "traditional" cultural web applications (websites and portals, chap. 1.1), and the current trends in web services (Web 2.0-3.0, chap. 1.2). Both sections treat all the different types of cultural institutions, museums, archives, libraries, temporary exhibitions and so on, proposing two-three good practices for each category.

To put into practice the wide knowledge base on the theme of our handbook, spacing from the human-computer interaction to the tendencies of users behaviour on the web, from the contents selection to interoperability between applications and the models of common access gateways, we needed to collect different points of view and know-how traditions. Our main sources came from the ICT field, from usability and accessibility experts, from the marketing and advertising field, from cultural sector experiences, from web users community.

The second part of the Handbook aims to synthesize this complex scenario with the principal goal to guide our readers to put into practice what was discussed so far. A series of guidelines are offered to focus on users needs and user opinions about their use of their web applications.

Chapter 2, divided into six sections, is a guide to answer some basic questions: who am I? What are the kind of web applications I may choose to develop? When is it especially important to take into account the users point of view on my project? What do we mean precisely by "web user": is it a single person, a type, a role, a profile, an account or what else? What interactive web services and procedures may I offer to my users? And most of all: what are the current systems for monitoring and evaluating user needs, behaviours and satisfaction?

Moreover, while we develop web resources, we need to consider a basic issue: the importance of using tagging and metadata to grant visibility and *findability* to our contents. We dedicated the third chapter of this handbook to present and give some practical tools on this topic. Even if in some environments, such as libraries, the metadata standards are well known and daily used, we thought that a quick guide to *Dublin Core* metadata element set could be useful for everyone, and we added some information on syndication techniques and languages and to the next step: the semantic web.

Moreover, the handbook offers two practical tools for cultural subjects who want to evaluate the users' point of view.

The first one is a self-evaluation questionnaire for planning a user-centred web application. This questionnaire tries to follow the same pattern we used for the Handbook of quality principles. It is particularly addressed to cultural subjects that are going to develop a new web application (or want to update an already on-line one) and whose goal is to evaluate user's expectations, their satisfaction and the possibility of foreseeing advanced forms of interaction for them. The self-evaluation questionnaire could be used not only in the initial stages of the project, but also in the subsequent phases, including the maintenance of the on-line application.

The second practical model is the websites and portals feedback form: a standardized interview model to be distributed to web sites and cultural portals users. The questionnaire was built on the basis of what was explained in the "Finding one's way" section of the handbook, and bearing in mind similar versions already available on the web. It can be used as a reference for the construction of a personalized questionnaire, that responds to the requirements of one's own web application. The questionnaire model is divided into various sections: data protection, personal details, visit and reasons for the visit, technical and graphic aspects, identification of the web application, quality of contents and research methods.

Relevant documents and studies from other institutions and European projects are included at the end of the handbook.

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Monika Hagedorn-Saupe
MINERVA EC Working Group
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1. Users and cultural contents on the web: state of the art

1.1. Users and services in cultural web applications: websites and portals

In keeping with the Lisbon strategy[1] of March 2000 that refers to a "society founded on knowledge", cultural institutions are called on to use the most effective tools of communication: this has led in recent years to a renewed interest towards the user and a consequent reconsideration of services to the public.

In this context, the creation of an interactive environment, specialized in the transmission of information, knowledge and culture, is of fundamental importance. It must have a precise communication of the identity of the institution and its mission and a vocation for high quality: the web site of a cultural institution that offers a well organized and developed architecture of contents within a sphere of strategic marketing and usability, with functional graphics, with simple routes for access to contents and with services that can be personalized, can emblematically represent a strong inclination for innovation and change[2].

To work on the construction of a portal or a classic usable and accessible web site is without a doubt the objective of those who decide to use Internet as their "virtual desk": in the case of cultural institutions, libraries, museums, etc. this objective is accompanied by the realization that it is an institutional source of knowledge and a tool for moving knowledge, so much so that the chance of offering one's user a selection of contents that is clear and efficient becomes a real foremost requirement.

At the present time cultural institutions clash with the need to create websites that are not just a virtual "double" but become a strongly recognizable, identifiable and credible space where the information must be available to all users, including those who are highly skilled in terms of using online services. Constructing the web site of a cultural institution (be it a museum, an archive, an individual library, information centre or network of libraries) thus becomes an operation that must of necessity consider a series of essential factors among which the needs and characteristics of the users and the peculiarities, values and mission of the same institution, so that the sense of identity of the institution, at the cost of losing its credibility, and the effectiveness of the services offered, at the cost of losing the client, are solidly preserved in the sea of the web.

When we speak of converting to digital we don't just refer to the change of the supports that transmit information but to the information dimension and the intrinsic value of that information. The *mission* of a cultural web/portal site (AWC[3]) has become considerably

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[1] "Become an economy based on the most competitive and dynamic knowledge of the world, able to achieve a sustainable economic growth with new and better jobs and a greater social cohesion" Declaration of the European Council of Lisbon, 23rd and 24th March 2000.

[2] Cfr. Minerva, *Handbook for quality in cultural Web sites: improving quality for citizens*, 1.1.1.1 *Identity*, <http://www.minervaeurope.org/publications/qualitycriteria1_2draft/cap1.htm>; Minerva, *Cultural Website Quality Principles*, especially the principle "User-centred": "taking into account the needs of users, ensuring relevance and ease of use through responding to evaluation and feedback", <http://www.minervaeurope.org/publications/tenqualityprinciples.htm>.

[3] "AWCP means every web creation the contents of which regard cultural and scientific patrimony in its various forms and that achieves at least one of the following objectives: effectively represent the identity and activity of a SCP; provide

more complex because the way of organizing knowledge has become more complex, as have the requirements and expectations of users faced with a variegated and transversal information universe.

Knowing users' expectations, trying to satisfy them to then gain their trust, is so to say a "universal mission", that belongs both to the individual cultural institution that decides to design its own site and to more complex bodies that find in the designing of a site not the concretizing of their identity but a vehicle of knowledge and services that forms their reason for existence.

There are however some peculiarities that permit us to deliberately use the term "web site" rather than portal: to say "web site" means to make reference to a cultural subject[4], even a temporary one, that in it not only has the tool for transmitting and organizing knowledge but also the concretization in the web of precise cultural objectives, be they institutional or not.

According to Wikipedia "a **web site** [...] is a collection of web pages, or a hypertextual structure of documents that are accessible with browser through World Wide Web on the Internet".

When, on the other hand, the use of the term "portal" is preferred, it is clear that reference is being made to the concept of "means-service", understood as an added value with respect to those offered by individual sites: that something extra that sets aside the identity of the cultural subjects and deals directly with *customer satisfaction*.

For example, if a museum online is not considered trustworthy and efficient at least as much as it is in reality and if it doesn't preserve its intrinsic values through the site that represents it, there is a risk that it will be confused with other commercial initiatives and an overload of information will be created to the detriment of the user's needs.

Below are the elements that make the structure of a site differ from a portal.

According to the initiative known as the Open Directory Project, to be considered a "**portal**" a site should have the following characteristics:

- Search engine / Directory
- Groupware and Collaboration
- Knowledge management
- Content management
- Work Flow

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cultural and scientific information and distribution; be a tool for formation, education and scientific research. An AWCP can by now be considered one of the most effective tools which an SCP can have for achieving its objectives and satisfying the needs of the greatest number of users. On the one hand it should reflect the identity of the SCP, in addition to its traditional activities to strengthen them and at the same time guarantee the observance of the regulations on technological applications that raise the level of its quality". Cfr. Minerva, Manuale per la qualità dei siti web culturali pubblici http://www.minervaeurope.org/publications/qualitycriteria-i/indice0402/capitoloprimo0402.htm.

[4] According to MINERVA, a Cultural Entity is "An institution, organisation or project of public interest in all sectors (archives, libraries, archaeological, historical-artistic and scientific, architectural, intangible ethnographical and anthropological heritage), whose stated aim is to conserve, organise and give access to culture and cultural heritage. Cultural Entities are repositories for basic materials and half-products".
<http://www.minervaeurope.org/publications/qualitycriteria1_2draft/cap1.htm>.

- Multichannel facilitation
- Personal signature
- Business intelligence and Integration of the applications
- Integration with identity management
- Infrastructural functionality

Within the cultural sphere, and in function of an analysis of the users, the differences between site and portal can be summarized as follows:

1) *Role of the transmitter (site versus portal) as an intrinsic element in the definition of the quality received*: a user who accesses a site such as that of a public library, museum or other cultural institution gives due consideration to the identity of that precise institution even more than to its contents. The perception of the site in question will be determined by the cultural contents that it offers, but also by the history of the institution it represents, by its *mission,* by its functional organization and by its internal and external relations. In this sense the user will probably interact with the contents bearing well in mind the identity of the institution that's providing them, on the contrary to what happens in the case of availing of contents/services from a portal. In fact, in this case the quality perceived will be determined more simply by the level of satisfaction and the identity of the transmitter of the information (the portal) will not influence the perception.

2) *Single subject (site) versus complex organizational model*: while for web sites the organizational model usually foresees one subject responsible for an individual application (even if outsourcing all or part of the editorial and technological services), for portals a more complex model has to be established. In fact, the informative and technological resources at the basis of a portal will certainly be numerous, often decentralized, and it will be essential to establish a management set-up that is efficient and stable over time, that will include control of the ownership of the data so that it is communicated to the users.

3) *Diffusion and organization of knowledge versus search of contents and offer of services:* by the term "site" we usually mean a structured collection of web pages that provides contents and services, even without the addition of evolved tools for navigation and research. The term "portal", on the other hand, refers to an application that mainly offers services for complex interaction with users, usually based on contents present in other cultural web applications that can be chosen by users through a special, more or less advanced, search engine and/or directory. It is precisely for this reason that user profiling becomes essential in function also of the evaluation of the *redemption*[5], a fundamental element in the design and control of the quality of the services. A portal's target does in fact seem even more varied with respect to the target of individual sites and it will be even more necessary to foresee distinct user targets to which to link services *ad hoc* and various routes between pages according to informative needs. Moreover, on the contrary to sites, portals cannot be without offers of customisation and advanced interaction services, based on the registration of identification information of the individual user. However, both cultural portals and sites should operate in the direction of the return of the user and capturing his custom, even if with different levels of complexity.

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[5] By the term "redemption" in marketing we mean an analysis of the results obtained from the issuing of a communication service/project, for example the result of an operation of direct marketing for which the number of messages sent and that of replies obtained is known. In this context the term redemption is used improperly but is considered efficacious for highlighting the absolute importance of analysing the results for planning any service.

4) *A portal as a tool that generates added value for research studies*: a portal inasmuch as it is a regrouping and access gate to various contents and services, with respect to sites that have greater probabilities of modifying even considerably the scale of priorities of users during a research study.

In order to reflect on users of cultural web applications, be they sites or portals, we must begin from the premise that web applications produced and/or promoted by public subjects and/or subjects of public interest, address – by institutional mission – an extremely vast and articulated user basin that cannot be confined to a predefined list. Generally speaking, within the sphere of web applications, a phase preliminary to design is devoted to identifying "user profiles" on the basis of which some crucial aspects for the future project are defined (*infra*, 2.4). Considering that the main goal of a cultural web application is that of spreading culture to all citizens so promoting its growth, some strategies other than just profiling the users must be developed (special navigation routes, suitable language, etc.). These assist in achieving its goals"[6].

The main function that an institution entrusts to a web site is that of spreading its name, its specific mission, informing on its location, its history, the cultural heritage that it preserves, safeguards or develops: a sort of charming and fascinating "shop window". Considering the *mission* and the objectives, the creation of a site (and in the same way of a portal) of a cultural subject[7] must foresee knowledge of the real and potential users, guaranteeing the relevance of answers to questions and ease of use through evaluation and feedback.

The risk of transmitting information with respect to some sections of the user basin that we could define as "weaker" in a way that is not simple must be avoided as we could chance losing them. The users of web sites of cultural institutions are in fact very mixed and this mixture can be a wealth but also a limit, if it is not sufficiently considered.

1.1.1 Libraries

The main objective of a Library institution understood as a transmitter and source of knowledge, aimed at the largest possible user basin, finds a great opportunity in new technologies especially for also reaching less fortunate users.

The intrinsic characteristics of the web encourage libraries to offer digital reference services that can promote the birth and growth of a remote user basin: an invisible target of which it seems to be very difficult to get to know the characteristics for reasons of offering a service aimed at *user satisfaction*. It is a question of understanding and knowing who the remote users are and what type of requests they make: a focus group activity, one of structured interviews as well as a careful analysis of the data offered by the registrations can produce elements for making the right choices.

It is first of all possible to draw up a profile of the user basin divided into levels of expertise and on the basis of this plan web sites that foresee achieving *user satisfaction* of all users by applying the suitable mediation level. For cataloguing we can give the following definitions:

- traditionalist users: users that are deeply bound to traditional research tools who find it difficult to use internet generally,
- beginner users who wish to develop an expertise with regard to new technologies and only rarely use OPACs
- skilled users who normally and preferably use OPACs for overcoming temporal space barriers and make use of a strongly customized service.

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[6] Cfr. http://www.minervaeurope.org/publications/qualitycriteria-i/indice0512/fresadigiorgioportali.html
[7] Cfr. *Infra*, http://www.minervaeurope.org/publications/qualitycriteria-i/indice0402/capitoloterzo0402.htm

1.1.1.1 *Digital libraries*

A digital library is a library in which collections are stored in digital formats (as opposed to print, microform, or other media) and accessible by computers. The digital content is normally accessed remotely via computer networks. A digital library, from the point of view of ICT, is a type of information retrieval system. Librarians consider a digital library as another space of cultural mediation, conversation, similar to a library but in a completely digital environment.

There are three fundamental components in a digital library:

- The *collection*: it is made up of metadata, video and sound documents and includes both a permanent collection and collection that can be accessed in particular times.
- *The access services*: they must provide the possibility for rapidly and easily finding all that one seeks and extending the search to linked documents. The access systems include the user interface, the research and identification systems and the systems for navigation and connection to the information desired. In the first place the users' requirements must be determined through the use of feedback mechanisms.
- *The user*: he acts alone without intermediaries, he has no limits of space and time and can interact with other users through instant replies. Because the user is an active agent, a digital document is dynamic, and has a life cycle in relation to different users at different times.

There are numerous creations at the current time on the Web defined as digital libraries, of which we would like to mention here: thematic or academic repositories accessible on the Web of documents/publications (based for example on the open-source DSpace platform), web applications similar to portals but characterized by a prevalence of contents born and collected within the sphere of the digital library project, collections of publications or multimedia material that was originally in analogical form, made accessible on the web following their digitalization. Lastly we should mention the sections of web sites of libraries, archives, museums and other cultural institutes defined as digital libraries, that offer documentation, publications and multimedia objects.

1.1.2. Museums

A separate reflection is required for the users of online museums especially with regard to the question: does the real user basin coincide with the virtual one? That is to say, is there consequentiality between those who physically visit a museum and those who visit its site or are they two experiences that completely differ from one another? The virtual route is an integration and not a substitution for the real one and it can be used as a preparation for a future visit or as a review of a past experience. How many more visitors would there be to the Louvre or the British Museum if it were possible to visit them free of charge and virtually through the web?

In recent years numerous European museum institutions have provided themselves with a web site: in most cases these are information sites with examples of the patrimony that they offer, often with virtual systems of a ticket office, bookings and a book-shop; more

rarely, considering also the high costs of their creation, they are "virtual representations" of the real museum, which direct its change structure and contents in a more or less sophisticated way from a technological viewpoint. The so-called "virtual museums" that have no real physical institution belong to this second category.

On the contrary to what we have seen for example for library web sites, that of necessity have provision of services as their raison d'être, achieving the substitution of real attendance at the library if the service is well provided, for museums, a web site will never be able to completely replace the enjoyment of a work of art or of a monument, even if it can without a doubt serve to promote knowledge of it.

The reference public of "real" museums does not necessarily coincide with that of virtual museums: if it isn't possible to establish that both user basins, which for convenience we will define as "real" and "virtual", clearly differ by socio-demographic characteristics, it is on the other hand certain that we will find a common element in the fruition. For the real fruition, costs in terms of time and money that influence the decision whether or not to visit the museum must be considered. The online user renounces emotional involvement while privileging personal and free fruition that can be interrupted and then begun again, that does not foresee geographic or temporal limits or access barriers, that overcomes the discriminating problem of the price and that can foresee some additional, more or less interactive, services.

We can summarize by stating that the users of museum web sites can be divided mainly among four profiles:

- those who through consulting the site prepare a real visit
- those who after a real visit to the museum consult the site to evoke or deepen their knowledge of the experience or for entering the museum community
- those who for various reasons require an advanced form of consultation, that goes over and above a visit.
- those who for various reasons require an advanced form of consultation and will never visit the museum.

Within the sphere of user interaction, some examples of *storytelling* are very interesting. These are situations where the institutions, in order to involve users, ask them to send stories relative to personal objects or objects that form part of the collections of the museums that have joined the initiative. These are examples of how the potential of Web 2.0, if properly used by museum institutions, can renew the relationship between museums – understood as centres of scientific research and distribution of cultural production – and their public. Nowadays there are many museums that offer their artistic collections online. Often these are thousands of works that are presented according to descriptive standards that are codified on the basis of an historical-artistic tradition and cataloguing aimed at the conservation and protection of the work. These systems, that are at the basis of the work of a museum curator, generally attract the interest of users and researchers expert in the field.

Good practices
5. Louvre
6. Hermitage - Virtual Academy
7. Every object tells a story

IN DEPTH

The research studies of the CHIN (Canadian Heritage Information Network) are very interesting: since 2001, the year that the Virtual Museum of Canada (VMC) was put online, the needs of the web users in relation to the users of the physical museum institution are being studied. "There is anecdotal evidence to suggest a link between the two, suggesting that on-line content actually increases the interest in visiting a museum. One of the most common uses of museum Web sites is for visitors planning a visit to the physical museum[8]". In 2003 a research study was planned that foresaw two investigations to be carried out in parallel:

- Analysis of the real users of a network of Canadian museums
- Analysis of the users of the Virtual Museum of Canada

The investigation showed that 81% of the visitors to the "real" museums used Internet for work or pleasure and 22% of these had previously visited the web site of the museum in which they were now for better planning their visit. The information is interesting if we consider that to the question "why did you not consult the museum web site before visiting it?", 31% answered that the experience of visiting a museum is spontaneous and free and isn't planned, 28% answered that they already knew the museum very well and 21% got the information necessary through other media.

The research experience highlights the strong cooperation that can exist between museum institutions and the web sites that represent them, for addressing different targets in searching for various types of fruition. The most interesting information that emerged is:

- Users consult the web site before visiting a museum for planning the visit and to have all the practical information necessary for reasons of organization.
- Users consult the web site after having visited a museum to deepen their knowledge about the works and the contents that they found most interesting with an aim that is definitively exploratory and for increasing their knowledge.

Lastly 70% of those who had navigated the web site before the physical visit of the Museum stated that they had visited it for organizational reasons and a good 30% said that they were driven to the physical visit by the virtual approach. 57% of the real visitors of the museum stated that they were encouraged by consultation of the web pages against 43% that stated they were not influenced. Nobody stated that the web visit was counterproductive or that it discouraged them from visiting the Museum.

As regards the visitors' profile, we note some differences: while the real visitors of the museum network in question were composed of 47% men and 53% women, in the case of the web site the percentages are 43% men and 57% women.

As regards ages, as could have been expected, in the case of web users the over 55 group decreases (13% against 20% of real users), while the young and very young visitors increase (23% against the 15% of the 25-34 group and 10% against 8% of the 15-24 group).

As regards visitors over 65 the percentage of the web users falls to 5% against 16% of the real visitors.

<http://www.chin.gc.ca/> <http://www.virtualmuseum.ca/>

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[8] Cfr. http://www.archimuse.com/mw2005/papers/thomas/thomas.html

1.1.3. Archives

In the same way as libraries and museums, archives carry out a role of institution of conservation and development of cultural heritage. Traditionally however there is a different relationship between archives and users, linked to the peculiarity of the archive material and access to it and type of research that it is possible to carry out.

Archives differ from libraries in several ways. Traditionally, archives were defined as:

1) Preserving primary sources of information (typically letters and papers directly produced by an individual or organization) rather than the secondary sources found in a library (books, etc);
2) Having their contents organized in series rather than as individual items. Whereas books in a library are catalogued individually, items in an archive are typically grouped by provenance (the individual or organization who created them) and original order (the order in which the materials were kept by the creator);
3) Having unique contents. Whereas a book may be found in many different libraries, depending on its rarity, the records in an archive are usually one-of-a-kind, and cannot be found or consulted at any other location except at the archive that holds them.

The use of the documents of an archive is typically overseen by specialized personnel and by the consultation of special mediation tools, the *finding aids*, because the archive document, contextualized as it is in an order based on the activity of the producer subjects (bodies, families, people, etc.) cannot be easily found and used without knowing how to move in the archive itself.

This makes a considerable impact on the way in which archives address their users: traditionally the public that uses archives was composed of people who were expert and aware of the peculiarities of archive order, although over time the archive audience has extended to "non specialized" users, guided by practical and administrative interest or indeed by curiosity.

Thanks to the spread of international descriptive standards and the digital treatment of research tools and documents, it is increasingly common to entrust all or part of archive mediation to web interfaces: archives have assumed the character of research space and virtual knowledge, in which the degree of mediation in their use between user and document is reduced.

Within this context, as well as the offer of a guide, tools and digital documents, it is becoming increasingly common to experiment in bringing the world of archives closer to web users: thus the educational value of the contents (the document or the archive series) is combined with an advanced, more user friendly, use of the web environment. Moreover recent tendencies in the so-called participational web – or web 2.0 – are beginning to filter through to the online archive world, enriching the research and use of the documents in systems of folksonomy and social tagging. The adoption of these tools means that archives respond to two requirements: facilitating access, helping users to more easily identify the archive documents that can best satisfy their research requirements, sustain their interpretation, providing additional information with respect to the classic information of the archive description, with more attention to the contents, so that the users can better interpret the documents.

Good practices
8. National Archives of Australia Virtual Room
9. Public Records Office - Just for kids

1.1.4. Temporary events

The web sites of temporary festivals, events and exhibitions first of all carry out a function of advertising "window", promoting a real marketing operation, coordinated with others, with the objective of making the event known and bringing the greatest possible number of people to visit the exhibition. For this reason a section of the web site is often dedicated to operators of the world of information, such as journalists of specialized and generalist magazines and press agencies.

The creation of these "instant Web sites" is often entrusted to professional creators external to the SCP and is activated directly by mixed "consortiums" (SCP, sponsors, etc.) who promote the exhibition.

Special care is given to the organization of basic information regarding the event starting from a programme with complete and updated information on the contents of the exhibition or of the event (subject, curators, promoters, agenda, etc.), on the place where the exhibition is being held (including geographic coordinates, means for getting there, etc.), the opening dates (including possible extensions), times, costs and reductions.

Another important function is that which deals with the services for users both on-line and on-site, such as bookings, on-line ticket offices, guided visits, multimedia, catalogues, e-shop, café, cloakroom, video streaming, photo gallery and press releases.

The topic of the conservation of the contents of the "instant Web sites" is now becoming an objective to be achieved in most cases, through the establishment of an archive that can be consulted following chronological parameters.

Good practices
10. Berlinale - Berlin International Film Festival

1.1.5. Research and education

In the world of internet the centres of research and didactic education are well known and of great interest to those involved in that work, be they students, research scholars, experts or simple net users, searching for information linked to subjects of learning. Public and private bodies often appear integrated into a single subject that provides web services at 360 degrees. Within the public sector there are numerous examples where teaching, scientific research activities and, generally speaking, scientific and technical consultancy activities are carried out by one subject: the centre of excellence. One or more cultural web applications can correspond to the one subject.

Portals and web sites regarding centres of research and formation are characterized especially by a strong demand for information from the users. The definition of identity usually represents an important and essential factor and, apart from the necessary presentation of one's activity, it is likely that there is a considerable request for updated contents, characterized also by a high level of detail and specialization.

The users differ considerably depending on the specific function carried out by the site and therefore depending on the composition of the reference community, but often strategies of on-line communication to the public at large are adopted, especially through the preparation of editorial articles that offer activities and results obtained in a common language.

Good practices
11. Italian Research Portal
12. UK-student.net
13. Christ's College Finchley, UK

1.1.6. Cultural portals

A portal, conceived as an organization for achieving *user satisfaction*, must necessarily acquire tools that are able to satisfy the demands of its user, serve him in such a way that the quality received is high and that this tool allows the user to extend his knowledge, so as to create a strong relationship of fidelity. A portal replaces a site when it adds value to the tools that characterize it, or when it is not translated into a simple sum of its two parts but makes it own and concretizes the concept of synergy: "for the users, a portal is surely only useful if it meets a real need that users have, and in a way with which they are comfortable. As such, the portal needs to do more than any of the current offers being presented. To facilitate this, there is need for continued work on ensuring interoperability of systems[9]".

We must review the idea that metaphorically associates the image of a sea in which it is possible to freely navigate and without any type of limit to the network. Even if the web space appears superficially navigable freely, actually this is formed of elements (sites) which if endowed with a strong personality can guide the user to address him according to established routes. This approach doesn't consider at all limited the freedom of the user but rather it tends to emphasize the extraordinary power that sites can have in directing the exploration of the contents making the exploration more effective. In the light of this premise it seems clear that if the chance of directing the user is an element that is intrinsic to the nature of the classic web site, it is even more so in the case where the portal that literally conceived as *access portal* "by its nature orders, addresses, chooses, organizes and facilitates access to the many resources present chaotically and indifferently in cyberspace, ever fuller of non structured data and information that are therefore difficult to recover and hard to believe reliable"[10].

Starting precisely from the heterogeneity of the users of cultural portals and considering them as a wealth inasmuch as encouragement towards opening, we can try to identify four macro categories of users that the portal must necessarily foresee in what is its mission of satisfaction of the reference target:

- *Specialist/educated users* (research scholars, teachers, etc). This user basin mainly addresses the portal for satisfying a need that is linked to its working and study activity. Acquiring and constantly maintaining efficient the know how, checking information, deepening its knowledge and updating are some of the reasons that drive this user basin to addressing the portal.

- *Scholastic use*: (school and formation generally). Recover, evaluate, choose, organize and use the information which one gradually considers necessary for didactic reasons is the motivation that drives this type of user.

- *Professionals:* professional people and those of the sector. These are users that access the portal as a work and update tool. The services should therefore be open to customization and should allow a rapid and simple monitoring of all the activities carried out. The existence of a virtual press would be a good idea for this type of user.

- *General/curious users*: users that access the portal driven by curiosity and the desire for cultural growth. It is a type of user that sees culture as an accessible, open, participatory and free good. These users access the portal by word of mouth and are driven by different interests. For this type of user we can refer to the concept of attractive quality because, driven by curiosity, they have a scale of priorities that can be quite easily inverted.

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[9] Cfr. Paul Miller, *The concept of the portal*, http://www.ariadne.ac.uk/issue30/portal/.
[10] Cfr. *Fresa-Di giorgio manuale minerva web p.165*

The use of cultural portals is obviously closely dependent on the use of Internet generally and on its "circulation" both in physical terms (spread of broad band) and in cultural terms and those of consumer habit. Internet has gradually become a familiar tool for a great number of people, with an important acceleration especially in this last year. The cultural portal will therefore address not only web users but also those of TV, radio, publications with a viewpoint to integration. With respect to the fruition of cultural portals, those of online libraries and museum institutions, a very interesting example is that of The Norwegian Archive, Library and Museum Authority that contains statistics updated to 2001 on fruition and consumption [11] etc.

In Europe there are some very interesting examples of cultural portals that highlight how profiling users is considered a central theme in the direction of which change should be structured and defined.

Good practices
14. American Memory from the Library of Congress
15. TEL

1.1.7. Cultural tourism

Going back to the type of general/curious users, we must consider the phenomenon of cultural tourism[12]. The idea was born in 1970s and was promoted by institutions such as ICOM (International Council of Museums) and UNESCO and foresees a cultural exchange and the promotion of individual cultures through promoting architectural, landscape, artistic or archaeological patrimony. Tourism is considered a platform of dialogue and intercultural exchange and in that sense the web appears as an extraordinary tool. Considering the profile of the user that uses the web to satisfy a cultural tourism requirement (man/woman/ between 25/45 years, medium-high social class, used to travelling), it would be well to remember some essential characteristics of this type of user basin: availability of infrastructures that make navigation simple and immediate: simple and rapid access to Internet; use of the network for various reasons: e-commerce, information search, entertainment, etc.; this type of user is certainly quite skilled in using the net; middle-high level of study and a fair knowledge of English; in the habit of travelling.

Good practice
16. Spain.Info

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[11] Cfr. www.abm-utvikling.no/publisert/aarbok/bib2002.pdf
[12] Cfr. Ricard Monistrol, Ponencia Seminario Grupo DigiDoc 24/5/07, Proyecto de investigación financiado por el Ministerio de Educación y Ciencia (referencia HUM2004-03162/FILO)

GOOD PRACTICES

1. British Library
<http://www.bl.uk/>

This good practice was chosen as an example of possible access to contents arranged according to the user category.

The BL site favours a simple approach that everyone can use (represented by a search mask in a central position in the home page) but that at the same time allows the user to identify himself in a precise category and therefore to be able to use *ad hoc* contents and services (represented by one of the two navigation menus).

The British Library is the national library of the United Kingdom: it owns more than 13 million monographs and over 920,000 magazines (information updated to June 2007). The BL site contains all the information on the library and its collections, providing digital resources through its integrated Opac and through specific digital library projects: Collect Britain, Online Gallery, Virtual Exhibitions, Learning.

In recent years, the BL too has had to face innovation in terms of Web accessibility and usability and the inevitable consequent need for update; in 2007 the home page was renewed and the site was completely revised with the objective of restructuring the presentation and visualization of the contents.

The central element is the search mask placed at the centre of the page and highlighted by a coloured frame. This mask can be used for searching the global contents that include the Web pages of the BL, the integrated Opac, the periodicals and the digital library (understood as the interface for digital collections), Collect Britain, with all combinations being possible. The main search mask, that makes it possible to search on four completely different sources, presents the results differentiated by source through a colour. This distinction is clear even in the visualization of brief descriptions. This method allows any user to copy the descriptions and be able to easily adapt them for his own work, as they are presented in a way that is suitable for their reuse and quotation.

Next to the simple search mask, we find a link for more advanced research and for the search tips and advanced searching instructions, with detailed explanations on the different sources and the research syntax. If we observe this transformation with a view to profiling users, it appears to be clear that the BL offers itself as a site for everyone, where the logic is the perfect search engine and where there is no need for the user to define himself as belonging to one category rather than another.

At the same time, however, BL offers itself as a web application with an extremely profiled target: in fact through one of the two horizontal menus users can access areas that offer highly specialized services and contents:

- *For higher education* leads to a section that structures services and resources especially for researchers and university libraries
- *For Business* leads to a section dedicated to those who are accessing the portal for work reasons
- *For Librarians* with a series of ad hoc structured services (LIS Service, Bibliographic services, Resources for research, Preservation)
- *Press* that leads to the press and communications service of the BL
- *Job Vacancies* dedicated to job offers
- *Contact us* a directory that links the possible questions and requests regarding services, a questionnaire for feedback and a map for arriving and finding one's way at the BL.

Next to the contents we note a series of services highlighted by the label Services in the navigation menu that offers a vast range of services such as those of alert, bibliographic and document consultations, and indicates the terms of opening of the reading rooms, details on reproduction services, etc. and a very well equipped online shop.

One of the greatest strong points of the BL is certainly the way that the structure and arrangement of the many research and fruition paths tries to offer the most of an endless documentary patrimony. The same abundance is found in the special catalogues that allow a specialist to immediately identify the tool that suits him best.

GOOD PRACTICE

2. New York Public Library
<http://www.nypl.org/>

The important United States library founded in 1895 uses its web site for pursuing its traditional library mission of choosing, collecting, preserving and rendering accessible "knowledge accumulated in the world, without distinction of income, religion, nationality, or other human conditioning". Through the NYPL Collection of Downloadable Media you can directly access a wide range of historical and cultural documents arranged in digital collections that include rare manuscripts, images, audio files and video and e-books.

In June 2006 the library launched a new useful initiative putting on its web site the «e-audio», that is to say, the digital audio versions, of seven hundred volumes chosen to respond to the taste of all types of public.

Digital audio is destined to revolutionize relations between readers and books, putting books on the same level as digital songs, that is to say demolishing what remains of the difference between written and oral culture. To borrow an e-book means linking in to the web site, choosing the title preferred and downloading it on to one's own computer to then open the file and read it like you do with paper books purchased in a bookshop. The digital audio version offers even more: the file that is downloaded free of charge from the site that is accessible around the clock and seven days a week is a recording and can be listened to not only on a portable or fixed computer but also on easy to use latest generation portable high-tech products such as Cd readers and digital music readers such as MP3 Players or the ever more popular Ipod. On the contrary to traditional audio-books, which are found on sale in cassette form and which can only be listened to on awkward recorders, «e-audio» books occupy the space of a digital file and hundreds of them can fit in an Ipod.

It was in the fact the widespread diffusion of MP3 Players and Ipods among the young generation that encouraged the New York Library to organize itself so that it could offer the new type of consultation service and stay abreast of the times. Library users today are more technologically sophisticated than ever before and the aim of this initiative is to allow them to have access to the volumes in the format that they prefer. Hence the possibility of replacing old style reading with listening to files at any time and in any place with the sole limit of having to respect the ritual and irrevocable twenty-one days of time that the New York Library establishes for public lending. Once that date has passed the digital audio file will no longer be accessible because a "secret key" inserted in the book will close it definitively, making it disappear in an instant from lists and micro-screens. All this is guaranteed by the on-line registration of the reader-customers, each one of which has a recognition code of a maximum of ten digits thanks to which he can access a virtual library in which he will find not only literary classics such as *Moby Dick* by Herman Melville and the *Broker* by John Grisham, but also essays by Theodor Adorno, reports from the war against terrorism, updated studies of electronics, mathematics, economics and psychology as also dictionaries and language courses.

As well as the majority of files that are valid for 21 days, the library proposes a special catalogue of "always available e-audio" that contains 100 digital titles with an unlimited lending time.

The NYPL Digital Gallery section of the web site of the New York Public Library provides users with 275,000 low resolution images, with free access for educational, didactic, creative and research reasons. A data base that is being constantly updated, that contains the results of the campaign of digitisation of the collections preserved in the Library of photographs, manuscripts, Japanese prints, images of New York City, maps, rare documents and much more. High definition images for personal and professional use can be obtained through the Photographic Services & Permissions.

GOOD PRACTICE

3. Gallica
<http://gallica.bnf.fr>

Gallica is the digital library of the Bibliothèque Nationale de France (*National Library of France).* Born in 1997, it was one of the first European digital libraries with free access. As regards the user, Gallica appears as a multi-target digital library, open to all types of user, from the most specialized (skilled users, for example, people of the same profession, researchers, students) to the least expert (beginner users, or just readers of the curious).   As regards the first type of user, the traditionalists, the obstacle is not the web's characteristics but the Internet means itself. As well as providing a generalized service, that can be found through the use of a non-specialist terminology, Gallica permits the user to find an identity in a precise category which means acquiring a profile of his own: the Gallica Classique section, for example, seems addressed to a purely scholastic and university public whereas, in offering a whole set of collections on the subject of travelling, the Voyage section is addressed to a public that is passionate about travelling and professionals in the area. A help section provides clarification on navigation, on the modalities of research available and, through a link to the FAQ, a user can forward an e-mail with specific questions that interest him.

GOOD PRACTICE

4. Project Gutenberg
<http://www.gutenberg.org/wiki/Main_Page>

Project Gutenberg is the first and largest single collection of free electronic books, or eBooks. The Mission statement available on the Project wiki says that "the mission of Project Gutenberg is simple: to encourage the creation and distribution of eBooks. This mission is, as much as possible, to encourage all those who are interested in making eBooks and helping to give them away. In fact, Project Gutenberg approves about 99% of all requests from those who would like to make our eBooks and give them away, within their various local copyright limitations." Project Gutenberg is not powered by financial or political power, therefore is powered totally by volunteers. The Project Gutenberg Literary Archive Foundation (PGLAF), a not-for-profit corporation registered in the state of Mississippi, USA, is the corporation that receives and processes donations to Project Gutenberg, and seeks fundraising opportunities.

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Project Gutenberg is a participant in Yahoo!'s Content Acquisition Program. This provides a search of book metadata (author, title, brief description, keywords).

GOOD PRACTICE

5. Louvre
<http://www.louvre.fr>

The Louvre was one of the first museums to present a digital version online.

Through the site we can discover how the museum is organized in terms of opening times, prices and ways of visiting, so satisfying the requirements of a user that intends visiting the "real" museum and using real virtual tours.

There are facilitated accesses for three different categories of visitors through a navigation menu on the home page. Thanks to these it is possible to immediately visualize events and offers chosen on the basis of the user's profile:

Professionnels
Enseignants
Jeunes (- de 26 ans)

There is a series of services available to users. Among these is the *glossaire*, a detailed list of definitions corresponding to terms regarding the works exhibited in the museum; the *agenda,* a selection of appointments not to be missed and a search engine regarding the events that makes it possible to carry out a search according to three modalities :

Period or date: Sélectionnez une période ou une date
Type of event (Visites guides, Ateliers, Musique, Lectures, Cinema, Concerts)
User profile (Tous les publics, adultes, enfants & familles, groupes, handicapés).

The works can also be enjoyed through the aid of an audio-guide (both in English and in French) through a slow sequence that can be blocked to access the description of the work that is of interest.

There are also an online ticket office and a boutique that functions like a real shop in which a constantly updated trolley keeps traces of preferences and purchases.

As well as representing the achievement of the concept of integration and synergy between real and virtual, the example of the Louvre site is interesting because of the way the centrality of user emerges very clearly. With routes for experts, young people, students, teachers and the disabled, the site permits an absolute personalization of the service.

GOOD PRACTICE

6. Hermitage Virtual Academy – Virtual Academy
<www.hermitagemuseum.org>

The Hermitage site was chosen among the good practices because, among its services to the public, it offers the *Virtual academy*, structured in 'monographic' routes that permit the online user of the Hermitage of St Petersburg to contextualize by multimedia means the largest resources present in the museum. There are six introductory routes that go from Egyptian to Roman history, to biblical studies, to the 'time of the knights' and to Rembrandt's painting, and also include the history of the Winter Palace.
A sort of in-depth study of the cultural and social significance of the works that have made the museum world-famous, through a brief introduction that mixes general information and at the same time makes an immediate connection between the masterpieces of the museum and their relative period and culture.
For network users it is a chance to get to know the collections, discovering their charm and meaning in this way. It is an approach that may be linked to a plan to visit St Petersburg, or just a moment of interest in the artistic contents at the centre of the 'routes' and that is limited to exploitation of the network, but it can also be a reflection after having visited the Hermitage.

GOOD PRACTICE

7. Every object tells a story: when the collection is created by the users
<www.everyobject.net>

There is particular interest for the experimental initiative *Every object tells a story* promoted by the Victoria and Albert museum in cooperation with three other British museums (the Tyne & Wear museums, the Birmingham museum and the Brighton & Hove museums).   The initiative is addressed to museum curators and operators. Through the mechanism that is called *storytelling* the addressees are asked to send stories relative to personal objects or objects that belong to the collections of the museums that have joined the initiative.

The mission is immediately clear in the home page: "*Every object tells a story* is a collection of stories about objects written by people like you about objects that interest you. If you are enchanted by your grandfather's watch or if you have a collection of objects that you want to share, send us your stories and discover what others think of them".

It is easy to participate: just indicate an object about which you care particularly through one or two images that can be loaded by web and send the title of the story and the text, or the audio or video, with the story connected with the object. Special attention is paid to security and copyright aspects. The web site is moderated and the contributions sent are checked before being published.

In the section dedicated to the museums, not only the files published by the museum's experts can be consulted, but you can comment the contents or publish a new story linked to that resource.

In this way real collections of objects are formed that are arranged in the site into nine main categories (visual arts, entertainment, fashion, home, infancy, hobbies, nature, beliefs and ideas, science and technology), which contain objects that are in the museums and not in the museums, presented and commented by the users themselves, creators and curators of the collections.

The project applied the potential of *user generated content* (UGC) to create a new way of communicating artistic collections, beginning precisely from the interests and motivations of the public.

GOOD PRACTICE

8. National Archives of Australia – Virtual Room
<http://vrroom.naa.gov.au/>

The project Virtual Reading Room was promoted and developed by the National Archives of Australia and it forms the online environment for consulting sets of digitalized documents from the National Archives of the Australian Government, that are constantly increasing. Virtual Reading Room has a decidedly educational mission, so much so that in 2006 it was awarded a prize as the best site addressed to secondary school classes.
The main objectives of the site are:

- offer an online tool for consulting documents on the most important events and themes of Australian history in the 20th century
- sustain teachers and students in the research and consultation of archival records (digital documents, photographs, maps, posters, films, etc.)

It thus appears clear that the profiles of the users to which the project is addressed are:

- students (of primary and secondary schools)
- teachers and educators

The homepage of the site is very simple and functional and it proposes a structure that is very typical of online databases: on the one hand an "editorial window" for capturing the attention of a curious user, one without a precise navigation objective; on the other an exploratory access to the resources, one that is more suitable to users moved by precise goals.
The *Worth a look* section proposes in its homepage three archival records that are periodically rotated. These are presented as if they were editorial pieces, capable of interesting a user and capturing his attention.
By clicking on one of the titles (for example "Australia – the land of opportunity") a user consults an archival record, provided with images and descriptive elements. Among these, the key words that act as tags, that identify and classify resources by topic. Some records are accompanied by an "About" page that presents in editorial style the content of an digital record and gives its educational value, so encouraging users to consult the resource and providing additional notions, dates and information in order to give "value" to the resource.
Virtual room permits registered users to "save" the record in their personal area, adding notes and comments to it for subsequent consultation.
The *Explore* function offers two methods of access:

- navigation of records by topic
- search of records by topic or year

The navigation of records is based on a faceted classification system, not normally used in the environment of archives, represented by macro-topics with which is expected that the archival heritage will be categorized. The use of "speaking" tags does in fact contribute to making the facets a more intuitive consultation tool for the user, who can gradually streamline his choices until he reaches the consultation that interests him.
The research function permits any user to search for resources simply through key words or the date of the documents. As in the case of navigation, the user can filter records on the basis of the presence or lack thereof of educational contents relative to the archival record.

9. Public Records Office – Just for kids
<http://www.nationalarchives.gov.uk/teachers/kids.htm>

Within the rich and well-organized site of the British Public Records Office, there is an area "Teachers, parents & children", where we find a series of interactive games for young children, "Just for kids – games and activities for children". These resources form part of the larger project "The learning curve", again of the BRO dedicated to the formation and long-life didactics on historical themes, inspired by the motto *bringing history to life*, that, as well as playing resources, offers videos for downloading in podcast, dossiers, routes in photographic documentation, etc.

The page that gives access to the eight different interactive resources of Just for kids acts also as a presentation of the Public Records Office with a simple but effective language.

The first interactive resource in Macromedia Flash, **Tudor Joust** (http://www.tudorbritain.org/joust/), invites the user to : Choose your horse, select your armour, and ride into combat in the joust, permitting the young virtual fighters to choose their armour as a knight and participate in the joust. At every stage of the game a herald can give aid and precious information on the words and historical concepts mentioned (heraldry, armour, horses, functions of a knight, etc.).

The second, **Tudor Hackney virtual world** (http://www.learningcurve.gov.uk/tudorhackney/virtualreality/tudh1.asp), is a three-dimensional virtual reconstruction in SVR of a city, Hackney, at the time of the Tudors, on the basis of historical studies. The site provides rich documentation on the daily life, building techniques, typical places of an English medieval city and their functions.

The third, **The Train** http://www.learningcurve.gov.uk/victorianbritain/happy/activity1.htm, invites the young users to make a virtual train run as far as the sea. The train game, inspired by the classical Trivial Pursuit only proceeds if questions regarding history and custom are answered correctly.

The fourth, **Victorian Crime** http://www.learningcurve.gov.uk/victorianbritain/lawless/activity1_1.htm, invites users to "Patrol the streets as a 'peeler', catch the criminals and decide their punishment". It takes place in the mid 19th century and as well as being an interactive game (that also proceeds by replying to historical questions) it has some records dedicated to original archive documents that regard crime and its suppression in history.

The fifth, Moving Here Multimart http://www.movinghere.org.uk/games/default.htm, invites to "Play a shopping game and win recipes for food from around the world". The scene of the game is the organization of a big party to celebrate two hundred years since the great migration from England and the users are asked to make purchases for carrying out the recipes proposed, that come from all over the world.

The game **Codemaster** http://www.nationalarchives.gov.uk/online/spies/codemaster/default.asp, makes it possible to "Send and receive coded messages with a real cipher used by French spies".

The following resource, Crime and punishment! , is actually composed of two separate games dedicated to crimes, judicial activity and punishment in history. **Who decides the law? It's a Tug of War** (http://www.learningcurve.gov.uk/candp/crime/g04/default.htm) and **Guilty? You be the judge** (http://www.learningcurve.gov.uk/candp/punishment/g06/default.htm), which can only be accessed by replying to specific questions on these topics, which of course can be answered after having read the relative didactic contents and documents.

Finally, even the last resource, **It's World War Two: How would you cope?** , is composed of three different games that take place at the time of the Second World War: **Bomb Shelter** (http://www.learningcurve.gov.uk/homefront/bombing/default.htm), **Shopping in war-time** (http://www.learningcurve.gov.uk/homefront/life/default.htm), **Escape from the Blitz** (http://www.learningcurve.gov.uk/homefront/life/default.htm). Here again, we cannot fail to notice the wealth and effectiveness of presentation of the historical questions, supported by archival documents, as well as the high quality graphics.

GOOD PRACTICE

10. Berlinale – Berlin International Film Festival
<http://www.berlinale.de/en/HomePage.html>

The Berlin International Film Festival is an event with great cosmopolitan participation: every year apart from the general public more than 19,000 professionals from the world of cinema from 120 countries participate. There are also 4,000 accredited journalists and 400 competing films are projected.

The web site has sections dedicated to information, and to services that are useful for the participation of the general public (from the presentation of the programme, the places where the festival will take place, on-line sale of tickets and of objects linked to merchandising) and news and services addressed to the specialized use of journalists, who find directly in the web site all the indications useful for accrediting and carrying out their activity, how to make appointments and arrange photographic shoots.

Among the services on-line it is worth noting 'My Berliner', a personal area that can be accessed through registration, where users can manage a personalized agenda in which to save appointments, information and press releases on the films in competition.

Without registering it is possible to assist in real time in videostreaming in the most important moments of the competition, such as the prize-giving and the press conferences of the producers who took part in the Festival. All the film clips remain accessible in the web site: videos of previous festivals can be consulted in the archive.

It can be consulted both through a timeline that starts from 1951, the first year of the Festival, and through a search engine. Information on the films competing, on the juries, press releases, photos and videos of the Festival can all be sought.

GOOD PRACTICE

11. Italian research Portal
<http://www.ricercaitaliana.it>

The National Portal for Italian Research was created by CINECA (Consorzio interuniversitario italiano (*Italian Interuniversity Consortium*)) and promoted by the Ministry for Public Instruction, Universities and Research (MIUR), research bodies and universities. Through it citizens can contact national public and private, scientific and non-scientific Research and that with immediate applications and also basic research.

The main objective of the portal, destined to citizens and special categories of users, among which students, schools and businesses, is to bring to light big and small research projects and, above all, those who do research in laboratories set up by man and in the great natural laboratories (Space, Earth and Sea), from the infinitely large to the infinitely small.

Another objective is that of offering a tool for linking and coordinating Italian research activities and for contributing to making them known internationally. The research projects are in fact described both in Italian and in English. The portal also addresses businesses, promoting the encounter and exchange of knowledge between the world of research and the entrepreneurial system. This takes place also through tools that promote technological transfer and spin-off activities for spreading in the market knowledge developed within the research structures.

The main actors involved in Italian Research are the researchers, who cooperate in the updating of the portal by sending material and documentation and indications of scientific articles published in national and international specialized magazines.

The portal is managed by an internal editorial staff that presents activities and research studies in a simple and slow language, proposing routes, detailed investigations and interviews to stimulate and assist the user in navigation and reading.

As well as the editorial contribution for identifying the most important topics within the funded projects, techniques of text mining are used to permit the automatic analysis of the data and suitable *information retrieval*. The theme of research is a multidisciplinary subject. A simple reading of the titles by subject does not in fact permit a non-expert editor to reveal the real topics hidden beneath and, above all, to identify the interdisciplinary connections. To do this the entire text is analyzed thanks to the techniques of *text mining*: in particular, the techniques of *clustering* (automatic grouping) act as a valid aid to the editor as they make it possible to identify the main thematic groups. The information available is automatically organized by the system into themes and it is thus possible to identify the most important topics in numeric terms. Connections between topics that are apparently distinct, but have a common terminology, are also highlighted.

The research activities can be consulted in the portal through a ministerial classification by technical-scientific subject, by geographical area and, in some cases, by strategic programmes. A reclassification by class of copyright has also been introduced in order to facilitate the search for contents that interest the business world. Such a classification job, if carried out manually, would require experts of various subjects and a great amount of time. In this case too it was decided to use automatic classifiers for the texts. An automatic classifier learns to recognize, from a group of pre-classified documents, the characteristics of the relevant categories and is able to reclassify any new document in one of the aforesaid categories.

GOOD PRACTICE

12. UK-student.net
<http://www.uk-student.net>

UK-student.net is the main online collection of academic essays for students. UK Student (http://www.uk-student.net). It is a British portal, addressed to the community of students and teachers of universities, that offers online didactic resources, arranged into an *Academic Directory*, useful for university students in preparing essays and studies. The directory offers the greatest collection of articles written by British and non-British scholars, specifically for students, a precious database the object of which is to give a valid contribution for avoiding the dangers of plagiarism, within the research environment.

The debate on plagiarism is in fact an important topic in universities and academic circles. According to a "Times" survey, (http://www.timesonline.co.uk/tol/life_and_style/education/article630886.ece) a third of university students admit to having unlawfully "copied" ideas from books or Internet and one out of ten stated that they had searched for material for research studies online.

The articles presented in the Academic Directory have been sent directly by scholars of international fame, with full consent of the copyright holder. Students can study and quote the articles in their graduation theses, certain of the authenticity of the source, rather than opting for the so deplored method of "cut and paste" whereby fragments of works found on internet are copied and inserted in a new work, which is then presented as an original essay of a student.

A section is dedicated to guidelines and tools on writing style and on how to prepare an abstract, an essay, a thesis or a *curriculum vitae*.

The users of the portal can also comment on all the articles and share them thanks to *social networking* tools.

The portal's functions are also important for academic teachers, who can find out through it about the activities and results of researches of their colleagues. They also gain an important reference source that can help them save time in their didactic activity giving students as a reference the page of a particular directory containing their article, rather than having to write a similar article again.

GOOD PRACTICE

13. Christ's College Finchley, UK
<http://ccflearning.com/school/>

Christ's College Finchley is a secondary school situated in the East Finchley area of London. It is a boys' school for ages 11 years onwards. The sixth form also allows entrance of girls to the extent of 25% of the total students. At the moment the school has about 1000 students.

The web site of the Institute provides numerous contents and services for the students, professors and parents of the students.

The central part of the site has a frame in which information belonging to various thematic areas is noted.

The subjects are listed in the main menu situated on the left of the home page, where the user can choose the section desired from: news, news regarding the college, direction, curriculum, sixth form, life inside the institute, photographs and examinations.

The site also offers the chance for registering for a newsletter and a mailing list.

From the main menu you can access two special services provided by the College: The Virtual Learning Environment (VLE) and the ccfplus.com, accessible by clicking on the item BLOG. The VLE (ccflearning.com) is a software that was developed for optimizing the possibility of students' learning through a group of on-line tools that are useful for assessment and communication between students and professors. Other examples of tools offered by the VLE are: questionnaires, organization of groups of students, uploading of contents and, recently, services such as wikis, blogs and RSS have been added.

The entire project is aimed at improving students' communication and learning.

In the left-hand column of the VLE of Christ's College Finchley there is a list of school subjects: by clicking and entering one of the courses, if you are registered with the site, you can access material on the subject and information on the teachers, their profile and the post that they have inserted in the site.

The central area of the page has a blog where comments can be added.

You can visualize the name of the registered users currently on-line; by clicking on the user name you can visualize his details.

There is also a space for news taken from the BBC and a section where each week the meaning of a word is explained.

The extension and development of ccflearning.com (VLE) is ccfplus.com.

By accessing iTunes store you can download free of charge mp3 and mp4 files of a didactic nature; there are also blogs in this area on various subjects.

By clicking on the title of a topic you can see a brief abstract and the various files attached (text files, mp3 or mp4) or add a comment.

You can choose the desired topic directly from a list that is available in the home page of the service or by carrying out a free text research..

From this service you can access a page that organically subdivides the material available on-line from:

- The school news site
- The school VLE site
- The school audio + video site
- The school photo site.

14. American Memory of the Library of Congress
<http://memory.loc.gov/ammem/index.html>

The American Memory project, supervised by the prestigious Library of Congress, was born in 1990 following a impressive campaign for digitalizing the book and audiovisual patrimony of the Library of Congress. The aim was to construct a "national memory" in digital form.

Thanks to this pilot experience, American Memory became the most advanced project within the sphere of the "National Digital Library Program" sustained by the Library of Congress, with the objective of providing free and open access to online consultation of the entire digitalized patrimony of the collections of the Library of Congress and of other public and private institutions.

As a testimony of the "American experience", the patrimony digitalized includes written and spoken documents, sound recordings, photographs, illustrations, prints, films, geographical maps and music sheets.

With specifically educational and information objectives, the web application is addressed to a public that is mainly composed of:

- Teachers
- Students and researchers
- Non-specialized but curious users.

In order to satisfy the requirements of all three targets, the homepage offers three modalities for navigation and consultation of the resources:

- The section "Browse collections by topics" allows the three types of user to consult the resources through a faceted navigation system which is the most effective and powerful of all organization systems in the web today.
- The section "Collection Highlights" informs the user about the presence of collections of digital resources of particular interest, so offering real "narrative" navigation routes. This consultation channel, obviously controlled by a central editorial office, carries out the difficult but essential role of assisting a curious, non-specialized, user who doesn't have a specific reason for research or precise consultation objectives.
- The section "Teachers" offers a special access channel for consultation of resources, chosen and proposed according to "the teacher's point of view". From a patrimony of over seven million digital documents, this section extracts and proposes material that is useful for their lessons.

Faceted consultation is especially useful, because the user can consult the resources through progressive refinements on the "tags" of a same topic. In the site the facets all use a simple and immediate language. Faceted navigation makes it possible to adapt to the mental parameters of the user. As well as consulting the resources by topic, the user can navigate by historical period, type of resource and place. It is a method for organizing the consultation interface according to the (mental) model of "Who, What, Where and When".

The most "editorial" section of the site, Collection Highlights, managed by an editorial board, proposes access to two collections by periodic rotation: the aim is to promote access and consultation to collections and resources that would otherwise be submersed in the vast digitalized patrimony.

To propose an editorial type of channel for consulting resources forms part of a recent communication strategy known as "user centred", especially in the case of digital libraries: the quantity of information is so large that a user who is curious, but who is not used to using faceted navigation or is frightened by the results of a simple research, could be dissuaded from pursuing navigation. The narrative dimension inside library sites becomes a choice of design – of the interface, of the architecture and of the contents – to capture the needs of curious but not specialized users.

If one of the main objectives of the American Memory project is to facilitate the discovery and consultation of everything that has formed the "American experience", it is only natural to assist schools, offering teachers tools and material useful for their class work.

The "Teachers" section offers a series of functions and sub-sections, aimed at covering the greatest didactic requirements of scholastic mediators: the didactic routes, prepared by the teachers themselves, on topics such as civil history and American culture are made available for the community. The educational games and play activities are based on the digital resources of American Memory and stimulate the curiosity and learning of students. The links between collections are an effective subsection for helping teachers to stimulate the critical spirit of their students, by comparing digitalized materials.

The community and professional development areas are useful for teachers for sharing and generally providing other material, such as thematic bibliographies or for exchanging information by chat.

"Ask a librarian" is the usual on line service for helping users in searching bibliographic resources. Through the use of tools such as form of interrogation or of synchronized conversation such as chat, a remote user can quickly receive assistance.

We would like to point out lastly the very effective system of Help on line, which can be reached both from the primary navigation menu and from within the faceted navigation. The style of navigation is clear and effective and it offers varies help methods according to what is needed and navigation context: help on how to use the multimedia contents, help on how to use faceted navigation of resources or the usual FAQ. The "Contact" section offers users the chance to interact with the personnel of the Library of Congress both for asking for information and for indicating comments or technical, typographical or linguistic errors.

GOOD PRACTICE

15. TEL – The European Library
<http://www.theeuropeanlibrary.org>

The TEL portal gives integrated access to about 150 million documents (bibliographical news and digital documents) of 23 national European libraries, thus aiming at developing their knowledge, information and cultural patrimony. The initiative promotes access to information that is open to absolutely everyone and the development of the diversity of European cultural heritage.

The presentation of the contents reflects these values: all the research solutions tend to emphasize the cooperative and "national" nature and one can easily identify what resources are made available by each library, OPAC and special collections. The different languages tend to highlight the desire to unify, while respecting each country's identity. The home page intuitively invites a simple research with a "Google-type" mask, with the possibility to refine it according to very specific documentary categories: Default list of collections, Maps & atlases, Cartography, Photographs, Posters and images, Portraits, etc. The presentation of the contents tries to be simple and transparent, through a serious and friendly interface, essential graphics and a generous size of character. A lot of space is devoted to the Organisation section, that gives all useful information on the initiative and allows interaction with the users. This interaction is suggested by a range of services, among which a user guide for users using the portal for the first time; very detailed FAQ; technical information on the browsers and operational systems supported; access to the bi-monthly newsletter including back issues; a media service for communiqués and press releases. Through non-obligatory registration, users can save their research studies to continue them in future sessions. Among the various initiatives to be noted is the Jobs and Careers section that offers all information on the job offers at the TEL for the Dutch office. The Contact &Feedback section is a page dedicated to the staff with photos and profiles that the users can contact for questions or details according to the profile that they prefer. In this case it should be noted that the portal addresses all users clarifying research for all categories with the modest use of specialist terminology. The registration and newsletter service, the beginner user guide, the help sections available at any stage of the research are just some elements that highlight how the portal aims at the centrality of the user.

GOOD PRACTICE

16. Spain.Info
http://www.spain.info

A portal that has successfully created functions linked to cultural tourism is Spain.Info, the official portal for tourism in Spain (Segitur) that offers a rich database, in seven languages, on museums, on special tourist sites that can be accessed through a simple or advanced form of research, an interactive map, etc.

Through a navigation menu on the right, a central part dedicated to news and the forms of research on the left the user manages to immediately identify the portal's message and satisfy his requirements.

The simple research form used by a user who is less aware of his requirements is flanked by another form that identifies and organizes the resources by independent community, province and city. When none of these possibilities is of interest to the user, he can act through the interactive map.

The portal also provides a series of additional services that make all the difference in terms of quality, highlighted by a different colour in the navigation menu placed on the left:

- User registration: through registration a user can receive the newsletter and use the traveller's journal, a journal in which to create and keep track of his journey, with stops, routes, etc.
- Newsletter: through the newsletter a user can receive by mail news and updates that can even be personalized by profile/requirements
- The traveller's journal
- Weather
- Roads and routes
- Virtual postcards

1.2. Current trends in web services: Web 2.0-3.0

This chapter describes the rich quality of content that cultural institutions have already brought to the web across what we can now call a Web 1.0 platform. As cultural institutions developed online, information was traditionally distributed through the broadcast model, where information was authored and published by the institutions themselves, and channelled to many users across the web. Over the last couple of years the web has become far more participatory, and there are now many more opportunities for individuals, in additional to institutions, to make their own voices heard. Much has been written about the participatory nature of Web 2.0, as it has gradually evolved since the early 00's and during this period, many innovative projects emerged from cultural institutions – even before the term Web 2.0 was coined[13]. The appearance of what we now call Web 2.0 brought with it an exponential growth of blogs, wikis, and wiki-like tools that enable you and me, to not only read other's content, but to be able to generate and publish our own micro-data, on just about anything we may wish to write about under the sun. Clearly, never before has there been so much micro-content publicly available in the public sphere – but, then again, never has there been a dissemination mechanism, like the Internet that could acquire such vast qualities of data, and maintain them a public vessel. Rather than simply describing a new set of standards or services, the social tools, and the authoring interfaces that characterise Web 2.0 in fact signify a paradigm shift in the ways we use the Internet. The emerging model can now be understood as a multi-channel model, where the web now acts as a conduit, running through distributed networks that makes connections not only from cultural institutions and their users, but also from node to node; from individual to individual.

With the explosion of so much community-based activity taking place on Web 2.0 interfaces, it is time to examine the role of the cultural institution in an information society, and more explicitly, the changing face of the institutions as they present, and represent the institution online. Some even say that we are moving towards Web 3.0; bringing with it even more challenges for the cultural institution community. This is currently described as a truly semantic web; one that grants deep access to information to the web, and opens up portals to new kinds of synthetic worlds. These persistent worlds are immersive spaces which invite people – or at least their avatars – to move into and around buildings and across landscapes; all meticulously modelled in 3D. These sites do not follow the web page metaphor, rather are ordered as connected islands, where everyone can build their own home, sell their own wares in their very own shop, even construct an entire library or museum for other avatars; all built with the tools provided for free in the in-world environment.

This chapter provides a brief overview of the different kinds of Web 2.0 and Web 3.0 experiences, and will describe what it is about them that separate them from Web 1.0 environments (as seen in early 2008). The discussion is framed within the context of the cultural institution **(see 2.1)**, and it will explore the ways in which cultural institutions are mobilised online, and in-world as they make the move from broadcast, to distributive model. Through different kinds of Web 2.0 services, we are now able to publish our own bookmarks, upload our favourite images, share our preferred music and video collections – even open up our online diaries – allowing others to sift, search and access our micro-content, while, at the same time we may access theirs. Web 2.0 now offers many different kinds of opportunities for *the folk* (you and me), to forge new horizontal connections with like minded colleagues, friends, fans and business partners. Once connected, we can now make our voice heard in new, creative ways and, through innovative collaborations we are

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[13] Hazan, Weaving Community Webs: A Position Paper, DigiCULT Thematic Issue 5: Virtual Communities and Collaboration ..., http://www.digicult.info/downloads/digicult_thematicissue5_january_2004.pdf

now able to co-author new kinds of activities and spaces that are opening up for the cultural institutions and their public. Against this backdrop we are already witnessing an explosion of cultural institutions who have already staked their claim in their own corner of a persistent world, and, in doing so, have began to reinvent themselves, as they take on a [Second] Life of their own.

This chapter discusses the different categories of Web 2.0-3.0 experiences:

Rather than offering an exhaustive report on the technological solutions of Web 2.0 platforms, this discussion focuses on the experience from the perspective of the user, and the ecologies of participation. This chapter explores what it means to be an active participant in the authorship and dissemination of personalised micro-content in a relationship with the cultural institution, an institution that has mostly acted – until recently – from within the traditional broadcast model approach.

1.2.1. Blogs and wikis

The best known of the Web 2.0 platforms is the **blog (see 2.2.4 and 2.5.1.4)**. Published as an online form of diary, blogs are characterised by their chronological ordering of information. Content is time-stamped, and, because they act outside of the framework of traditional media outlets, a blog tends to offer an alternate voice to the mainstream reporting of events. There are many good examples of museum blogs, and a useful survey on the take up of blogs in the museum was completed in 2006 by Jim Spadaccini from Ideum[14]. Museums, libraries and archives are beginning to find that blogging can be useful when thoughtfully incorporated and a useful resource that documents the latest trends in cultural institutions and emerging technologies, such as institutional blogs can be found at the Archives & Museum Informatics Conference, Museums and the Web conferences[15], the IFLA World Library and Information Congress[16], and similar annual meetings of professionals dedicated to the latest trends in the field.

Appearing around the same time as blogging began to become popular is the **Wiki (see 2.2.5)**; an abbreviation of the internationally renowned *Wikipedia* phenomenon that has all but swept traditional encyclopaedias under the carpet. According to the definition posted on their site: *Wikipedia* (pronounced /'wi-ki-pi-di / or /'w ki-pi-di /) is a multilingual, web-based, free content encyclopaedia project. The name Wikipedia is a portmanteau of the words wiki (a type of collaborative website) and encyclopaedia. Wikipedia's articles provide links to guide the user to related pages with additional information[17].

The key to their success lies in the collaborative nature of the user-generated content; the wisdom of the masses that is authored by those who know enough about, or who care enough about a particular subject to actually sit down to create or edit the content. In the first month of 2008, according the Wikipedia.org, there were more than 75,000 active contributors working on some 9,000,000 articles in more than 250 languages. Founded initially in 2001 as *Nupedia*, and developed through an elaborate system of peer editing, *Wikipedia* has since spawned dozens of spin-offs, who use the MediaWiki software, the open-source program that takes up the wiki architecture to facilitate thousands of web forums and knowledge bases. *Wikipedia* is a registered trademark of the non-profit Wikimedia Foundation, and is covered by the GNU Free Documentation License (GFDL). For the full history see their official site[18].

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[14] Museums: 2.0: A Survey of Museum Blogs & Community Sites
http://www.ideum.com/blog/2006/03/06/a-survey-of-museum-blogs-community-sites
[15] Museums and the Web, www.archimuse.com/conferences/mw.html
[16] IFLA World Library and Information Congress http://www.ifla.org/IV/index.htm
[17] <Wikipedia, http://en.wikipedia.org>.
[18] The history of Wikipedia, http://en.wikipedia.org/wiki/History_of_Wikipedia

Museums on Wikipedia

For cultural institutions that depend on the trust that they have traditionally received from their public, many institutions may not always find the *Wikipedia* editorials to their liking. As the ultimate voice of authority of their own institution, they may not actually agree with a commentary from the public that refers to the collections that are held in their stewardship. It then becomes up to the institution to either intervene, or correct the mistakes often made – in good faith – or to turn a blind eye and leave the spontaneous, and constant editorial progressions up the public. Without repeating any specific editorial mistakes found in the numerous institutional pages, and crystallising them here in print media, a simple review of a handful of cultural institution sites seem to reflect that they have not been written at a standard that might be expected of such an institution.

When content from the trusted and true institutions – such as libraries, museums, and archives came to our notice via the traditional print and electronic broadcast industries and Web 1.0 interfaces, there always was a sense that this kind of content could be relied on with impunity. The knowledge that now emerges from open Wikis; the pages that have been generated through collaborative processes may now, not be perceived quite as worthy of the same trust. Until these kinds of websites and portals aspire to those same measures of integrity, and professional standards that drive the internationally recognised institutions, only then will sites, like *Wikipedia* receive the same measures of trust as becomes the cultural institution. On the other hand, a cultural institution, or organisation may well celebrate the fact that somewhere, out there in the world, there are people who care enough about a particular institution to take considerate time to describe an archive's holdings, a library's collection, or a museum's exhibition.

Some institutions have taken a different approach and have invited their public to make active contributions in their own, institutional Wiki. While the strength of the UK based National Archives website has traditionally enabled online users to download their own histories from an authoritative source, here was the perfect opportunity for those very same users to upload their own stories into a public space that is respected by national, and international communities. The impressive Wiki interface, *Your archives* is open to all, and it is reassuring to see how its complexity was made simple by the intuitive interface. Even though, at the time of writing the portal still seems to be very much an evolving space, there is clearly an exciting potential for remote users to make their own contributions and to be able to publish them online. This can be seen as a courageous stance as they, themselves point out how (according to the website) how «new resources such as *Your archives* are challenging the traditional methods of authorship» and point out

how «they allow for information sharing on a scale unheard of before and facilitate the ´democratisation´ of history>>[19].
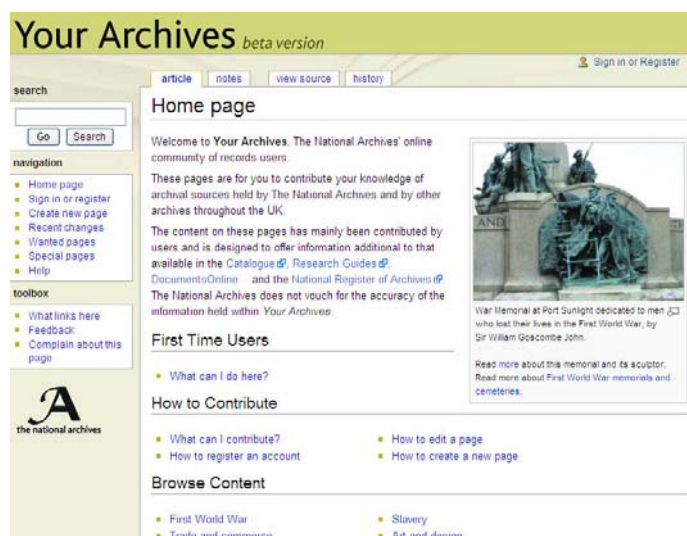
***YourArchives*, The National Archives Online Community of Record Users**

The engagement with the public through a Wiki approach assures that material is intuitively harvested, professionally structured, and fully accessible. After registering, readers/authors may then go on to create, edit and publish pages directly from the web browser. According to the portal *Your archives* builds on content already available in the Catalogue, Research Guides, DocumentsOnline and the National Register of Archives. The Catalogue has a link on each page to *Your archives*, encouraging users to find out more about subjects that interest them, and to go on to contribute their own knowledge concerning a particular record. Subjects have already been identified by the national Archive as worthy of an article in their own right, and readers are encouraged to click on the relevant link, and to upload their own material. This then insures that content/knowledge/stories are directly entered into a highly structured format; which not only extends the professionally entered archived resources, but also acts to enhance, and amplify the archive in ways that inspires, trust, and confidence in the institution that hosts the portal.

Your archives is swiftly becoming a user friendly webspace. It welcomes its readers to make their own contributions by urging first time users to come on board, encouraging them make their own contribution for others to read with the friendly invitation: «You may wish to start by making a minor change, such as correcting the spelling of a word. Go ahead and try - you'll soon see how easy it is. http://yourarchives.nationalarchives.gov.uk».

1.2.2. Content in a pod
With all the range of potential platforms now available over Web 2.0, part of the confusion for authors of cultural institutions lies in deciding which platform works best for their institution. Once an institutions has worked out where best to apply their resources there is a wealth of platforms to choose from. One way for an institution to forge a direct and long-term relationship with their public is by offering them syndicated, subscription-based content that comes to them in high quality, bite-sized chunks. Like peas in a pod, these audio or video clips are especially crafted as a series of mini clips, primed for viewing on a small screen on hand-held devices **(see 2.5.6.1)**; iPhones, personal digital assistant (PDA's),

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[19] Your Archives, <http://yourarchives.nationalarchives.gov.uk>.

or mobile phones. The file is then downloaded, or streamed automatically via an aggregator, or feed reader capable using feed formats such as RSS[20] **(see 3.4)** or Atom[21] and cast, (podcast, as apposed to broadcast) directly to the user.

An impressive example of these new direct links is the SFMOMA Artcasts program[22] when, during 2007, the museum become the recipient of many, well-earned awards[23]. According to their website 'Artcasts paint vivid audio portraits that extend the SFMOMA galleries beyond their physical space in San Francisco to art fans everywhere. Download the latest Artcast and hear Olafur Eliasson and visitors respond to his mind-expanding exhibition *Take your time*'.

SFMOMA Artcasts

An excellent resource for those who might like to learn more about Podcasting in museums may read the article by the UK-Based *24HourMuseum*[24] and to access the Wikipedia list of Libraries who podcast;[25] and an excellent resource for the library community. Not only are cultural institutions making excellent use of ths platform, but so too are the traditional media organisations, such as the BBC[26], print publications such as InfoWorld[27] and of course, the thousands of bloggers who find that their text-based diary is simply not compelling enough.

1.2.3 Micro-content: sharing, book marking and tagging
Moving away from user-generated, collaborative knowledge, this section describes those Web 2.0 sites that can be described as micro-content sharing sites **(see 2.5.6.3)**. These are the sites that host, aggregate, and publish personal bookmarks; *Delicious* (http://del.icio.us), *Magnolia* (ma.gnolia.com), *RawSugar* (http://rawsugar.com), *Library Thing* (www.librarything.com) or focus on one particular kind of medium such as the photo-sharing sites; the yahoo owned site *Flickr* (www.flickr.com), and the *Google* owned, video sharing *YouTube* (www.youtube.com).

What is common to all these kinds of Web 2.0 sites is the principal of tagging; the simple use of personal 'hook', or metadata mark-up that is applied to an object, whether it is a

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20 RSS (Really Simple Syndication), http://en.wikipedia.org/wiki/RSS_(file_format)

21 ATOM (Atom Syndication Format), http://en.wikipedia.org/wiki/Atom_%28standard%29

22 SFMOMA Artcasts Program, http://www.sfmoma.org/education/edu_podcasts.html

23 SFMOMA Artcasts awards, the 2007 Museums and the Web Best of the Web Award in the "Best Innovative or Experimental Application" category; and the 2006 American Association of Museums Muse Award in the "Two-Way Communication"

24 Article on podcasting in the museum on the UK-Based 24 HourMuseum, http://www.24hourmuseum.org.uk/nwh/ART37770.html

25 Libraries who podcast, http://www.libsuccess.org/index.php?title=Podcasting

26 BBC Podcasts, http://www.bbc.co.uk/radio/podcasts/docarchive/

27 InfrWorld Posdcast, http://weblog.infoworld.com/daily/archives/podcast/archive.html

bookmark, photo, or video. Tags may be used for sorting content into simple thematic categories, and, once a critical mass has been reached, these same tags then can also work as aggregators, or groups of objects to denote similar thematic interest.

Tags often appear in clouds, where the terms become a simple way of displaying the user generated tags in a highly visual form. Terms are typically listed in alphabetic order, and are weighted according to the frequency they are used in a closed environment. If they represent your own list of bookmarks from your *del.icio.us* page, for example, they will enable you to see how often you have used a specific term. The term that has been used more frequently will appear in a larger, or bolder font, and will stand out against the other terms, less frequently used, which will then recede into the background with a lighter, or smaller font.
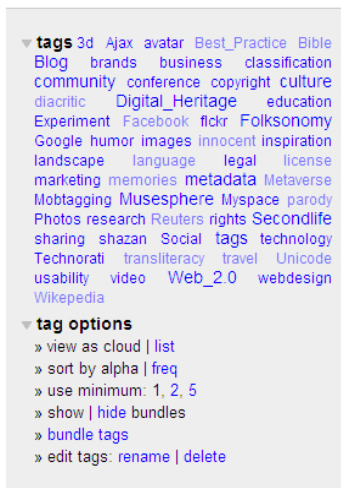
Example of tagcloud

A further advantage of displaying of your own tags in this way is the ability to share tags with others. As individual bookmarks are listed, they are described by a colour-coded reference that shows how many other people have tagged the same bookmark. This is a great way of tracking hot subjects and popular web sites where you may be surprised sometimes to see that so many other people found a particular site to be of interest to them.

Other people's tags may also be sorted by bundles (aggregations), and by most frequently used and if you are feeling adventurous, or simply curious, you can also go back to trace what other web pages have been described in the same terms as you by following a breadcrumb trail to back to other sites that use the same tags. In addition, by exploring who else has been using your kinds of tags, you can easily discover how like-minded people are saving, and describing their own web pages and to go on to track a specific person's bookmarks. In this way you can stay in touch with their travels through the web, stepping into their 'footprints' as they bookmark along their webway.

Viewing the value of bookmarks weighted by number and colour code

The disadvantages of this method result from the highly subjective nature of personal descriptions. Even within the same language, the tags I find very useful maybe totally useless for you because of the highly subjective nature of online tagging. This is clearly

due to the fact that we do not really share the same vocabulary and, my terms are so idiosyncratic, that you probably wouldn't even understand why I described an image, or an article in the way that I have. In fact, the very premise of a controlled vocabulary; a shared understanding of a professional term, standard spelling, even conforming to the way we use hyphens (or not), the inferred meaning by an abbreviated term, etc. may all be so uncontrolled in the tags we encounter in these sites, that, in reality, my own tags may become totally meaningless to you. Refinements are already taking place, and, as these systems evolve, the commonality, and share-ability of tags may well become more efficient.

In a compelling article on how these kinds of systems can actually work[28] Marieke Guy and Emma Tonkin draw on anecdotal evidence to support the view that there is a natural tendency towards the convergence of tags, and that there are already strategies that may facilitate this development. They cite Stephen Pinker in his *The Language Instinct* to discuss 'pidgin' (a combination of words from other languages absent of any stable grammatical structure) and 'creole' (a combination of words from other languages with a unique grammar imposed) language. Pinker suggests that 'creole' will come from 'pidgin' if people are given the chance to speak to others, and Guy and Tonkin argue that similarly social tagging services create the kinds of environments in which metadata vocabularies could easily evolve in a natural way.

Just as a tagging a photo aims at describing the image for others as well as for yourself, tags that have been added by the folk in the context of the cultural institution could be just as useful to describe the object, a book or an artwork in a collection. In this case the term that has come into use is *folksonomy* and is generally attributed to Thomas Vander Wal, who not only uses the term to describe a cultural institution's collection, but to describe the process whereby, in this case, the object has been described by 'the folk'[29].

Several examples of these kinds of taxonomic experiments have been implemented in cultural institutions. One of the first examples was the Steve Museum project[30].
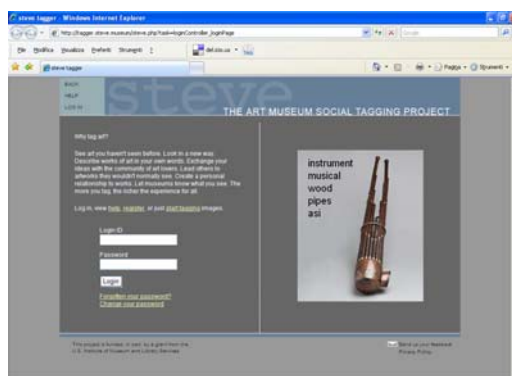
According to Wyman, B., *et al.*, <<Tagging lets us temper our authored voice and create an additional means of access to art in the public's voice. For museums, including these alternative perspectives signals an important shift to a greater awareness of our place in a diverse community, and the assertion of a goal to promote social engagement with our audiences>> (2006).

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[28] Folksonomies: Tidying up Tags?, <http://www.dlib.org/dlib/january06/guy/01guy.html>.
[29] <<Folksonomy is the result of personal free tagging of information and objects (anything with a URL) for one's own retrieval. The tagging is done in a social environment (usually shared and open to others). Folksonomy is created from the act of tagging by the person consuming the information. The value in this external tagging is derived from people using their own vocabulary and adding explicit meaning, which may come from inferred understanding of the information/object. People are not so much categorizing, as providing a means to connect items (placing hooks) to provide their meaning in their own understanding.>>, Thomas Vander Wal, 2004[29].
[30] Steve Museum, www.steve.museum

In spite of this ambitious, yet admirable declaration, taking into account the different ways people tend to describe an object, website or photo, it does raise many questions as to how any individual, located bellow the radar of the museum, could possibly contribute a meaningful interpretation of a museum object, other than with his, or with her idiosyncratic description of a specific art work. One way in which this may be resolved could be in the context of emergent vocabularies, as Guy and Tonkin suggest, and, as tags become more popular in the context of the museum, and consequently more meaningful, they may well prove to become attractive.

There are now many sites where the folk can contribute their own descriptions. The Powerhouse Museum, in Sydney has introduced the folksonomic strategies[31] to describe their collections in additional to museum's traditional search mechanisms. This would be an excellent starting point for those interested in folksonomies in the cultural institution to see how this process works.
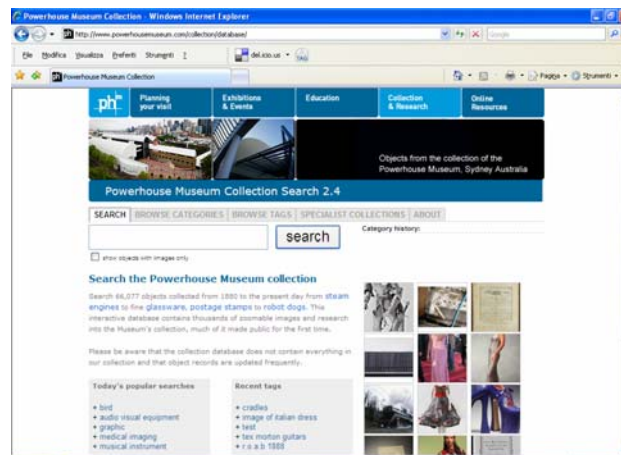
Powerhouse Museum, Sydney, Tagging online

Managing vast quantities of micro-content uploaded by the public, with almost no taxonomic structure however, is tantamount to dropping thousands of family photos ripped out of their albums into a huge lake, and trying to fish out a specific family member, or a family event. In be able to maintain some sort of taxonomic order over their massive image bank,

Google is currently encouraging users to add their own tags to content[32]. This takes place through an online game, that encourages users to "play" with an unseen partner to find similar labels to 10 images that are randomly uploaded for both "labellers" to see at the same time. Participants are motivated by a point system, where the number of points depends on how specific the label is. According to *Google*, you will receive more points for matches with more descriptive labels. In the image of a flying bird used as an example, more points are given to the labels that are qualitatively more expressive. With the term 'sky' you receive 50 points, for 'bird' 60 points, 'soaring' gets you 120 points, while using the term 'frigate bird' gets you an impressive 150 points. The *Google Image Labeller* was originally developed by Luis von Ahn as the *ESP Game*, and was licensed by him to *Google*.

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[31] Powerhouse Museum, Sydney, <http://www.powerhousemuseum.com/collection/database>.
[32] Google's Imager, www.images.google.com/imagelabeler
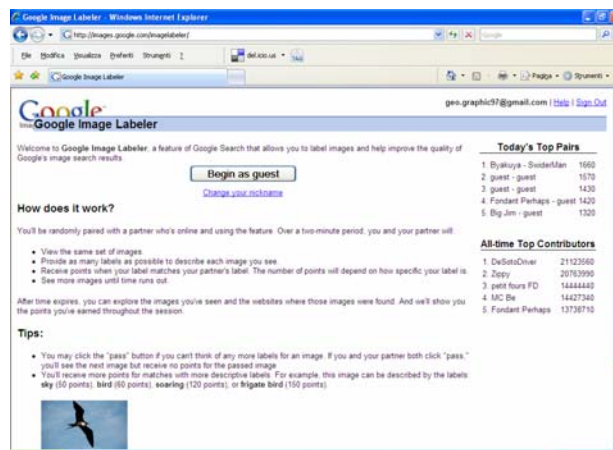
Theses kinds of online collaborations that take advantage of *the folk* in this way could be seen as highly exploitive. The collective knowledge that can be harvested through these kinds of voluntary collaborations can be, in fact be highly lucrative, and while many people are happy to contribute altruistically, they may not feel quite so dedicated if they realise that their input, in fact, may result in someone else's financial gain. This has, in fact been identified as phenomena in its own right, and, has become so much of an issue that there is actually a term for it – *crowdsourcing* – used by Jeff Howe in a *Wired* Magazine article in June 2006[33].

Cultural institutions are acting within an internationally recognized, non-profit framework, and similar efforts – in this case as the public generation of folksonomies – tends to be seen as well intended collaborative effort, by the folk, for the folk.

These kinds of developments are taking place across the whole Web 2.0 map, and, where cultural institutions are concerned, what was previously clearly marked as "institutional territory" now has librarians and curators peeking gingerly over the fence to see what they can "bring home". One example of this kind of Web 2.0 synergy is the *Yahoo* owned *Flickr*, collaboration with the Library of Congress, aimed to <<facilitate giving people a voice in describing the content of a publicly-held photography collection>>. The folk, in this case, are invited to help describe photographs in the Library of Congress' collection on *Flickr*, by adding tags, or leaving comments on two collections: *1930s-40s in colour* and to *News in the 1910s*[34]. According to *Flickr*: <<These beautiful, historic pictures from the Library represent materials for which the Library is not the intellectual property owner. *Flickr* is working with the Library of Congress to provide an appropriate statement for these materials. It's called '*no known copyright restrictions*'. Hopefully, this pilot can be used as a model that other cultural institutions would pick up, to share and redistribute the myriad collections held by cultural heritage institutions all over the world>>.

This brief overview of Web 2.0-3.0 has barely scratched the tip of the iceberg on intellectual property issues that these kinds of collaborations are raising, and to do so in a meaningful way, would demand a comprehensive discussion that would need to take place on many different levels. These kinds of copyright issues may well be worked out under the 'Creative Commons license' a complicated enough subject in the context of Web 1.0 platforms implications that already have many reverberations for cultural institutions. At the same time, and in spite of the tangled web of copyright legalities that need to be worked out, these kinds of opportunities could well serve to mobilize collections otherwise locked in their institutional silos. Integrating Web 2.0 platforms into cultural websites may grant access into institutional holdings in new ways ; allowing the folk to be able to tag objects in novel ways, and to open up new opportunities to disseminate rich content across networks beyond the institutional walls.

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[33] Jeff Howe's definition of 'crowdsourcing', <http://crowdsourcing.typepad.com/cs>.
[34] Flickr Commons, <http://www.flickr.com/commons>.
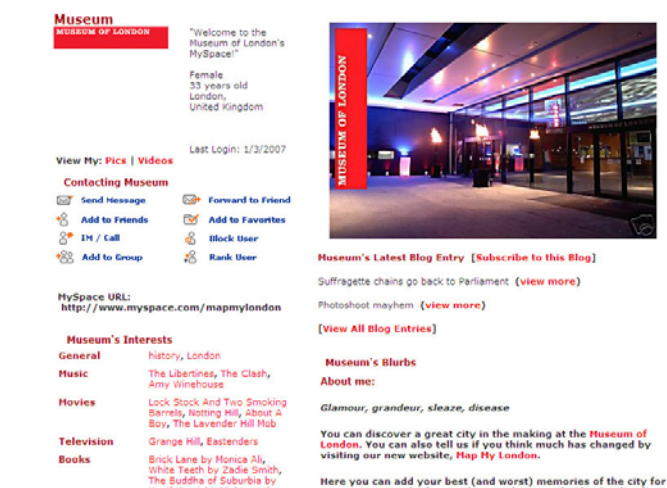
1.2.4. Social networking sites

While there may be close to 100 sites that can be classified as social networking sites[35] **(see 2.2.10)** we will focus on three sites that have almost become household names. According to current Wikipedia statistics, *MySpace* now boasts some 217,000,000 members (http://www.myspace.com) while *Facebook* has currently 58,000,000 registered users (www.facebook.com). At the same time, *LinkedIn*, a site for professional networking asserts that they have some 16,000,000 registered members (http://www.linkedin.com). While the previous platforms described above all focus on content sharing and knowledge collaboration and rely on collaborative filtering, *Linkedin* is driven more by professional group affinities, which grow exponentially through personal recommendation.

MySpace

Created by Thomas Anderson and Christopher DeWolfe *MySpace* was launched in 1999, well before other, similar networking sites had made their early online appearances. *Friends Reunited* was officially launched in July 2000, and *Friendster* in fact, started popping up with requests sent via e-mail in 2002. Most of these platforms combine a personal profile, blog, photos, videos, chat room and instant messenger application. In the case of *MySpace*, it draws its revenues from banner ads, and is currently owned by Rupert Murdoch's Fox Interactive Media. The kinds of exchange that take place between registered members across the network revolve around the micro-content authored by the members themselves. This personal micro-content is exchanged throughout the network both through synchronous communication and asynchronous communication.

Museum of London on Myspace

Facebook

Launched in the spring of 2004, as similar platform, *Facebook*, founded by Mark Zuckerberg, a former Harvard student was first conceived as social networking directory for Harvard students. As social connections naturally extended beyond the Harvard campus, so their online network quickly grew. Within a month it included students at MIT, Boston University, Boston College, and soon expanded to include friends from Columbia, Stanford and Yale. The idea behind the network was taken from the printed book of faces that is distributed across campuses. These in-campus publications were designed so that students could get to know one another by reading about one another and to be able to recognise fellow students from their photos. Today, even those without the previously

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[35] Social networking sites according the Wikipedia list, http://en.wikipedia.org/wiki/List_of_social_networking_websites

indispensable .edu or .ac email account, anyone can now sign up and maintain daily or even hourly contact with those individuals you have selected to be part of your own personal network. There are hundreds of mini applications available to embed into the interface. With a simple click you can add hundreds of different gizmos to your own home page, ranging from, ArtShare, Causes, Chat, Crowd Cloud, Events, Free Gifts, Groups, Live Chat, Notes, Photos, Slide Shows, and your own Super Wall to display your very own graffiti – with so many widget to choose from, no single *Facebook* page will look like another. *Facebook* connects to other sister Web 2.0 platforms, such as *Twitter* (http://www.twitter.com) a micro-blogging interface that allows you to send "tweets"; text-based posts, up to 140 characters in length. These kinds of sites are aimed at keeping you in touch with your own network; whether you want to know who has been skiing this week, who has split up from whom, or who has just added the latest gizmo to their own *Facebook.* While for those who are delighted to share their professional and personal lives with a chosen few (a typical *Facebook* networks can reach into the hundreds), what concerns our discussion here is what can, or should a cultural institution be doing here?

ArtShare is an application initiated by Shelly Bernstein from the Brooklyn Museum that can be added to your *Facebook* profile. Once added it allows you to select works from the Brooklyn Museum collection, and a few works from the V & A in London and to them display collections in your own profile at random. The idea is to allow your friends to see what kind of art you like; and if you don't find anything relevant in these collections, you can even your own artwork. This of course presents serious copyright issues, but applications like these do keep on popping up on Web 2.0 sites, when members of social networks are *as* devoted to their favourite artwork in their museum of choice, as they are to their favourite photos, video clips or bookmarks. Whether they enjoy longevity or not is another question.
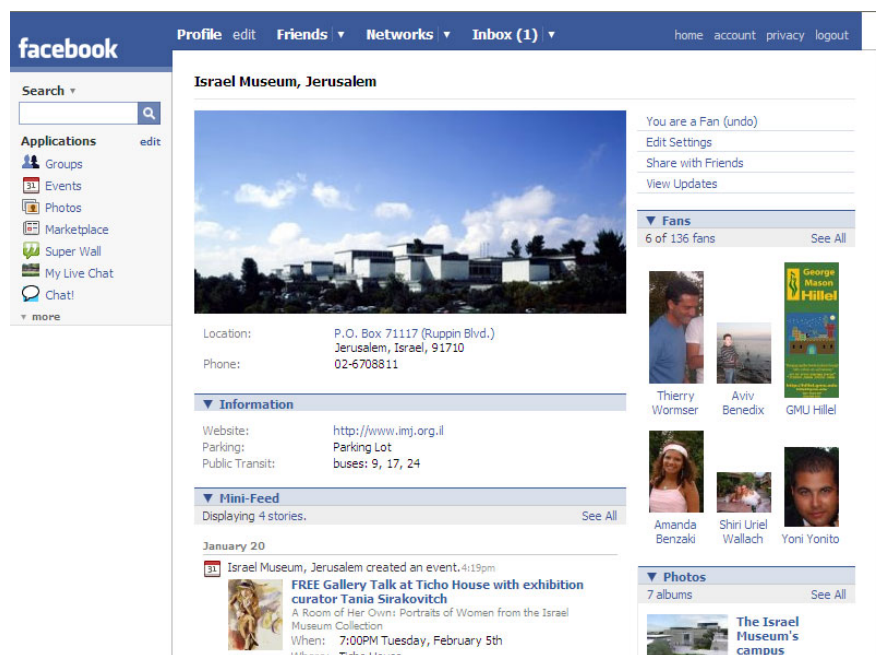
The Israel Museum, Jerusalem on Facebook

Another way take advantage of the network is to create a *Facebook* page for the entire museum. There are several museums that have already done so, such as the Israel Museum, Jerusalem who links their *Facebook* page to the institutional website. There are currently over a hundred 'fans' that follow the museum events and activities, and, at the moment, as in all thriving, viral networks, the fan group is growing exponentially.

For those institutions who may yet be undecided whether to stake a claim in *Facebook,* there is an online discussion taking place over a *Facebook* group that is called *'Museums on Facebook*[36]*'* where members are encouraged to share their experiences.

Linkedin

Other kinds of social networks are those that are framed as professional platforms. *Linkedin* works in the same ways as other social networks, but the expressed goal of this platform is to stimulate professional networking. On receiving an invitation from a network member, you are requested to affirm them, while noting the professional association that links you to this person. Although this step can be bypassed, by affirming the connection with your own institutional information, you can gradually see how networks in fact are formed across the world; each within their professional association. Members are encouraged to endorse colleagues, presumable to make them more attractive in the workplace, and potential job opportunities are merely a click away. While members may respond to others within the network, any deeper correspondence requires full registration, and with it comes the registration fee. As with all of the social networking platforms, there seems to be some sort of prestige as to the number of people you can boast on your network. In the case of your professional status, as reflected by your *Linkedin* virtual colleagues, one can only presume that this may help your standing in the international market.
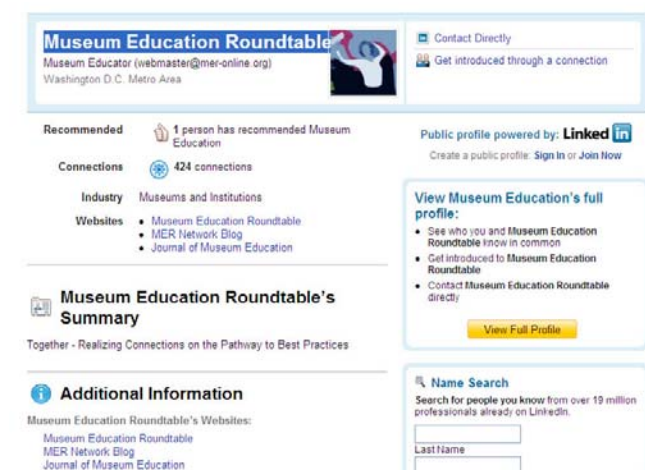
Museum Education Roundtable on LinkedIn

For those whose lifestyle prohibits an exhaustive investment of precious time, you will be gratified to hear that you can always reject an invitation from any of these sites; the person who invites you does not usually see that they are being actively rejected, only that they are being ignored or allowing the inviter to decide that perhaps the invitation never made it to the invitees mailbox.

1.2.5. MUVE'S (Multi User Virtual Environments)

The Web 2.0 platforms mentioned above act within 2D web spaces and mostly take place across linked web pages and mobile phones. While these kinds of social networks are encouraging participants to take on more active authorship of the web content, they are now beginning to be enhanced by web-based, virtual environments; spaces where people 'meet' as movement avatars, and interact in Multi User Virtual Environments (MUVE's) in 3D, isometric environments **(see 2.2.10 and 2.5.7)**.

In the summer of 2007, the *New Scientist* ran a three-part special report on *Second Life,* and around the same time, the virtual world hit the front page of *Newsweek.* These are the

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[36] Museums on Facebook Group, <http://www.facebook.com/group.php?gid=8173798651>.

worlds that emerged from Neal Stephenson's fictional vision of the *Metaverse* in his novel *Snow Crash* which have now crossed over from being a fringe fantasy for pure escapists, to persistent worlds - worlds that never go away; even when you log out of the community, and continue to thrive even in your absence. This is a place where users log in throughout the day (or night) to interact with others in play, commerce, creativity and exploration. It is not simply that hundreds of respectable newspapers and magazines around the world are talking about Second Life. If we are to believe Adam Reuters, one of the reporters from *AvaStar*, a professional tabloid newspaper for the residents of Second Life, people are not just talking about this virtual simulation; they have already sent in the avatars! And, just as in real life these dedicated, imbedded reporters are submitting their copy directly from the field; only here, the field is in-world, and this world has a dynamic all its own. This is the, San Francisco-based Linden Lab's, vast grid of islands where commodity exchange, property acquisition, live performances, real time learning and a host of savory and not so savory activities take place 24 hours, 7 days a week.

Our discussion turns, of course, to explore how cultural institutions can stake their claim in the new frontier, and in order to describe the different possibilities, this section will showcase a number of cultural institutions that are already thriving in-world.

Second House of Sweden in Second Life

One of the most impressive builds is the Swedish Institute, a promotional organisation which works alongside the foreign ministry who have built the Swedish Embassy on their specially designed island in Second Life. Although this embassy does not issue residents with either passports or visas, it does explain to avatars how to get the necessary documents for their alter-egos in the real world. Since May 30, 2007, the Institute has been circulating information about Sweden, making their representatives available to meet the public during the office hours clearly posted on their "reception desk" in a dedicated, virtual diplomatic effort towards extending Sweden's culture. More interesting for our discussion however, is the collaboration taking place between the Swedish Institute and the National Museum in Stockholm, which is "loaning" some of its most famous works of art to the Second House of Sweden in Second Life. Why would such a prestigious national institution invest in these resources? According to the Swedish Institution's website:

> Paintings and textiles offering links with Sweden and the museum's collections will now be placed in the virtual version of architect Gert Wingårdh's new embassy building in Washington DC. The items to be shown in the virtual embassy are among the best-known works of art at National Museum. They reflect different epochs in the history of art and the museum's collections of Dutch and French painting from the 17th to the 20th centuries.
>
> Swedish Institute 2007

Second Sweden on Second Life

Taking up official residence in the new world is a logical extension of the country's national outreach policies and Sweden's embassy in SL is, in fact modelled on another embassy;

architect Gert Wingårdh's new embassy building that is physically located in Washington DC. Based on the very same architectural concept—and even perhaps using the same CAD drawings—the building can be almost effortlessly relocated to the synthetic world. In addition to the virtual treasures from the National Museum, the Embassy also hosts a photography exhibit from Sweden and a comprehensive exhibition about the life of Raoul Wallenberg, arranged in cooperation with OSA Archivum[37], the Open Society's archives in Budapest. In addition to the permanent exhibitions, Second Sweden's diplomatic staff present a rich agenda of seminars, lectures and distance learning, all developed to amplify its public diplomacy agenda. Set in the elegantly designed island, the buildings and the gardens have been created by one of the leading SL designer companies, the Electric Sheep Company[38] and were modelled according the embassy's specifications.

McMaster University, Ontario

A highly innovative approach to accessing library resources has been taken by the University Library of McMaster University, Ontario[39]. Avatars Danu Dahlstrom, Amanda Matzerath, Devi Daviau, Isobella Sands, Gudrun Bertolucci and Ataro Santos (real-life librarians Krista Godfrey, Amanda Etches-Johnson and Nora Gaskin, and staff members Rhonda Moore, Renu Barrett and Derek Bragg) are currently helping visitors (avatars) at their newest branch, located on Second Life on Cybrary City, near InfoIsland. The librarians are amazingly patient as they explain (in chat) to drop-in avatars how to access resources – via in-world terminals to the library's website; all lined up against the wall in this tiny simulation of the real library. In much the same way as one would expect to retrieve books, and journals in the real world, fondly referred to as RL (real life), some publications are available electronically, while others (the books for example) still demand a visit to the physical library, located in the Canadian campus. There are currently hundreds of universities that actively teach accredited classes on Second Life, demanding these kinds of responses that allow students - fresh from their morning's lecture (in world) - to be able to 'pop over' with a friend to the 'local library'.

McMaster University Library, Hamilton, Canada, in Second Life

Musée du Louvre on Thompson Island

Many of the in-world cultural institutions are not listed; one simply hears about them from others or flies into them by chance. News travels fast in Second Life, and like-minded people know how to use both in-world and online facilities to spread the word. Currently, one of the most popular new museums is the Second Louvre Museum, where self-proclaimed curator Kharis Forte has developed an impressive rendering of the physical

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[37] The Open Society Archives -- OSA -- is an archives and a center for research and education. Its collections and activities relate to the period after the Second World War, mainly The Cold War, The history of the formerly communist countries, Human rights, and War crimes.
[38] The Electric Sheep Company, http://www.electricsheepcompany.com.
[39] McMaster University, Ontario, The http://dailynews.mcmaster.ca/story.cfm?id=4660

museum, now transposed to Thompson Island. Forte's 'physical' layout follows the same floor plan as the real museum, but he names his galleries and curates their contents at whim. For some this might be a perplexing visit. Professionals who work in the real Louvre might find it downright shocking. For while Forte has modelled his SL museum on the original in exquisite 3D detail; the collections displayed inside bear no resemblance to those that appear in the physical museum located far away in Paris. Forte does, of course, leave us with the disclaimer:

> This museum is in no way affiliated with the Musée du Louvre in Paris, France.
> No claims or representation of being anything other than a museum of Second Life are being made.
> Please refer inquiries to Kharis Fortis.

While this rendering of the Parisian Louvre seems extraordinary, considering that the staff of the real museum had no part in the support or development of this museum, never the less, The Second Louvre still continues to be one of the best known museums in Second Life.
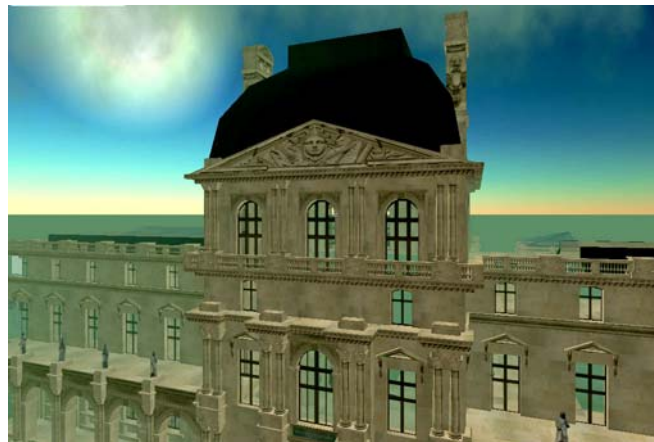
Second Louvre, Second Life

The Staatliche Kunstsammlungen's Old Masters Picture Gallery, Dresden
The third example of a Second Life Museum is the spectacular Dresden Gallery[40] in Second Life. This museum is located on its own island and is a replica of the Staatliche Kunstsammlungen's Old Masters Picture Gallery in Dresden. The locations of many famous masterpieces, such as Raphael's "Sistine Madonna" or Giorgione's "Sleeping Venus" have been transposed to this beautifully modeled museum, and have been reconstructed, true to scale to includs *all* of the 750 masterpieces in the permanent exhibition. Andrew Curry from Wired Magazine[41] playfully suggests, 'if you can't make it to Dresden this summer, consider teleporting'. While this might sound rather alarming to some museum professionals, who tend to prefer their visitors to walk through their physical door, this simulations is exquisite. Acting in the same ways as do their institutional web portals, the Staatliche Kunstsammlungen's Second Life presence may well generate enough interest so that visitors will actually seek out the real museum, and come to visit the collections and exhibitions for themselves.

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[40] Dresden gallery in Second Life, http://www.dresdengallery.com
[41] Andrew Curry, <http://www.wired.com/culture/art/multimedia/2007/08/gallery_dresden>.

Staatliche Kunstsammlungen, Dresden in Second Life
Old Masters Picture Gallery of the Dresden State Art Collections

1.2.6. Conclusion

As Web 1.0 laid the rich foundations for cultural institutional websites **(see 1.1)**; Web 2.o platforms have become far more participatory and interactive. They have not only opened up the authorship of content from meta to micro-content, they also have shifted the sites of knowledge authorship; and, in doing so, have caused tectonic shifts in the balance of power associated with knowledge management. As the traditional wardens of - not only the physical collections - but also as keepers of the knowledge articulated by the collections, cultural institutions now have to pause to consider, both how to navigate web 2.0, as well as how to join in the synergy of social networking. These spaces can not simply be ignored by cultural institutions; they are already taking up vast tracts of the World Wide Web. According to *Technorati* at the beginning of 2008 they were tracking some 112.8 million blogs, and monitoring over 250 million pieces of tagged social media[42]. This represents millions of conversations that are taking place outside of traditional web spaces. As a paradigm shift in the way we think about the World Wide Web, there is no going back. On March 15, 2007, wiki entered the Oxford English Dictionary Online, and as knowledge resources are articulated by wiki environments, we are becoming to becoming accustomed to the fact that it is not always the traditional institution that is stewarding the conversations. The trust in cultural institutions that once drew on the physical presence and the long-standing tradition of trust inspired by the library, museum or archive may now be fading when the public, who is visiting, notices that it is no longer the cultural institution who is writing the narrative. However, on the other hand there are many causes for celebration when the institutions open up their holdings in new ways for its public, and joins in new kinds of conversations that are meaningful, engaging and true to the Web 2.0 tradition are worth sharing.

This brief overview seems to have posed more questions than it answered, but, it is very difficult to document the implications and repercussions of Web 2.0 and 3.0 paradigms while there is so much changing around us. This is a challenging time for museums, libraries and archives, and, as new opportunities are beginning to open up, only time will tell whether the forays that have already taken place by cultural institutions into the new territories have been the right ones. If these journeys into Facebook, Wikis and Second Life succeed in maintaining the same measures of trust, and dedication that have inspired their publics over the years, cultural institutions will be able to extend their activities - that already reach into the past - with confidence and integrity straight into the future.

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[42]Technorati, <http://www.technorati.com/about>.

Roc Fages, Ramón Sangüesa, *Report prepared by ePractice.eu - a project funded by the European Commission*
State-of-the-art in Good Practice Exchange and Web 2.0
http://www.epractice.eu

Lee Rainie, Director, Pew Internet and American Life Project, *Interview: Author David Weinberger Describes How Tagging Changes People's Relationship to Information and Each Other*, January 31, 2007
http://www.pewinternet.org/pdfs/PIP_Tagging.pdf

A directory of web 2.0 applications and services
http://www.go2web20.net

2. Finding one's way

A collection of reasoned schemas, information and tools to auto-orientate our web project, taking into serious account users needs (before) and opinions about web application. More or less, we dare to offer a guide to answer to some basic questions: who am I? What are the kind of web applications I can choose to develop? When it's more important to take into account the users point of view on my project? What does it mean more precisely "web user": it's a single person, a type, a profile, an account or what else? What interactive web services and procedures may I offer to my users? And most of all: what are the current systems for evaluating user needs, behaviours and satisfaction?

2.1 Cultural subject types

A cultural entity can be defined a person, organisation, institution or a group of different entities joined to build a cultural product, whose aims could be reached also with the help of ICT and in particular via web.

2.1.1 Archive (see 1.1.3)

An organization or part of, public or private, accessioning, appraising, describing and keeping [archival] material and making them accessible to the public[43]. For "archival material" we mean records, documents, materials of some media conserved as evidence of facts or because of their historical interest.

Remote users who could be interested in information and archive services, depending on the objectives of the web application are principally people interested in public administration and culture and the use of new technology for public services and topics related to production, authenticity and preservation of documents. Specialist or professional users are interested in more specific research, in exchanging experiences and good practices in organising archives and registers. However, the users of archives are not only professionals: they are often university students, teachers and school students, university professors, people interested in specialist training on organising archives, building a curriculum to set up in the sector market or to gain knowledge and skills necessary for an entity or company. In addition there are amateurs interested in history, tour operators interested in collecting news for creating tours, services which undergo paid research for third parties (genealogical or anagraphic).

2.1.2 Library (see 1.1.1)

"A public library is an organisation established, supported and funded by the community, either through local, regional or national government or through some other form of community organisation. It provides access to knowledge, information and works of the imagination through a range of resources and services and is equally available to all members of the community regardless of race, nationality, age, gender, religion, language, disability, economic and employment status and educational attainment."(IFLA/Unesco, 2001)

The primary goal of a library is to offer resources and services for the diffusion, archiving and conservation of all types of culture and expression, without boundaries of

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[43] *International Standard for Institutions with Archival Holdings*, draft ICA standard, in

appurtenance to organisation or administration, and without having physical location in one or another country. Documentation centres are intended as belonging to this category.

2.1.3 Museum (see 1.1.2)

"A museum is a non-profit making, permanent institution in the service of society and of its development, and open to the public, which acquires, conserves, researches, communicates and exhibits, for purposes of study, education and enjoyment, material evidence of people and their environment".

While accepting this ICOM definition, it is important to stress that museums, in their entirety, constitute a varied and articulated universe; vast because of the many histories of formation, diverse contents, collections and compositions. They are "abstract" representations of the societies that generated them and it is for this, more than in other sectors, that museums can be considered a unifying symbol of the diversities of the cultures of their Regions.

On the other hand it has been observed that the Museum itself is often a means of cultural communication, with its own codes and language which have developed through time and experimentation. While it is true that museums were born as collection of art and antiquity.

2.1.4 Widespread cultural heritage

This category includes fixed location archaeological, architectural and naturalistic territorial heritage. They are dealt with together, not only because they share the feature of being "on territory" and are often so important as to have become part of the historical, cultural and scientific identity of the territory of their location, but also because they are interconnected throughout the course of their formation and anthropic landscaping.

The oldest European park goes back to Sweden in 1909. The twentieth century saw a specialisation and increasing specification in the realisation of parks and reserves which often included differing values which were present in the location: environmental, historical/cultural, traditional and the emerging sciences of archaeology and urbanistic-architecture. This led to the composition of complex landscapes and the most advanced examples of "abstract parks" such as for example, the "park of literature" which is clearly anchored to a defined territory, or "areas of cultural tourism" which have clearly defined homogeneous areas and valorise important historic/cultural, environmental, ethno-gastronomic elements, merging them into a new concept of sustainable development.

From the point of view of the potential of a Web Application, the subject is vast and articulated. It includes traditionally archaeological Monuments, buildings and on-site historical/artistic heritage, entities which are often connected with local museums, libraries and archives which play a central role in territorial records. The category also embraces Parks and archaeological areas which are delegated to institutional management, usually public, or of public interest, and also specific projects such as stratigraphic and thematic surveys of the territory, seen as complex unique specimens with anthropic and naturalistic or landscape values.

2.1.5 Temporary exhibition event (see 1.1.4)

2.1.6 Management and governing institution

This category includes all levels of administration of the cultural heritage: from central state and regional offices (Ministries, General Management) which are concerned mainly with directing and co-ordinating policies, strategies and spending programmes, to territorial offices and institutes with technical-scientific administrative roles in the territorial heritage. This includes museums, libraries and archives.

2.1.7 Centres for research and training, schools (see 1.1.5)

The Web itself is originated as a research centre. Creation of Web systems for exchange of information and visualisation of documents in hypertext is the need to which T. Berners Lee of CERN – the main European scientific organisation – tries to meet through a communication tool which harmonises existing standards (networks, data transmission, hypertext, multimedia).

Exchange of scientific information starts from the RFC (Request for Comment) which has characterised Internet since its birth. This need has made and makes the Web, the main container for grey literature of scientific subjects. Academic circles are those that immediately adopted this tool and rendered it popular.

2.1.8 Cultural digital projects

The implementation of a Web site is often one of the outcomes of a cultural project and related to the vocation of the Project, it aims to improve and strengthen strategies for creation and diffusion of cultural contents. A cultural digital project may create Web-based data banks. In this case, complying with the norms for preservation of privacy of contents, the CWA becomes not only a tool for communication, but also the realisation of the Project itself: portals and digital libraries are more and more important to facilitate to users the access to cultural informations and services.

2.1.9 Portals (see 1.1.6)
2.1.10 Digital libraries (see 1.1.1.1)
2.1.11 Cultural tourism portals (see 1.1.7

2.2. Web Applications Types

In order to clarify the differences between the various types of web applications, especially as regards the implementation of interaction strategies with users, we will give here a schematic presentation of the main types of web applications that cultural subjects can promote as tools for achieving their mission in whole or in part.

Of course the most important and widespread types, those that were dealt with in the chapters of this manual dedicated to interaction with users and the stages of life of a web site, are static or dynamic web sites, databases, information systems and portals, even if it is advised to also consider the types that are emerging such as forums, blogs, web services, web games and social networks.

2.2.1. Web site

A web site is a collection of web pages, that is to say a hypertext structure of documents (called *web pages*) that are accessible with a browser through World Wide Web on the Internet network. A web page is usually in HTML/XHTML format; it contains hypertext links that facilitate navigation from a page or from a section to another; it often uses graphics for presentation and illustrations, that in their turn can also be active links. A *dynamic* web page is a page the contents of which is as a whole or in part generated at the time by the server and it can therefore be different every time that it is called up. This means that the HTML language is not used directly, but programming languages (*scripting* languages) are used; these deal with creating the page at the time when it is visited, even interacting with visitors. We can therefore identify two main types of web sites:

a) static sites, that offer contents that are solely and exclusively for reading. They are usually maintained by one or more people who act directly on the code of the page (through special text or graphic web editors , also called WYS/WYG)

b) dynamic sites, that on the other hand offer contents prepared dynamically (for example, thanks to a link with a database, through a special application, called Content

Management System) and provide contents through ways of navigation and research that can vary on the basis of a number of factors. Dynamic web sites are characterized by a higher level of interaction between site and user.

2.2.2. Web application
Web application is the term normally used for indicating all web-based distributed applications. It is normally used within the sphere of *software engineering*, where the term *webapp* describes an application that is accessible by web through a network. Those clients that wish solely to enjoy the function of being linked as a terminal of a web-application, are often called *thin clients.* By now web-based applications contribute to implementing wholly or in part very much used software solutions such as webmail, e-commerce, web forum, blog, MMORPG and many more besides. Common examples are those applications that permit us to search on the web, to cooperate in projects, to purchase products from an auction. In recent times, very advanced web applications that make it possible to replace the application software usually loaded on one's PC, moving it onto a server web, are becoming common: popular examples are some server-side multimedia readers and the Google Apps package (Calendar, Docs, PageCreator..).

2.2.3. Forum (or *board, message board, bulletin board, discussion groups, bacheca*)
Place for discussion through publication and reading of messages, organized by discussions (*thread*), messages (*post*) and replies to messages (*reply*). On the contrary to chat, that is a synchronous communications tool, a forum is asynchronous inasmuch as the messages are written and read even at different times. Many forums require registration of the user before he can send messages and in some cases even for reading them. The *administrators* are usually the managers of a forum and they normally are able to modify, cancel and move any message. They can usually also close the forum, change it, bring changes to the software, expel, cancel or create users. The *moderators* usually assist the administrators, by whom they were chosen, but with respect to them have less privileges over the application.

2.2.4. Blog
Born in 1997, blogs (from the contraction of *web log* = trace in the networks) begin to become more common in 2001, thanks to the free availability in the network of service management platforms **(see 1.2.1 and 2.2.4)**
In Internet jargon, a blog is a hybrid between diary and journalism on-line: the blog phenomenon has meant that the chance of publishing documents on Internet has evolved from being the privilege of the few (universities and research centres) to the right of everyone (bloggers, in fact). The collection of existing blogs is known as *blogosphere*.
Blogs and *wiki* have some common characteristics: in the way that updates are managed, with comments of the readers being preferred and birth of communities being encouraged.
The structure of a blog is usually composed of a guided publishing program that makes it possible to automatically create a web page, even without necessarily knowing HTML language; this structure can be personalized with graphics called *templates*. A blog allows anyone who has an internet connection to easily create a site in which to publish stories, information and opinions in total autonomy. Every article is usually linked to a theme (*thread)*, in which readers can write their comments and leave messages for the author. Every article is numbered within the blog and can be singularly indicated through a *permalink*, that is to say a link that points directly to that article. In some cases there can be a number of *bloggers* who write for the one blog. In other cases there are sites that are similar to blogs but they are open to everyone.
There are some specialized *content management* systems that allow the integration of different services in the interface; these can be exclusive or cooperative: statistics, tools

for cooperative editing, services for image presentation, sounds and video, etc. provided by third parties. This sort of application bazar is called *mashing.*

A *blogroll* is that page section in which the *blogger* inserts in his architecture the references to other blogs worth indicating, so forming a first level of popularity.

The interfaces are aided by the *widgets*, elements that are typically graphic (such as buttons or checkboxes) that facilitate the user's interaction with the program. They are portions of software that "plug-in" to a platform for creating a blog for increasing its functional characteristics.

Any user can take part in the new process creating services that integrate others and contributing in this way to their success.

The advantages of a blog are: reduced initial investment, low management costs, contents generated by the user.

2.2.4.1 *Photoblog*

Photoblog (from photo + blog) is a kind of blog privileging images to text. Usually text is just a comment to images and is very short.

2.2.4.2 *Videoblog / Vlog*

Videoblog (from video + blog) is a kind of blog privileging videos to images and text. Usually text is just a comment to videos and is very short.

2.2.4.3 *Geoblog*

The geoblog makes possible an interaction between the territory map and stories posted by users. Users add written or audiovisual diaries, connecting them to the geographic maps online.

2.2.5. Wiki

A wiki (from a term in the Hawaian language that means "very fast"), is a web site (or in any case a collection of hypertext documents) that can be modified by its users and the contents of which are developed in cooperation with all those who have access to them, as in a *forum* **(see 1.2.1 and 2.2.5)** The modification of the contents is open and free, but it is chronologically recorded so making it possible when necessary to restore the part involved to its previous version; the aim is that of sharing, exchanging, storing and optimizing knowledge in an atmosphere of cooperation. A wiki is a completely hypertextual means, with a non-linear navigation structure. Normally each page contains a large number of links to other pages; in large wikis there is in any case a navigation hierarchy, but it does not necessarily have to be used. The term wiki also indicates the cooperative software used for creating the web site. Wiki software was born in the web community as a solution for writing and discussing *languages*.

2.2.6. Web portal

A web portal is a web site that forms a point of departure, an entrance gate to a good-sized group of resources of Internet or of an Intranet. The most important web portals provide a wide range of commercial or cultural services, contents and collaborations. Many of the portals were born as Internet directories (like Yahoo!) and/or as search engines (among the first Excite, Lycos, Altavista, infoseek, HotBot). The provision of services (web mail, personalization and chatroom procedures, for example) was then extended so as to consolidate the base of users and lengthen their time of stay within the sphere of the site. The portal tool orders, addresses, chooses, organizes and facilitates access to the many resources present in the web, which is increasingly full of data and information that is non-structured and therefore hard to retrieve and for which it is hard to evaluate the reliability. Within the cultural sphere, one of the main functions of portals is that of gathering together resources that come from various reliable information sources,

even of different sectors, so that users can carry out searches in a more extended and complex dominion.

2.2.7. Database
A site the main use of which is to search and show all or part of the content of a specific database.

2.2.8. Information system
An information system is composed of a collection of calculators, computer networks and procedures for the electronic memorization and transmission of information, usually within complex organizations. For preserving data, databases are often used, for their implementation in Internet and for access to the web, especially when that part of data not reserved for management functions is destined for public use.

2.2.9. Web service
A Web Service is a software system designed for supporting the interoperability between different computers on one network; a fundamental characteristic of Web Service is that of offering a software interface using which other systems can interact with the Web Service itself by activating operations through special "messages" included in a SOAP (Simple Object Access Protocol) "bag": these messages are usually transported through the HTTP protocol and formatted according to the XML standard. The protocols and formats of the web services of data are, where possible, in text format, thus making them more easily understood and used by developers. This makes it possible to interoperate between different software applications on different hardware platforms, using "open" standards and protocols.

2.2.10. Online social network
The Internet version of a social network is one of the most evolved forms of communication online: the network of social relations that each one of us weaves every day, more or less casually, in the various spheres of our lives, can thus "materialize", organize into a consultable "map", and enrich with new contacts **(see 1.2.4)**. The phenomenon of a social network developed around three large themes: the professional sphere, that of friendship and that of affectionate relationships. To enter a social network online, you have to construct your own personal profile, starting from information such as your e-mail address and going as far as interests and passions, past work experiences and relative references. At this stage you can invite your acquaintances to become part of your network and they in their turn can do the same so that the circle of contacts increases continuously. The result is the formation of thematic communities on the base of ones interests or business areas, adding other users to them and creating contacts of friendship or business. Further evolutions come from *Semantic Social Networks*, that interconnect both people and weblogs: in this case you can talk about a hybrid between a social network and a gatherer, that is to say a site that permits blog authors to publish their post. Social networks can be subdivided into:
1) Social browsing (es. Del.icio.us)
2) Interest networks (they are based on sharing interests and passions among users that are distant and different by social-demographic characteristics) (Es. Flickr)
3) Action networks (organization of one's *physical* activities through a web site)
4) Personal social network: limited networks.

2.2.11. Web game
In the history of videogames we talk about a seventh age, characterized by the spread of household consoles that can connect to Internet, so that the players are part of a huge

world community and can link in wherever they are **(see 2.5.6.7)**. Some games, on the other hand, such as the so-called MMORPG (Massive(ly) Multiplayer Online Role-Playing Game),can be used through web browsers. These are played contemporaneously by thousands of people that can interact interpreting personages that evolve together with the world that surrounds them and in which they live.

2.2.12. MUVE
This term refers to online, multi-user virtual environments, sometimes called virtual worlds. Modern MUVEs have 3D isometric/third-person graphics, are accessed over the Internet **(see 1.2.5 and 2.5.7)**, allow for some dozens of simultaneous users to interact, and represent a persistent virtual world.

2.3 Web applications life cycle

This paragraph presents the relation between the life phases of a web site and the problems connected with interaction with its users. In fact, some phases appear particularly critical both because more opportune for activating procedures for evaluating the expectations of the web application's users, and because more directly linked to the capacity to satisfy these expectations.
This schedule of the life phases of a website, with some small variations, is based on that of the *MINERVA Quality principles for cultural websites: a handbook*, in its turn a partially modified version of the life phases of a digitalization project proposed in the *Good practice* handbook and in the *Technical guidelines for digital cultural content creation programmes*), again of the Minerva project.
The creation of a site involves the phases that are listed below. These differ from the documents mentioned because they only refer to web sites and not usually to digitisation projects. Each phase commented, is marked by one or two asterisks, to schematize how critical it is with respect to interaction with users' needs.

2.3.1. Website planning
This phase deals with defining the nature of the site, the user basin to which it is destined and the services and contents that it is intended to provide. It is also essential for defining policies regarding the treatment of personal data, the long-term preservation of the contents, accessibility, etc. It seems important in this phase to outline the responsibilities and technical roles typical of a project for a high quality web site, drawing up a relative management manual. From the viewpoint of interaction with the users it is advisable, when possible, to activate procedures for evaluating the expectations of a representative sample of the future users and a most possibly extensive study of solutions adopted in the network for web applications that can in some way be compared with the one that we are planning to create. Consideration must also be given to aspects such as multi-linguism and interoperability, principles of quality that are particularly important for the overall effectiveness of the site with respect to users' needs. This implies the necessity to integrate them from the time of the site's conception, rather that taking them into consideration at a later stage.

2.3.2. Website design
This more operational phase defines the way in which the site will provide the services and present the contents, choosing moreover the most suitable technological platform. This phase, that is directly dependent on the activities carried out in the planning phase, is the right one for defining the special interactive procedures and the degree of usability of the digital environment that it is wished to create. It is advised that at this stage careful

consideration is given to deciding whether or not to use web techniques of interaction with users to guarantee their complete satisfaction.

2.3.3 Content selection

In this phase the selection criteria are chosen and the contents of the web application that we are creating are prepared for digitisation on the basis of the resources available and the user basin which we intend addressing. This latter information is drawn from the evaluations carried out in the planning phase. In this very delicate phase casual choices must be avoided as also those based on prejudices relevant to "popular" interests among users (e.g. The most famous pieces, the oldest pieces, the rarest pieces). If possible, carry out here an additional analysis of the sample of users consulted in the planning phase, adding some specific questions on the contents in the questionnaire.

2.3.4. Digitisation process and collection of digital contents

The chosen contents are digitised, creating the master images and all the other necessary digital resources. This very technical phase only partially affects the users – just to the extent of the quality of the resources digitised from the point of view of their final fruition.

2.3.5. Storage of the digital masters

The master digital documents are collected and memorized on secure supports that guarantee their safety. The versions destined for publication on the web site are then prepared from these. This operation affects the users because it is a good idea to use standard or very common formats, so as not to force users to have to acquire special technologies to have access to them.

2.3.6. Metadata creation and capture

The metadata that refer to the chosen and digitised contents are created, captured and stored in this life phase of the web application. From the point of view of interaction with the users the creation of the metadata is a particularly critical activity, because it is responsible for the effective availability of the contents, both through research procedures that are internal to the environment and with search engines external to it.

2.3.7. Website implementation and test of the prototype

From an operational viewpoint the web site is created on the basis of established policies, available contents and a defined presentation; in this phase it would be a good idea to submit the prototype of the web site, made available on a local network or a protected version in Internet, to test procedures by people who are not its designers. If possible this could be done through a panel group and checking techniques like the questionnaire or comments and proposals of changes for individual pages.

2.3.8. Online publication

In this phase the web site is made publicly available on the network: an initial check for how the application has been received by users is possible by collecting opinions on the occasion of public presentations. These should be carefully evaluated seeing the importance of "first impressions" in enjoying the web.

2.3.9. Ongoing maintenance

This very important phase is that when the site is maintained up to date and increased as regards its contents, and duly stored. The comments and suggestions of the users, collected through questionnaires, comments, requests of assistance, forums, etc., together with an analysis of accesses to the *server*, must be given due consideration in view of interventions of modification and correction.

2.4. Users and uses

2.4.1 The web user: state of the art and tendencies

After having proposed the typologies of cultural subjects, listed the most common web applications and schematized their life cycles, all with respect to the question of interaction with users, in this chapter we must begin to reason what it means to talk about users and uses of the cultural web. As this chapter aims at providing tools of reflection for designing applications that satisfy citizens' expectations, its structure, that is divided into three distinct parts, is all the more important. The first, the web user: state of the art and tendencies, proposes various approaches with respect to the users, according to the most common slants involved in the design and creation of web applications. The second, the web user: who is he?, tries rather to offer a typing of the web users based on the role that they effectively have (within a cultural institute or users of information and services), or that it seems to the web designers that they want or can have (abstracting them into typologies, typical behaviour, profiles and scenarios).

Finally, the third part is dedicated to the presentation of ICT applications that can be adapted to the use that users make of them, providing interfaces and selections of contents and of personalized services.

2.4.1.1. *The user for ICT professionals*

A user is a person who uses a computer system. In order to identify oneself, a user has an account (a user account), a username (also called a screen name, handle, nickname, or nick on some systems) and a password.

An account is that collection of functions, tools and contents attributed to a user in certain operational contexts. Through the mechanism of the account, the systems provide the user with an environment with contents and functions that can be customized, as well as a certain isolation from other parallel users.

2.4.1.2. *The user in marketing*

Another approach (that is not always so distant from the previous ones, seeing the influence of marketing culture on PAs and informatics) is that of marketing, that identifies users by virtue of their possible quality as consumers.

The users are not treated individually, but gathered into consumer market segments, or groups of people that have a similar perception of a requirement, its characteristics and motivations, that brings them to develop an homogeneous behaviour in solving the problem represented by the requirement.

The requirements for a successful segmentation are: omogeneity within the segment; heterogeneity between segments; measurability; identifiability; accessibility of information; enough quantity to be profitable.

The variables used for segmentation include:

- Geographic variables (nation, region, country, etc.)
- Demographic variables (age, gender, family size, family life cycle, education, income, occupation, socioeconomic status, religion, nationality/race, etc.
- Psychographic variables (personality, life style)
- Behavioural variables (product usage rate, brand loyalty, etc.)

When enough information is combined to create a clear picture of a typical member of a segment, this is referred to as a "profile" (or "type").

2.4.1.3. *The user according to MINERVA*

According to the MINERVA *Handbook for quality in cultural web sites: improving quality for citizens*, "A user is a professional person or not, a specialist or not, who casually or with specific aims, occasionally or systematically uses the Cultural Web Application. User identity is extremely variable depending on cultural profile, aspirations for cultural growth, professional aims and even momentary curiosity" (p. 15).

2.4.1.4 *The user according to usability gurus*

Tanto più si conoscono le caratteristiche e le aspettative dei potenziali utenti, tanto più l'applicazione web avrà probabilità di buona riuscita. Però i potenziali utenti spesso hanno caratteristiche diverse ed esprimono bisogni poco prevedibili e mutevoli. I committenti, inoltre, riscontrano molte difficoltà nell'identificare questi requisiti. Come gestire quest'attività così complessa? The user-centered design is a solution, proposed by usability experts at the beginning of the 90s.

According to Wikipedia, "user-centered design (UCD) is a design philosophy and a process in which the needs, wants, and limitations of the end user of an interface or document are given extensive attention at each stage of the design process. User-centered design can be characterized as a multi-stage problem solving process that not only requires designers to analyze and foresee how users are likely to use an interface, but to test the validity of their assumptions with regards to user behavior in real world tests with actual users. Such testing is necessary as it is often very difficult for the designers of an interface to understand intuitively what a first-time user of their design experiences, and what each user's learning curve may look like. [...] The chief difference from other interface design philosophies is that user-centered design tries to optimize the user interface around how people can, want, or need to work, rather than forcing the users to change how they work to accommodate the system or function".

This process was defined by different authors and also by some ISO rules, as n. 13407, *Human-centered design process* and TR 18529, *Human-centred lifecycle process descriptions* [44]. Several sources describe slightly different processes, but they are all guided by the same philosophy: the project must be founded on user needs.
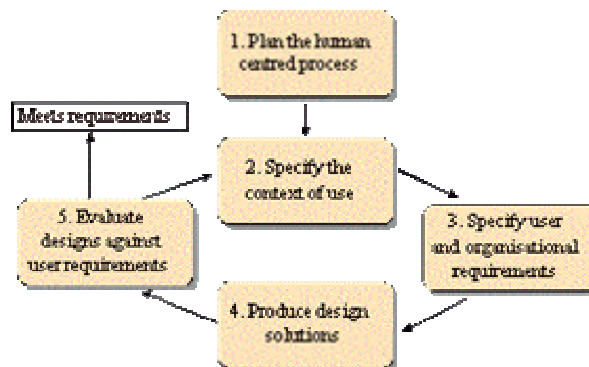
A requirements' analysis forms one of the primary activities of a web application project and the decisions made at this time make a significant impact on its usability. In order to construct a successful application, the requisites of all stakeholders involved must be analyzed, in this case the stakeholders being both those who use the services offered by the web application and the clients.

Task analysis, which can be conducted at different level of granularity, means learning about one's users' goals. User and task analysis aims at understanding:

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[44]   Usability.net,   *ISO   13407:   Human   centred   design   processes   for   interactive   systems*, <http://www.usabilitynet.org/tools/13407stds.htm>.

- which are the users' goal
- what the users do to achieve these goals
- which are the personal, social, and cultural characteristics of the users
- how the physical environment influences users
- how users' previous knowledge and experience influence their workflow.

The benefits of this type of analysis are:

- discover which are the tasks that must be supported by the web application
- choose on the best technological solutions a web application should include
- define the web application's navigation and search according to user needs
- build specific web pages and web applications matching users' goals, tasks, and behaviours on the web.

> Usability.gov. *Conduct task analysis*
> http://www.usability.gov/analyze/analysis.html

2.4.1.5. *The user in current tendencies*
Seeing the current tendencies of the Web, strongly oriented towards functions of cooperation, advanced interaction with the movement of applications even onto the network, the sharing of social networks, etc. (Web 2.0, by now 3.0...) it would seem necessary to update the classical concept of the user as a person who uses an application.
As early as 1980 Alvin Toffler introduced the term *prosumer* (producer + consumer), extending a suggestion made by McLuhan in 1972: in a standard and saturated market, the added value would be found in mass customisation guided by users, and the functions of consumer and producer would tend to become mixed and overlap.
In short, the classical user is changing into a hybrid individual also defined as a *transceiver* (transmitter + receiver), the addressee of contents and source of his own multimedia productions.
In conclusion, a fluid individual, from time to time prosumer, consumer, client, audience, surfer, visitor, viewer, player, clicker, downloader, streamer...
These are only some of the terms used for characterizing the current many activities and different fruition attitudes in the network.

IN-DEPTH

To deepen the issues on users and the Web, a significant study on the user behaviour of virtual libraries is the *information behaviour of the researcher of the future,* 11 January 2008, commissioned by the British Library and JISC to identify how the specialist researchers of the future, currently in their school or pre-school years, are likely to access and interact with digital resources in five to ten years' time.

The main question focused by the study is this one: if the `Google generation' are searching for and researching content in new ways, those seems to be any different from the ways that existing researchers and scholars carry out their work? To reach an answer the study examines first of all the edges of the so-called google generation, and the current behaviour of virtual libraries users, carachterised by horizontal information seeking, by the prevalence of navigation in comparison to reading, by the avarage shortness of time spent on e-books and e-journals and by the 'squirreling' behaviour. According to the study, some trends of the future information environment could be identified: a unified web culture, the inexorable rise of the e-book, more content

2.4.1.6. *The automatic user*
The Web is ever increasingly an environment of interaction not only between people and bodies but also between software procedures, between machines, in short, an environment of interoperability.
It is sufficient to mention search engines, web services, extraction and reprocessing of the XML feed, mash-up between functions, harvesting of metadata and data, SOAP, WSDL...
So the quality of a web application has also to deal with the approval of non-human users, which to function must be able to find the right information in the right form and in the right way. These conditions, in short, are what guarantee interoperability.

2.4.2 The web user: who is he?

2.4.2.1 *The in-home user*
The management of a web application within a cultural institution can be very simple (think of a little museum where one person is sufficient), or very complex and involve many individuals (think of a large museum or library). Web applications give the possibility to define in-home different user types with different roles – for example Administrator, Supervisor, Editor etc. – with different levels of authorizations.
In the *Handbook for Quality of Cultural Websites: Improving Quality for Citizens*, among the 8 recommendations (cap. 1.3) was put in evidence the necessity for cultural institutions to grant the co-ordination of internal and external information flow, the cross-over between various channels of communication and to put attention to the phase of planning, development and management of the web applications. The issues involved in the planning and preparation phase in a digitisation process, involving the organisation of human resources and the choice of the right in-house users, are well explained in the MINERVA *Technical Guidelines for Digital Cultural Content Creation Programmes* and in the *Quality Principles for cultural Web sites: a handbook*, as regards transparency, effectiveness, maintenance, responsiveness and preservation.

2.4.2.2 *The simulated user*

2.4.2.2.1 *User types and roles*
Recently, web individualisation through information technology has become an increasingly significant trend in the cultural institutions too, in order to make facilities more relevant and useful for individual users and to help to respond to institutions' educational, marketing, as well as usability needs.
Consequently to the rapid development of the Web, people with different features and goals have the possibility to access an ever-growing quantity of information for personal use.
But the potential visitors of a web application have characteristics very different among them, not very foreseeable and changing in time. In order to manage this complexity, in the phase of task analysis, it's possible to try to define some "user profiles" or "user types".
The user types describe "same stable features of a typology of people which are representative of the destinees' basin to whom the web application aims to address"[45].
 User types can be classified, for example:

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[45] Lorenzo Cantoni, Nicoletta Di Blas, Davide Bolchini, *Comunicazione, qualità, usabilità*, Milano: Apogeo, 2003, p. 33.

- By geographic variables (nation, region, town, etc.)
- By demographic variables (age, gender, education, income, occupation, socioeconomic status, religion, nationality/race, disabilities, language, etc.
- By webliographic variables (behaviour in using Internet, preferite sites, browsed used etc.
- Behavioural variables (impatiens, disposed to explore etc.

Example of User Type

Job: Museum Curator
Age: 25-35
Use of the Web: 2 hours a day
Connection: ADSL
Preferite sites: museums and art portals
Languages: English, French

This kind of classification doesn't allow to consider features which are common to more than one profile and that require to be treated in a different way.
In fact to each user type, may correspond a "role", as to say the user's general reasons to visit a web application and the tasks or objectives deriving from these reasons.
A role must not describe any personal feature. A role may be assumed by more user types.

**Example of Roles
in a Museum Website**

Casual exploration
Planning of a visit
Look for events
See a virtual exhibition
etc.

The web application can propose content selections corresponding to certain user types or roles. This process may also be automated following a registration where the final user indicates the profile he belongs to.
In this case, user types can be added according to the requirements of the site and deleted if no longer needed. Once defined and assigned to users, these types can be used in searches and to apply marketing logic to specific groups of users. Once a user type has been defined, it is a searchable attribute that can be used to quickly retrieve all users assigned to this type.

When site access is directly controlled by roles, these roles may be granted to users through user types.
Each role controls access to one or more web pages configured to be accessed by users who have acquired that role. A user type may be associated with more than one role, a role may be associated with more than one user type.
For example, in a museum website, roles could be: explore, search images, plan a visit, learn, purchase.

Examples of user types and roles on the Web

Louvre http://www.louvre.fr/llv/commun/home.jsp?id=home	*Professionnels* (A la Une, Journalistes, Entreprises, Tourisme, Professionnels & Associations) *Enseignants* *Jeunes – de 26 ans* (A la Une, Moins de 18 ans, 18-25 ans)
Children's Museum of Manhattan http://www.cmom.org/	*For teachers* *For parents*
MOMA http://www.moma.org/education/http://www.moma.org/education/	*Destination modern art* (for Kids) *Red Studio* (for teenagers) *Modern teachers*
Britih Library http://www.bl.uk	*For higher education* *For business* *For librarians*
Aboriginal Canada Portal http://www.aboriginalcanada.gc.ca/acp/site.nsf/en/index.html	*By Audience* (Elders, Women, Youth, Kids)
British Museum http://www.britishmuseum.org/learning.aspx	*Schools and teachers* *Further and higher education* *Adult learning* *Access, families and children*
Parent portal http://www.activ.asn.au/parentportal/life_events.cfm	*Life events* (Adolescence, Ageing, Diagnosis, Employment, Infancy, Leaving Home, Post School, Preschool, School)
Spain.Info http://www.spain.info	*Where to go* *What to do* *Plan your trip*
Cité des sciences et de l'industrie http://www.cite-sciences.fr/francais/indexFLASH.htm	*Cité des enfants* *Cité des metiers* *Cité de la santé*
MICHAEL Culture http://www.michael-culture.org	*By institutions* *By audience*

2.4.2.2.2 *Personas*

To identify user types, it's possible to use the technique of "personas".

According to Wikipedia, "Personas – a technique popularized by Alan Cooper in his 1999 book *The Inmates are Running the Asylum* – are fictitious characters that are created to represent the different user types within a targeted demographic that might use a site or product. [...] Personas are useful in helping to guide decisions about a product, such as features, interactions, and visual design. A user persona is a representation of the goals and behaviour of real user group".

How do we get information for a persona? Usually, personas are synthesized from data collected from contextual interviews, individual interviews, online surveys, focus group, usability testing (*infra*, 2.6). Through these techniques, major user groups of one's web application type are identified and descriptions including behavior patterns, goals, skills, attitudes, and environment are identified. Once selected each group's most representative characteristics, they are turned into a persona. For each application, more than one persona is usually created, but one persona should always be the primary focus for the design.

A persona usually include a fictional name, eventually an image, information on demographics (age, education, race, family status, etc.), job titles, goals and tasks in relation to one's web application type, environment (physical, social, technological).
Which are the benefits of using personas?

- Personas give a personal "human face" on otherwise abstract data about users.
- Defining personas helps the developing team to share understanding of the real users in terms of their goals, capabilities and contexts.
- Personas help prevent "self referential design": designers and developers could unconsciously project a web application following their own mental models which could be very different from the reality.

For example, In a library web site, personas could be: a person accessing the site for the first time, teenagers, users with visual disabilities, teachers, journalists ecc.).
Many experts are critics about using personas, arguing that they are fictional and therefore there is no clear way to determine how many users are represented by any given persona.

Example of persona

John Smith
Tourist

- 45-years-old
- Married, 2 children
- Degree
- Comfortable using a computer, with an ADSL connection at work and at home
- Uses e-mail extensively; uses the web about 1.5 hours a day

Key Attributes

- Focused, goal-oriented
- Curious, etc.

Etc.

Usability.gov. *Develop personas*
http://www.usability.gov/analyze/personas.html

Wikipedia – *Personas*
http://en.wikipedia.org/wiki/Personas

2.4.2.3 *The simulated uses*

2.4.2.3.1 *Use cases and scenarios*
A *use case* is a description of how users will perform tasks on one's web application. It describes a sequence of interactions between a user and a web application, without specifying the user interface. Usually it is divided into two parts:

- the steps a user will take to fulfil a particular task on the web application
- the way the web application should respond to a user's action.
A use case must include:

- the actor (the user who is using the web application)
- the interaction (what the user wants to do)
- the goal (of the user).

Generally, a use-case must be narrated in an easy-to-understand language. Members of the design team must be involved and encouraged in defining the requirements.
Alistair Cockburn, in *Writing effective use cases*, identified three levels of detail in writing use cases:

- *brief use case:* a few sentences summarizing the use case
- *casual use case:* few paragraphs of text, summarizing the use case
- *fully dressed use case* is a formal document based on a detailed template with fields for various sections.

Summarising, a use case defines the interactions between external actors and the system under consideration to accomplish a goal. An actor specifies a role played by a person or thing when interacting with the system. The same person using the system may be represented as two different actors because they are playing different roles. For example, "Juliet" could be playing the role of a Student consulting an online catalogue to find a book or the role of a Librarian giving online advice on a specific information.
To describe the functions and services offered by a system, so as they are perceived and used by actors interacting with it, it is possible to use a Use Case Diagram (UCD).

Use Case Diagram (UCD)
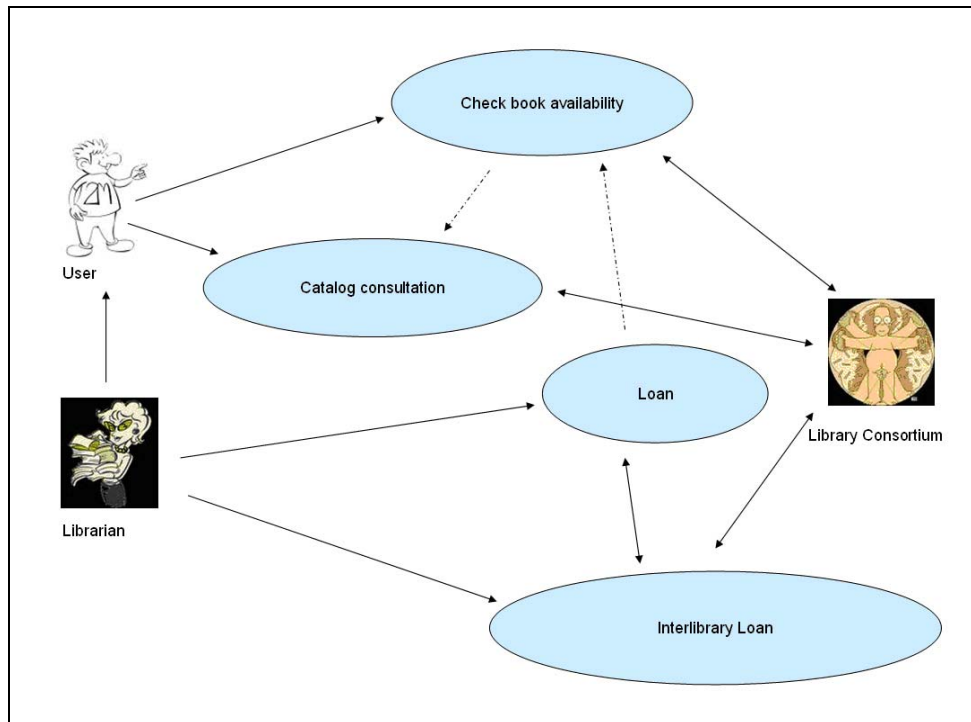
The diagram includes three items:

System: the system as a whole is represented as an empty rectangle. This symbol is put into relation with the others in the sense that the model elements that represent characteristics of the system will be positioned inside the rectangle, while those that represent external bodies (belonging to the dominion or to the context of the system) are positioned outside.

Actor: the actors are graphically represented in the diagram by an icon that shows a stickman. Formally, an actor is a class with a stereotype «actor». Practically, an actor represents a role covered by a certain group of bodies interacting with the system (including human users, other software systems, hardware appliances and so on). A role corresponds to a certain family of related interactions that the actor undertakes with the system.

Use Case: a use case is graphically represented as an ellipse containing the name of the use case. Formally a use case is a classifier with behaviour; it could be seen as a class of related behaviours. Practically, a use case represents a function or service offered by the system to one or more actors. The function must be complete and significant from the point of view of the actors that participate in it.

Usability.gov. *Use cases*
http://www.usability.gov/methods/usecases.html

Wikipedia – Use case, Use case diagram
http://en.wikipedia.org/wiki/Use_case
http://it.wikipedia.org/wiki/Use_Case_Diagram

According to Wikipedia, "In computing, a *scenario* is a narrative describing foreseeable interactions of types of users (characters) and the system. Scenarios include information about goals, expectations, motivations, actions and reactions. Scenarios are neither predictions nor forecasts, but rather attempts to reflect on or portray the way in which a system is used in the context of daily activity".
Scenarios can be at different levels of detail:

- goal- or task-based scenarios in which it's only stated what the user wants to do
- elaborated and very detailed scenarios
- full-scale, task scenarios, including all the steps to accomplish the task.

Scenarios for one's web site may be build gathering information from many sources (*infra*, 2.6), as:

- e-mail to users
- surveys (Online)
- contextual Interviews
- individual Interviews

The differences between *use cases* and *scenarios* is that a use case typically refers to generic actors and describe several path, while scenarios typically refer to examples of the actors such as Paolo Rossi and describe a single path.

To formulate scenarios, a valid help may be given by editing tables with lists of personas, roles and expectations[46].

Personas' goals

	Persona	Goal	Expectation
Job	Tourist	To decide if visiting the museum or not To decide if bringing children ...	Attractivity Attractivity
Job	Student	To consult a database To download images	Accuracy Richness
Behavior	Curious	To explore all the contents	Richness
Behavior	Needing to be guided	To follow in-depth paths	Clearness
Etc.			

Roles' goals

Role	Goal	Expectation
Visit planning	To look for opening time and address To reserve a guided tour	Updating

---

[46] Lorenzo Cantoni, Nicoletta Di Blas, Davide Bolchini, *Comunicazione, qualità, usabilità* cit., p. 47.

	...	
Looking for images	Find works images of xyz with relevant information Download high resolution images Know about copyright rules .	Accuracy Accuracy Authority
Etc.		
Needing to be guided	To follow in-depth paths	Clearness

2.4.2.4 *The final user point of view: user stories*

User stories are a quick way of handling customer requirements without having to elaborate vast formalized requirement documents and without performing overloaded administrative tasks related to maintaining them. The intention with the *user story* is to be able to respond faster and with less overhead to rapidly changing real-world requirements. User Stories are written by the users as things that the system needs to do for them.

According to Wikipedia, "A user story is a software system requirement formulated as one or two sentences in the everyday language of the user. Each *user story* is limited to the volume of a small paper note card to ensure that it does not grow too large. The *user stories* should be written by the customers for a software project and are their main instrument to influence the development of the software.

Wikipedia – User Story
http://en.wikipedia.org/wiki/User_story

**Example of user story
by MICHAEL project**

How I found Austria in North East England

My name is XXX. I am from Germany and I am working on my Ph. D.. I am writing about the history of German university studies in Austria and Germany and two 19th century scholars in particular, August Sauer from Vienna and Albert Leitzmann from Magdeburg. They exchanged letters for nearly 40 years and their letters are the basis of my dissertation. My research started with the biographical details of their lives. Being interested in getting a picture of their home towns and living conditions in the nineteenth century, I was looking for an easy way to get the information and found MICHAEL to be a very helpful.

I started my research in the MICHAEL portal using the geographical search combined with period: I chose "Austria" and "19th century". Next, I was able to browse the digitised collections that document Austria in that period. It is surprising the collections in which one finds interesting pictures, drawings and photographs!

From the MICHAEL portal I was redirected to the Bowes Museum in North East England that holds a great collection of European fine and decorative arts - including Austrian art. Amongst the digitised items I found a lithograph called "National Costume of Austria" showing the fashion and local costume of the time (http://www.bowesmuseum.org.uk/collections/objects/category/11/7610/). This was very interesting for me as August Sauer was engaged in ethnological studies. In the 19th centuries there were more than 10 different nationalities and ethnicities in Austria. Without MICHAEL I would never have looked at an English museum collection! MICHAEL broadens my sense of the richness of European historic tradition and shows just how widespread the collections and cultures of Europe are.

Of course, I could always borrow a book from the library in order to get a picture from former times. I see using digital information as complementary - MICHAEL's advantage for me is its 24 hour availability, and the service is free of charge. Also the content is taken from reliable sources - and cultural institutions allow for quotation and academic uses of their content.

MICHAEL-Culture – User stories
http://www.michael-culture.org/en/user-stories

2.4.3. Systems adapting their behaviour to users

Often it is very difficult for people to find the right information at the right time and at the right level of detail. In order to find a solution to this problem, researchers are developing systems adapting their behaviour to the interests, task, and goals of single users or group of users. Individualisation therefore helps providing differentiated access to information and services according to the user's profile. These systems are generally called "adaptive or personalized systems/hypermedia". Differing from traditional "static" web pages, personalised systems foresees a user model that represents the characteristics of the user. This model is then used to create and present content and services adapted to the different individuals. Individualisation techniques offer useful tools in the selection and filtering of information, facilitating navigation and increasing the possibility that the user find what he is looking for in a shorter time.

The first applications of this type were developed in the e-commerce field, where companies understood the possibility to sale products and services and to offer advertisement according to customer's profile (see the leading example Amazon, www.amazon.com.

In the field of cultural institutions, the first personalised web applications were developed by libraries, in order to assist librarians in selecting and filtering materials for the users. By means of personalised systems, models of users' interests can be created in order to "prioritize" information and sort search results so that users find immediately what they are looking for in the library's catalogue.

In the past years also museums and other important cultural institutions are experimenting individualisations tools, proposing different access to collections, personalised agendas, tour proposals. They have understood that the challenge is not only connected to improve the usability of the website and the access to information, but also to facilitate the learning process. In fact, research says that learning is stimulated when information is described in a more understandable way. Moreover, personalised systems "listen to the user" recreating the human element and making the user feel more comfortable. A satisfied user could be more stimulated to go back to the site and reuse the system.

When providing access to information and service, there are certainly a lot of benefits for cultural institutions taking into considerations the different users needs, however some considerations must be done. Studies says that often only a few percentage of visitors benefits of individualisation techniques, often because of the difficulty of using these technologies or just for the willing of the user to spend his time in another way. Moreover cost of personalisation are very high, so only big cultural institutions can invest in them. An important advice is that an institution invests on individualised systems only if there is a real added value in term of returning to visit the website and real visit to the institution, at least until technologies are more stable, usable and cheap.

There are different techniques to collect information about the users, as well as different methods to process this information to create different user profiles and give adapted content, presentation or structure. Moreover, according to techniques, the amount of control the user has on the personalisation process may vary a lot.

Individualisation techniques can be divided in two fields: personalisation and customisation.

2.4.3.1. *Customisation*

Customisation (or adaptability) is the ability of the user to modify the interface to individual requirements. As said by Bonnet in 2002, "the user can configure an interface and create a profile manually, adding and removing elements in the profile". In this case the user is involved actively in the whole process and has direct control. A good example is given by *My Yahoo!*, born in 1996, a customizable web page with news, stock quotes, weather, and

many other features, giving the possibility to customize the access to content and the layout. Other examples are given by websites customized in order to aid disabled access on-line, for example partially sighted people who can customize colours, sizes and fonts. Summarizing, customisation generally covers content *presentation*, meaning that the user chooses the best way in which he wants the content to be presented.

2.4.3.2. *Personalisation*

Personalisation (or adaptivity) techniques see the user as being more passive and less in control. In this case, modifications in access to content and structure are performed automatically by the system, which uses information on the user included in the so called *user profile.* This information can be provided *explicitly* by the user, by means of online registration forms, questionnaires and reviewing or *implicitly* recording the surfing behaviour and preferences of the single user, for example through *cookies* (pieces of text sent by a server to a web browser and then sent back unchanged by the browser each time it accesses that server) and *web server log files* (files memorising the chronological registrations of users' actions). Summarizing, personalisation generally involves *access to content* with information given explicitly by the user or extracted implicitly through technologies.

After the collection of the users' data in both implicit or explicit way, appropriate content is edited and delivered by one or more of these techniques:

1) *Collaborative filtering*: it compares the different user's tastes, assuming that a user will value what like-minded users also enjoyed. Amazon, for example, identifies the users' interests analyzing and comparing previous purchases and ratings given to titles. Libraries, for example, could use this technique to generate lists of the most read books in the library.

2) *Rule-based filtering*: website administrators specify rules based on a profile to provide a certain content to a certain user. For example, a user interested in Lascaux murals could also be interested in Prehistorical rock painting.

3) *Web usage mining*: application of statistical and data-mining methods to the web server log data, in order to produce patterns indicating the user's navigational behaviour. According to Wikipedia "Data mining is the principle of <u>sorting</u> through large amounts of data and picking out relevant information". Data mining techniques include: *association rules* (to find correlations among sets of items), *sequential pattern discovery* inlcuding the notion of time sequence); *clustering* (according to Wikipedia: "the partitioning of a data set into subsets (clusters), so that the data in each subset (ideally) share some common trait"; *classification* (process which maps items into classes, as for example different user profiles).
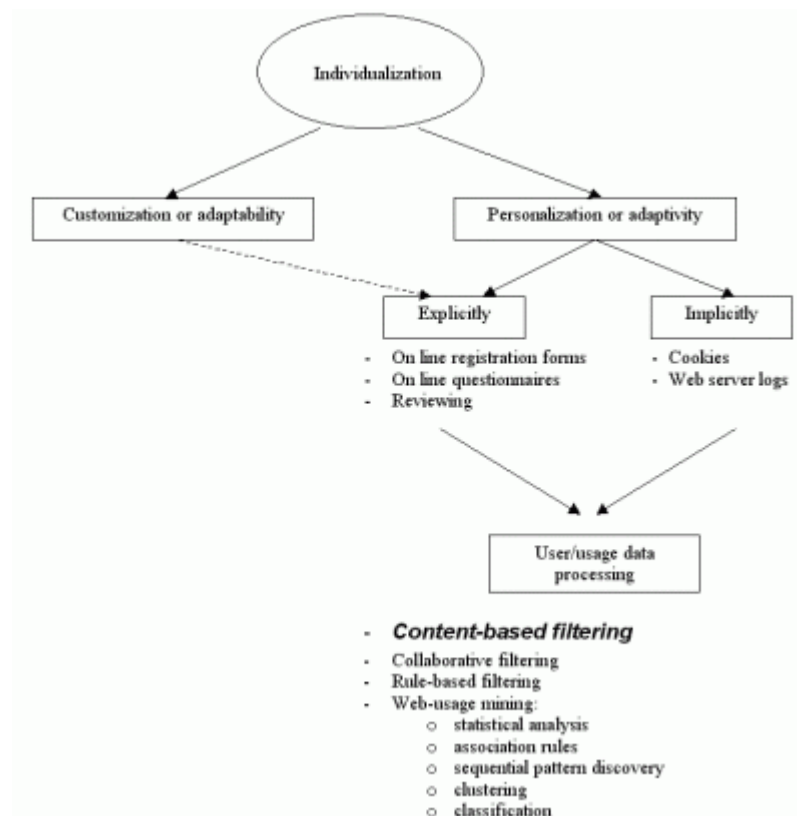
An overview of individualisation techniques (from Bowen et al. 2004)

Jonathan P. Bowen, Silvia Filippini-Fantoni,
Personalization and the Web from a Museum Perspective,
Paper presented at the International Conference"Museum and the Web 2004",
http://www.archimuse.com/mw2004/papers/bowen/bowen.html

2.5. Interactive and user side services

2.5.1. Interactive communication services with the intermediation of the information provider

2.5.1.1. Electronic mailing list

An electronic mailing list (sometimes written as elist or e-list) is a special usage of e-mail that allows for widespread distribution of information to many Internet users. It is similar to a traditional mailing list — a list of names and addresses — as might be kept by an organization for sending publications to its members or customers, but typically refers to four things: a list of e-mail addresses, the people ("subscribers") receiving mail at those addresses, the publications (e-mail messages) sent to those addresses, and a *reflector*, which is a single e-mail address that, when designated as the recipient of a message, will send a copy of that message to all of the subscribers (from Wikipedia).

Science Museum, UK
http://www.sciencemuseum.org.uk/visitmuseum/enews.aspx

Fundació Antoni Tàpies, Spain
http://www.fundaciotapies.org/site/rubrique.php3?id_rubrique=530#

IRCAM Centre Pompidou, France
http://listes.ircam.fr/wws

AIB-CUR, Italy
http://www.aib.it/aib/aibcur/aibcur.htm3

2.5.1.2. Newsletter

A newsletter is a news bulletin in written or image form periodically sent out by electronic mail. Nowadays it is often in HTML format. It is usually requested by those who receive it (through a subscription and its aims go from information to entertainment, but various portals and providers make an invasive use of them for advertising. A newsletter can be defined as an electronic mail message that is sent regularly (for example, daily, weekly, monthly) and free of charge to all those who have specifically asked for it (from Wikipedia).

Centre Pompidou, France
http://www.cnacgp.fr/Pompidou/Inscriptions.nsf/InscrireWeb?OpenForm&sessionM=3.6.1&L=2

Tate, UK
http://www.tate.org.uk/bulletins/

Centro cultural de Belém Lisboa, Portugal
https://www.ccb.pt/sites/ccb/en-EN/Registo/Pages/default.aspx

Museo del Prado, Spain
http://www.museodelprado.es/index.php?id=206

Musée des Instruments de Musique (MIM), France
http://www.mim.fgov.be/home_fr.htm

Museum Moderner Kunst Stiftung Ludwig Wien, Austria
http://www.mumok.at/online-resources/newsletter-en/?L=1

Museo Thyssen-Bornemisza, Madrid, Spain
http://www.museothyssen.org/thyssen/comunicacion/comunicacion_newsletter.html
Centre de Cultura Contemporània de Barcelona (CCCB), Spain
http://www.cccb.org/en/contacte

IRCAM Centre Pompidou, France
http://www.ircam.fr/newsletter.html?&L=1

Rijksmuseum, Amsterdam, The Netherlands
http://rijksmuseum.dmdelivery.com/x/plugin/?pName=opt_in1&MIDRID=S7Y1BwAA04&lang=en&Z=920694542

2.5.1.3. Forum (see 2.1.3)

Aegyptologie community
http://www.aegyptologie.com/forum/

IRCAM Centre Pompidou, France
http://forumnet.ircam.fr/

2.5.1.4. Blog, photoblog, videoblog, geoblog
(see 1.2.1, 2.4.1)

Centre Pompidou, France
http://www.centrepompidou.blogs.com/

Le blog de Paul Cox Centre Pompidou, France
http://www.centrepompidou.fr/Pompidou/Pedagogie.nsf/0/21D42DA2FF575D83C125722900347F53?OpenDocument&sessionM=3.3.4
&L=1

Van Gogh Museum, Amsterdam, The Netherlands
http://www3.vangoghmuseum.nl/vgm/index.jsp?page=142155&lang=en

City Museum Helsinky, Finland
http://www.hel.fi/wps/portal/Kaupunginmuseo_en/Artikkeli_en?WCM_GLOBAL_CONTEXT=/en/City+Museum/Web+Museum/Blogs

Liverpool Museums Walker art Gallery, UK
http://blog.liverpoolmuseums.org.uk/CategoryView,category,learning.aspx

Victoria and Albert Museum
http://www.vam.ac.uk/activ_events/do_online/blogs/index.html

Museo Diffuso di Torino – Geoblog
http://www.geoblog.it

2.5.1.5. Virtual reference services

Online reference service, generally known as "Ask the librarian", offered via e-mail or chat by the library. Sometimes is optimized for handheld devices.

Library of Congress, USA (Ask a librarian)
http://www.loc.gov/rr/askalib/

Florida's Virtual Reference Service, USA (Ask a librarian)
http://www.askalibrarian.org/aal.asp

City Museum Helsinky, Finland (Ask the museum)
http://www.hel.fi/wps/portal/Kaupunginmuseo_en/Artikkeli_en?WCM_GLOBAL_CONTEXT=/en/City+Museum/Ask+the+Museum

British Museum, UK (Ask the expert)
http://www.britishmuseum.org/explore/families_and_children/ask_the_expert.aspx

Regione Toscana, Italy (Chiedi in biblioteca)
http://www.cultura.toscana.it/biblioteche/servizi_web/chiedi_biblioteca/

Bibliothèque Centre Pompidou, Paris, France (Discutez en ligne avec les bibliothécaires)
http://www.bpi.fr/uploadfile/formulairechat.htm

2.5.1.6. Mobile devices: SMS/MMS/Bluetooth

Short Message Service (SMS) is a communications protocol allowing the interchange of short text messages between mobile telephone devices.
Multimedia Messaging Service (MMS) is a standard for telephone messaging systems that allows sending messages that include multimedia objects (images, audio, video, rich text) and not just text as in Short Message Service (SMS).
Institutions are beginning to send information using these technologies (from Wikipedia).

Servizio bibliotecario vimercatese, Italy (SMS Service)
http://www.sbv.mi.it/IT/sistema/003/009/001/

Swinburne Library, Australia (SMS Service)
http://www.swinburne.edu.au/lib/forms/sms_registration.htm

Swinburne Library, Australia (SMS Service)
http://www.swinburne.edu.au/lib/forms/sms_registration.htm

Servizio bibliotecario vimercatese, Italy (SMS Service)
http://www.sbv.mi.it/IT/sistema/003/009/001/

Guggenheim Bilbao, Spain (Mobile devices)
http://www.guggenheimbilbao.es/secciones/area_de_prensa/alertas_al_movil.php?idioma=en

2.5.1.7. Instant messaging

"Instant Messaging (IM) is a form of real-time communication between two or more people based on typed text. The text is conveyed via computers connected over a network such as the Internet. It is important to understand that what separates chat and instant messaging from technologies such as e-mail is the perceived synchronicity of the communication by the user - Chat happens in real-time before your eyes. For this reason, some people consider communication via instant messaging to be less intrusive than communication via phone. However, some systems allow the sending of messages to people not currently logged on (*offline messages*), thus removing much of the difference between Instant Messaging and e-mail.
Some IM systems allow users to use webcams and microphones which make them more popular than others. Due to this feature users can have a real-time conversation. In addition IM has additional features such as: the immediate receipt of acknowledgement or reply, group chatting, conference services (including voice and video), conversation logging and file transfer.

Mobile Instant Messaging (MIM) is a presence enabled messaging service that aims to transpose the desktop messaging experience to the usage scenario of being on the move" (from Wikipedia)
Several libraries are already using this kind of technology for interaction with users.

University Libraries of Nevada, Las Vegas, Instant messaging reference service
http://www.library.unlv.edu/ask/chat.html

2.5.1.8. Videoconferencing
"A videoconference (also known as a *videoteleconference*) is a set of interactive telecommunication technologies which allow two or more locations to interact via two-way video and audio transmissions simultaneously. It has also been called visual collaboration and is a type of groupware. It differs from videophone in that it is designed to serve a conference rather than individuals. The core technology used in a videoteleconference (VTC) system is digital compression of audio and video streams in real time (from Wikipedia)".

Natural History Museum, London, UK (Educational Videoconferences)
http://www.nhm.ac.uk/education/activities/school-activities/video-conference/Videoconferencing.html

Smithsonian – National ad Air Space Museum, Washington, USA (Educational Videoconferences)
http://www.nasm.si.edu/education/classroom_videoconf.cfm

National Maritime Museum, Greenwich (Videoconferencing)
http://www.nmm.ac.uk/server/show/nav.3009

Project Videonet. *Guidelines for Community Use of Public Library Videoconferencing Services*, July 2003
http://www.infopeople.org/partners/vidnet/guidelines/PolicyPricingGuidelines.pdf

2.5.1.9. Streaming
"The term streaming identifies a flow of audio/video data transmitted by a source to one or more destinations through a telematic network. This data is reproduced as it arrives at its destination. There are basically two kinds of streaming:
Streaming live. Similar to traditional broadcasting transmission by radio or video. In this case too the data is transmitted using opportune compression to lighten the load on the network as much as possible. The compression of the contents introduces a delay of about ten seconds in the flow. This delay is not usually a problem in the area of streaming live.
Streaming on demand: the audio/video contents are initially compressed and memorized on a server as files. A user can request the server to send him the audio/video contents. It isn't necessary to download them all on the PC to be able to reproduce them: the data received is decompressed and reproduced a few seconds after the beginning of reception. This delay allows the creation of a sort of lung for compensating delays or micro-interruptions of the network. The streaming flows of Real Video and Real Audio, Windows Media Player, QuickTime Flash Video (Youtube) are of this type." (da Wikipedia).

Streaming Museum
It is a real-time exhibition in cyberspace and public space on seven continents, launching on January 29, 2008. The project will present an ongoing program of multi-media exhibitions in collaboration with international curators and cultural institutions. Streaming Museum is conceived as a source of free cultural content and public service messaging on the environment, education and health, accessed via internet and in high visibility public locations. Streaming Museum is a member of the International Urban Screens Association. President, Mirjam Struppek is an advisor to Streaming Museum.
http://www.streamingmuseum.org/info/

Foundacion Tapies, Barcelona, Spain (audioguides)
http://www.fundaciotapies.org/site/article.php3?id_article=2977

Museu d'Art Contemporani de Barcelona (MACBA) (Conferences: audio)
http://www.macba.es/controller.php?p_action=show_page&pagina_id=72&inst_id=23061

Foundaciò Mirò (audio visit)
http://www.bcn.fjmiro.cat/

Liceu Barcelona, Spain (Watch and listen)
http://www.liceubarcelona.com/musica/esp/index_dvd.asp

Centre Pompidou-Metz : le chantier hier, France
http://www.mairie-metz.fr/metz2/actions/cpm/hier.php

The Natural History Museum, London, UK
http://www.nhm.ac.uk/kids-only/naturecams/index.html

teacher.tv
http://www.teachers.tv/

Università di Torino, Italy
http://www.110.unito.it/?pubblica=&lang=fra

2.5.1.10. WebCam

Webcams (web cameras) are small cameras whose images can be accessed using the World Wide Web.

Centre Pompidou, France
http://www.centrepompidou.fr/pompidou/Communication.nsf/0/EC87316EA3FB8B1FC1256E2000462116?OpenDocument&sessionM=3.4.1&L=1

2.5.2. Interactive learning services

2.5.2.1. Online tutorials, Online help
Online courses and tutorials, available through websites of public cultural institutions.

Plot, Park Library Online Tutorial - Resources for Librarians and Educators
http://www.lib.cmich.edu/departments/reference/instruct/intro/

Uk, The National Archives – In-depth learning guides
Guides covering some of our most popular research topics: Family history, Latin, Local history, Paleography
http://www.nationalarchives.gov.uk/gettingstarted/in_depth_guides.htm

Library of the Southern Cross University, Australia
http://www.scu.edu.au/library/services/copyright.html
Tutorial for students on copyright

teacher.tv
http://www.teachers.tv/

2.5.3. Virtual interactive tours

Interactive tours on collection highlights, exhibitions, popular themes, etc.

Musem of Fine Arts, Boston
http://www.mfa.org/collections/index.asp?key=37

The London Canal Museum, London
http://www.eyerevolution.co.uk/virtual_tours/london_canal_museum/index.php

Madrid Virtual. Com, Spain
http://www.madridvirtual.com/

Reina Sofia Madrid, Spain
http://www.museoreinasofia.es/s-exposiciones/exposicion_virtual.php

Reina Sofia Madrid, Spain
http://www.museoreinasofia.es/s-museo/visitavirtual.php?idioma='en'

Leopold Museum Vienna
http://www.leopoldmuseum.org/index_en.html

Museo Thyssen-Bornemisza, Madrid, Spain
http://www.museothyssen.org/thyssen/coleccion/thyssen_virtual/w_pages/mtb/hall_1.htm

Liceu Barcelona, Spain
http://www.liceubarcelona.com/visita/eng/index.asp

Guggenheim Bilbao, Spain

http://www.guggenheim-bilbao.es/visita_virtual/visita_virtual.php?idioma=fr

Centre Pompidou, France
http://www.centrepompidou.fr/Pompidou/Communication.nsf/0/D8A04006C256531CC1256DE5005A5324?OpenDocument&sessionM=3.4.2&L=1

MuseumsInsel Berlin, Germany
http://www.museumsinsel-berlin.de/index.php?lang=en&page=5_1

2.5.4. Commercial interactive services

2.5.4.1. E-commerce

Electronic commerce or e-commerce consists in buying and selling, marketing and providing products or services through network linked computers. In the telecommunications industry it can also mean the group of applications dedicated to commercial transactions (from Wikipedia).

British Museum, UK (Shop Online)
http://www.britishmuseumshoponline.org/icat/shoponline

The Library of Congress, USA (Shop, Best selling images)
http://loc.gov/shop/index.php?action=cCatalog.showSubCategory&cid=43&scid=402&page=1&PHPSESSID=d656fdd3614b1d9388a816b8244d0a6c

Toronto Public Library, Canada (Photographic and Digital Reproduction Services)
http://www.tpl.toronto.on.ca/spe_ser_photo.jsp

Museum Moderner Kunst Stiftung Ludwig Wien, Austria (Shop)
http://www.mumok.at/?L=1

Kunsthistorisches Museum Wien, Austria (Shop)
http://ecomm.khm.at/cgi-bin/khmmuseumsshop.storefront/EN/Catalog

Secession Wien, Austria (Shop)
http://www.secession.at/shop/index.php

Fundacion Tapies, Spain (Shop)
http://www.fundaciotapies.org/site/rubrique.php3?id_rubrique=94

Van Gogh Museum. The Netherlands (shop)
http://www.vangoghmuseumshop.com/Default.htm

Rijksmuseum Museum Amsterdam, The Netherlands (Shop)
https://rijksmuseum.nl/webwinkel/index.jsp?lang=en

Victoria and Albert Museum (Shop)
http://www.vandashop.com/

2.5.4.2. Online ticketing

On line booking service for museums, exhibitions and events.

Museo Thyssen-Bornemisza, Madrid, Spain
http://www.museothyssen.org/thyssen_ing/informacion/informacion_ticketing_ing.html

Oceanario Lisboa
http://www.oceanario.pt/site/ol_bilheteira_00.asp

Centro Cultural de Belém
https://www.ccb.pt/sites/ccb/en-EN/Bilheteira/Pages/Search.aspx

Belvedere Wien
https://tickets.belvedere.at/index.php5?action=step2

Schoenbrunn Wien
https://eticketing.schoenbrunn.at/amepheas/inet/eticket.html?eLngId=5

Cosmo Caixa Barcelona
http://obrasocial.lacaixa.es/centros/cosmocaixabcnreservas_es.html

Guggenheim Bilbao
http://www.guggenheimbilbao.es/secciones/planea_visita/informacion_museo_tarifas.php?idioma=fr

Centre Pompidou

http://www.centrepompidou.fr/Pompidou/Manifs.nsf/Actualite?ReadForm&count=999&sessionM=2.1.1&L=1

Rijksmuseum Museum Amsterdam
http://ticketing.wheretocard.nl/rijksmuseum/ctrl/orderentry?language=en

2.5.5. Interactive forms

Many institutions use interactive forms for subscriptions, reservations, desiderata, suggestions, comments etc.

New York State Library, USA (Library Online Request Forms)
http://www.nysl.nysed.gov/library/forms.htm

Juedisches Museum Berlin, Germany
http://www.juedisches-museum-berlin.de/site/EN/03-Collections/reading-room/reading-room-application-form.php#formular

2.5.6 User-side services

2.5.6.1. Podcasting (1.2.2)

A system that makes it possible to automatically download documents (generally audio or video) called *podcast*, using a programme ("client") that is usually free of charge called a *feeder*. A podcast is therefore a file provided on Internet for anyone who wishes to subscribe to a periodical transmission that is automatically downloadable from a special programme, called feeder, and is based on RSS feeds.

Podcasting is a package based on the fusion of two words: iPod (the popular reproducer of MP3 Apple audio files) and broadcasting. The term was born when the use of the RSS feeds became popular for exchanging audio recordings on computers, **palmari, digital music readers and mobile phones.

To receive a *podcast* you must have: any *support connected to internet* (a PC, for example); a *special client* programme (often free of charge); a *subscription* with a podcast provider (often free of charge)

A *podcast* works like a subscription to a periodical publication, using a metaphor: the *support connected to internet* is the *postbox*, the *client* is the *postman,* and the *podcast provider* is the *publisher*. The subscriber receives the publications regularly, and can listen to them or see them in the way and in the time best suits him. (from Wikipedia)

MomAudio, USA
http://www.moma.org/visit_moma/audio.html

British Library, UK
http://www.bl.uk/onlinegallery/whatson/downloads/index.html

Guggenheim Bilbao, Spain
http://www.guggenheim-bilbao.es/secciones/area_de_prensa/rss.php?idioma=fr

Cité des Sciences Paris, France
http://www.cite-sciences.fr/francais/aide/syndication/index.php

Espace Dalì Paris, France
http://www.daliparis.com/photos-videos.html

Van Gogh Museum, The Netherlands
http://www3.vangoghmuseum.nl/vgm/index.jsp?page=139043&lang=en

Rijksmuseum Museum Amsterdam, The Netherlands
http://www.rijksmuseum.nl/podcast?lang=nl

Natural History Museum London, UK
http://www.nhm.ac.uk/visit-us/whats-on/temporary-exhibitions/wpy/competition/podcast.jsp

Museo Thyssen-Bornemisza, Madrid, Spain
http://www.museothyssen.org/thyssen_ing/actividades/actividades_actuales.html

2.5.6.2. Social bookmarking (see 1.2.3)

Social bookmarking is a service provided on the web, through which lists of *bookmarks* created by users are made available for free consultation and for sharing with other users belonging to the same virtual community. Categorisation of the resources takes place through "tags" freely chosen by the user.

On the contrary to traditional search engines that "place" a resource on the basis of the number of external links that aim at it, *social bookmarking* favours placing of a resource on the basis of its "acknowledged" usefulness, therefore becoming much more interesting for the user.

The most diffused social bookmarking networks are de.li.cious, founded in late 2003, that coined the term "social bookmarking, then FURL and Simpy, along with Citeulike and Connotea (sometimes called social citation services), and the related recommendation system Stumbleupon in 2006, Ma.gnolia, Blue Dot, and Diigo were released.

Many *social bookmarking* systems offer subscriptions to RSS feeds (see the *infra* entry) based on categories. In this way, the user who has subscribed to the service receives automatic notification every time other users add new bookmarks in the category that interests him. Many of them offer services of social tagging to auto-classificate the bookmarke (see above).

National Army Museum Chelsea, UK (social bookmarking buttons)
http://www.national-army-museum.ac.uk/pages/socialBookmarking.shtml

Victoria and Albert Museum London, UK (social bookmarking buttons)
http://www.vam.ac.uk/vastatic/microsites/1750_scalway/blog/

Getty Bookmarks
https://www.getty.edu/mygetty/mygetty?handler=newuser
Getty Bookmarks lets you collect and save your favorite artists and works of art from the Getty collection on your own bookmarks page.

2.5.6.3. Folksonomies, social tagging (see 1.2.3)

The term, coined by Thomas Vander Wal in 2003, derives from the words *folk* and *taxonomy.* In this case we talk about *collaborative tagging* or *social tagging*, that is *distributed classification*: the same users that visualize a content, categorise it and classify associating tags to it that are not appointed into categories and sub-categories, according to a *bottom-up* approach, that is one that is constructed from the bottom up.

The content of different objects can be described with the same *tags.* The greater popularity of some objects with respect to others can be highlighted in some way (with a specific colour, a size or a different placing).

The user can tag the post of a blog, a photograph, a video, etc. and thus facilitate the search within the archived contents.

Classification is not based on a hierarchical order of the contents, since the user can insert more than one key word. The more a *tag* is applied by a number of users, the more the term will increase in popularity and precision in categorization. Main research categories will therefore be created in the sites on the basis of the themes that are more frequently dealt with in the application and of users' interests. Categorization thus becomes "democratic", not imposed from above, but from below, evolving spontaneously.

It is as if the user created a "personal dictionary" for himself, that he can also make available to other users, providing traces for finding pages a services thanks to the terms used for tagging them.

This system is very like the natural model with which we classify information in the real world, that is to say making piles or bundles on the desk or in a cabinet (*pile cabinet*), as we make with piles of files and documents (*file cabinet*).

One of the defects of this system consists in the proliferation of variants for the one term (synonymy, homonym, single/plural use, small case/upper case, etc.). To avoid this problem, techniques such as *clustering* can be applied, that is to say gathering together

some elements, so that different tags are treated as if they were one (e. *Folksonomy*, *folksonomy* or *folksonomies*).

The folksonomy system is used when it isn't possible or not desired to centrally manage classification and it is desired to make the public participate in the classification of the contents making the mental models emerge from below.

The advantages of this system are: a rapid, distributed and shared classification; scalability, that is to say the capacity to increase or decrease in *scale* in function of users' necessities; limited costs and times; serendipity, ease of use; extensive popular following, creation of common mental models.

The disadvantages are: lack of precision, not easily found (more useful for exploratory rather than precise research); proliferation of variants for the one term; excess of information.

Simpy
http://www.simpy.com/

Taggly
http://www.taggly.com/

Segnalo
http://segnalo.alice.it/?

Technorati
http://www.technorati.com/

StumbleUpon
http://www.stumbleupon.com/

"Steve Museum" project
http://www.steve.museum/
Steve is a collaboration of museum professionals and others who believe that social tagging may provide profound new ways to describe and access museum collections and encourage visitor engagement with museum objects.

taggato
Service proposed by the town of Torino
http://www.comune.torino.it/taggato/

2.5.6.4. File-sharing (texts, images, video)
Sharing of files within a common network. It can take place through a network with a client-server or peer-to-peer structure.

Isabella Steward Gardner Museum
http://creativecommons.org/press-releases/entry/6061

Global Museum Podcast Index
http://www4.wave.co.nz/~jollyroger/GM2/podcasts.htm

SlideShare
http://www.slideshare.net

2.5.6.5. Mashup
This term is used to indicate the possibility of creating Web services within an existing site or in a new site by freely using the information of other sites or services, therefore extracted from external sources using public interfaces. This procedure is possible thanks to the use of application programming interfaces (API), which are a source code interface that an operating system or library provides to support requests for services to be made of it by computer programs.

Sputtr
http://www.sputtr.com/

Book Finder 4 you
http://www.bookfinder4u.com/isbn_search.html

Book Jetty
http://www.bookjetty.com/

2.5.6.6. Story-telling

It is the ancient art of conveying events in words, images, and sounds often by improvisation or embellishment. Stories have been shared in every culture and in every land as a means of entertainment, education, preservation of culture and in order to instill moral values. Crucial elements of storytelling include plot and characters, as well as the narrative point of view. Stories are frequently used to teach, explain, and/or entertain. Storytelling has existed as long as humanity has had language. It's the world of myth, of history, of the imagination... it explains life. Every culture has its stories and legends, just as every culture has its storytellers and often revered figures with the magic of the tale in their voices and minds.

The appearance of technology has changed the tools available to storytellers. [...] Traditionally, oral stories were passed from generation to generation, and survived solely by memory. With written media, this has become less important. Conversely, in modern times, the vast entertainment industry is built upon a foundation of sophisticated multimedia storytelling (from Wikipedia)

Every object tells a story **(see 1.1, good practice 7)**
http://everyobject.net

National Museum of Wildlife Art - Art Tales
http://wildlifeart.org/ArtTales/

Story teller museum, Poland
http://www.storytellermuseum.org/index.html

Guggenheim Bilbao, Spain (Tell about the visit)
http://www.guggenheim-bilbao.es/secciones/el_museo/cuentales_tu_visita.php?idioma=en

2.5.6.7. Interactive games

A videogame is a game with rules that are automatically controlled by an electronic device that uses a man-machine interface based on the display as an output system. Like any game, a videogame symbolically reproduces particular cultural contexts, taking them from their *default* environment and applying them to contexts and situations that can go from the most faithful simulation to parody. Cultural institutions often use them for didactic or entertainment purposes.

Public Records Office – Just for kids, UK **(see 1.1, good practice 9)**
http://www.nationalarchives.gov.uk/teachers/kids.htm

Ajuntament Barcelona, Spain
http://www.bcn.es/jocs/eng/welcome.htm

Guggenheim Bilbao, Spain
http://www.guggenheim-bilbao.es/secciones/ninyos_y_familias/juegos.php?idioma=fr
http://www.guggenheim-bilbao.es/secciones/ninyos_y_familias/imprimibles.php?idioma=fr

Musée Marmottan Monet, France
http://www.marmottan.com/francais/enfants/rebus/index.asp

Musée Marmottan Monet, France
http://www.marmottan.com/francais/enfants/index.asp

Rembrandt Museum, The Netherlands
http://www.rembrandthuis.nl/cms_pages/index_main.html

Liverpool Museums Walker art Gallery, UK
http://www.liverpoolmuseums.org.uk/nof/portraits/index.html

Liverpool Museums Walker art Gallery, UK
http://www.liverpoolmuseums.org.uk/walker/bigart/painting/

Museums of Liverpool, UK
http://www.liverpoolmuseums.org.uk/online/games/beatles/

2.5.6.8. Masterpiece on your desktop
A widget allows you to view a different work from the collection every day. And the 'reverse side' of every work provides more information about the work and the painter.

Rijksmuseum Museum Amsterdam, The Netherlands
http://www.rijksmuseum.nl/widget?lang=en

2.5.6.9. Add a comment
The possibility for a user to add a comment to a text or on an image.

Tate Britain, UK (Write your own label)
http://www.tate.org.uk/britain/writeyourown/

Schoenbrunn, Austria (Guestbook)
http://www.schoenbrunn.at/it/contatti/libro-degli-ospiti.html

2.5.6.10. Send to a friend
The possibility for a user to send the content of a webpage to another person.

Kindermuseum Wien, Austria
http://www.kindermuseum.at/jart/prj3/zoom/main.jart?rel=en&content-id=1127609922463&reserve-mode=active

Juedisches Museum, Berlin, The Netherlands
http://www.juedisches-museum-berlin.de/site/EN/03-Collections/recent-acquisition.php?dummyinclude=/site/system/zoom_bild.php&bildDocID=16360&list=TRUE

2.5.6.11. Votes and polls
The possibility for the user to vote on favourite contents.

Moma, RedStudio, USA
http://redstudio.moma.org/polls/

2.5.6.12. Travelogue Service
Possibility to: organise a journey by selecting information. Simply click on "add to travelogue" button to save information for one's trip; design one's own tailor-made route and create a map of one's trip; make personalised tourist leaflets; create one's trip planner, add notes to each stage of the trip.

Spain.Info **(see 1.1, good practice 16)**
http://www.spain.info/TourSpain/users/authorize?language=EN

2.5.6.13. Personalised agenda and calendar
Personalised agenda for saving appointments and information.
For those who are bewildered by the amount of daily programming at the Institution, the system can also provide the chance to set up a personal profile indicating specific interests making a selection from the event types and the subjects.

Guggenheim Bilbao, Spain
http://www.guggenheim-bilbao.es/secciones/planea_visita/agenda_rapida.php?idioma=&err=1

Cité de la musique Paris, France
http://www.cite-musique.fr/francais/spectacles/agenda.asp

New York's Metropolitan Museum, USA
http://www.metmuseum.org/calendar

2.5.6.14. Personalised Map
Map on which it is possible to save personal information.

2.5.6.15. Personalised Visitor Plans

The system provides a personalised plan for the visit, taking into consideration how and when, with whom and how long the visitor is planning to come, as well as in what is he interested.

Part of the content concerning an exhibition can be retrieved by the visitor after the visit.

Cité des Sciences et de l'Industrie, France (Mes service Visite+)
http://www.cite-sciences.fr/cgi/modif?ref=43bfe9610d2858660884bc4165d88ccd&onglet=profil&langue=fr

Tate Britain, UK
http://www.tate.org.uk/britain/explore/etb.jsp

2.5.6.16 Personalised Web Gallery / The virtual curator

The possibility to select images from the digitised collection in order to create a personalised Web gallery, adding personal comments and descriptions. The possibility to create a "My Personal Museum" space in which to collect, interpret and exhibit regarding a theme, an artist, or a favourite object. Very interesting for school projects.

Virtual Museum of Canada
http://www.virtualmuseum.ca/English/Personal/

Louvre, France **(see 1.1, good practice 5)**
http://www.louvre.fr/llv/perso/identification/connexion.jsp?bmUID=1209501204235

Musée Orsay, France
http://www.musee-orsay.fr/en/collections/index-of-works/home.html

Tate Britain. UK
http://www.tate.org.uk/britain/yourcollection/

2.5.6.17. Virtual postcards

Possibility for the user to make and send self made virtual postcards.

Virtual Museum of Canada
http://www.virtualmuseum.ca/PM.cgi?LM=Postcard&LANG=English&AP=postcard&Category=FP&Language=english&submit=submit

Gubelkian Lisboa, Portugal
http://www.museu.gulbenkian.pt/postais.asp?lang=en

Museo Thyssen-Bornemisza, Madrid, Spain
http://www.museothyssen.org/postales2005/index.html

Musèe Orsay, France
http://www.musee-orsay.fr/it/attrezzi/spazio-personale/tessere-virtuali.html

Irish museum of modern art, Ireland
http://www.irishmuseumofmodernart.com/en/postcard.cgi

2.5.6.18. Learning environments

Sites where the users are able to explore and discover collections through narrative topics, images and other content-rich resources such as library and object records.

UK National Museum of Science and Industry Museum Group – Ingenious Project
http://www.ingenious.org.uk/

Explore Art Getty, USA
http://www.getty.edu/art/gettyguide/

Louvre, France
http://education.louvre.fr

2.5.7 Muve's

According to Wikipedia, "MUVE (plural MUVEs) refers to online, multi-user virtual environments, sometimes called virtual worlds".

The most common platform is Second Life **(see 1.2.5 for examples and 2.2.12)**.

2.6. Audience measurement in Internet

By *audience measurement* we mean all the methods used for calculating how many people form part of an *audience*, that is a group of people reached by a message (television programme, advertising, multimedia contents, written texts, etc.).
In Internet, *audience measurement* is carried out for a variety of reasons, among which:

1) *programming analysis*: we must know the characteristics and behaviour of the users in order to satisfy their requirements;
2) *social research*: public institutions must monitor the means of mass communication (and therefore also Internet) in order to understand the role carried out by the media in involving citizens;
3) *advertising sales*: a lot of media are supported by advertising and, today, it is not unusual for portals of cultural interest to be sustained by the contribution of advertising banners;
4) *product sales* (ticket sales, bookshops, photographs, etc.): it is essential to determine the basin of one's users and study its evolution.

The main aim of audiometric research is therefore to quantify the public, not just in terms of numbers, but also of socio-demographic characteristics (sex, age, study title, geographical area, place of use, taste, behaviour, etc.).
Certain special aspects of the network must however be considered. Within mass communication, Internet represents a real revolution: in traditional media, communication was from one to many whereas the web is characterized by the concept of "interactivity". There is a two-way relation between the user and the web, a constant communications dialogue between content and navigator. The interface of all the new media (web, messenger, chat, blog, etc.) must also be taken into account. These are designed for visualizing the contents and interacting with them in different ways. On the one hand, the user expresses his intentions to the means; on the other, the system, through the aid of technologies in constant evolution, responds to the actions of the user, in a continuous cycle. The new media are therefore able to perceive the desire of the users through devices placed in the interfaces and this makes them able to directly monitor user behaviour in the network.
The aim of this chapter is to map the techniques and metrics used for audience measurement in the Web.
Many professional figures find themselves using these methods of measurement. Among these we find producers for on-line contents, professionals of the computer industry, public administration and e-government operators, webmasters, those in charge of commercial strategies in the network.
These techniques change over time, both as a result of technological development and in relation to the evolution and use of the network.
In order to become familiar with these subjects, below is a list of the terminology currently in use on these themes, which are quite extensive and diversified. Literature does in fact distinguish between:

1) systems based on: *a*) *census-based measurement*, in which the measurement is made on the entire collection of information received, without any panel plans or statistic projections; *b*) systems based on *panel-based measurement*;

2) systems that take measurements based on the network infrastructure (*site-centric / server centric*) or on the user (*user-centric*);
3) measurement based on *server experience* or on *user experience*;
4) measurements based on devices for access to the net (*device-centric*) or systems aimed at visitors (*visitor-centric*);
5) tools of *web analytics* and *audience measurement* services.

Up to now, the quantitative analysis of the *audience*, even within the sphere of other media, has used two approaches:

1) measurement of media consumer behaviour with automatic and passive instruments, that do not foresee the user's direct involvement;
2) information gathering through interviews or questionnaires presented to users, and therefore directly involved.

Starting from the 1990s, with the new potential of Internet and the web, these two approaches have undergone vast evolutions:
Automatic data measurement, that is the gathering and analysis of on-line traffic, is now generically indicated with the term of *web analytics*, a concept that includes the capacity for recording server webs (*logging capabilities*), the technologies for "tagging" the digital contents (*tagging technologies*), the possibilities for "sniffing" the traffic in the network (*network sniffing*), in other words a series of technologies that use different data sources for measuring, analysing and using the information regarding the utilization methodologies of the web by the users.
On the other hand, even gathering data through more traditional audiometric investigations (*metering* and interviews/questionnaires, see *infra*) has in its turn evolved, by taking advantage of the interaction potential through the web.
In no way can it be affirmed that one method is better than another; each time the methodology to be used needs to be verified with respect to the information recovery requirements and available resources..
One of the fundamental aspects is that regarding the modalities for data gathering:

1) in *census data* modality, when the measurement is carried out on the total reference population;
2) in *sample data* modality, when the measurement is done on samples of the population.

Of course, the high costs of measuring and analysing data means that sample data measurements are preferred to census data measurements.

2.6.1. Census data measurements: web analytics

The term *web analytics* refers to the study of the behaviour of the network users.
This system of measurement, of the census data type, does not entail the direct involvement of the subjects to be measured.
A classification of these measurement systems can be made on the basis of the *data sources* of the behaviour of the users on the web:

1) *server based* measurement: the server web records the requests of access (*log*) to the pages of a web site, it files them and analyses them:
2) *browser-based* measurement: in this case the measurement is done by the client's computer. The browser calls up the pages of a site hosted by a web server and these are "labelled" with a form of *tag* through sophisticated technology. This technique is

founded on the conviction that measurements must be made in the closest point to the place and at the moment of effective media consumption of the site's resources, that is to say the instant when the browser loads and therefore visualizes the web pages on the client's screen;

3) *network based* measurement: Measurement takes place at the level of the *proxy servers* of the Internet service providers that sort the requests of resources of the various clients and direct them towards a server web that hosts a site. In actual fact, all the pages consulted by the users are gathered and analyses by these intermediate nodes of the network's architecture. Sophisticated tools "sniff" the page requests and subsequently the data gathered is processed for analysing network traffic.

Various web analytics software and services are available on payment or by open source (for example, Google Analytics, Shinystat, AWStats etc.).

2.6.2 Sample or user centred measurements

If we go back to a definition of the Australian technical Committee for the Internet industry, the methodology of user centred measurement derives from "recording the activity of a sample of Internet users who are recruited to be representative of the entire universe of Internet users" The behaviour of these subjects is subsequently projected in order to estimate the behaviour of the entire population of Internet users through opportune statistical projections".

There are two fundamental elements on which a "user centred" measurement system is based: the identification of a sample of Internet users, that are representative of a whole, and the actual monitoring of the on-line behaviour of these individuals, through an electronic device that records the data.

The sample chosen is usually indicated as a *panel* (according to Wikipedia, a *panel* is « the "quantity" chosen on the basis of representative criteria, used for the statistic measurement of a specific universe. It is usually a group of persons or families included in a sample investigation »).

The choice of a sample of a population can be made according to different modalities; the sample must however reflect as far as possible the total population from which it was chosen, precisely so that the partial information can be subsequently applied to the total of the population investigated. Generally speaking, it is usual to prefer a choice of "casual samples" or "probable" samples, that do not feel affected by the influence or inclination of the analysts. The *panels* are therefore representative statistic samples of a certain sphere, on which a certain number of more or less continuative or distanced-over-time measurements are made. The advantage of these measurements is that they provide data on the evolution of particular phenomena over time.

So how does one recruit a *panel*? Generally speaking, research institutes adopt various techniques, among which telephonic research with random digiting of numbers or personal interviews with person to person meetings, or more recently, recruiting systems by post or web, even if the latter risk falsifying the casual nature of recruiting, imbalanced towards network consumers only.

User-centred measurement methodology (by *panel*) is strongly recommended also during the designing of web sites that are accessible to all user categories, including the most disadvantaged.

In-depth

For example in Italian national rules: having defined the objectives of the web product, experimented alternative solutions, you proceed to an evaluation with the client in the use

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context, to then carry out any corrections and updates, to be submitted to progressive monitoring. "This methodology is founded on four main conditions: 1) the formation of a representative group of users or a panel in which there must be users with different types of disabilities and also the different roles and reasons for which a user is interested in entering the site; 2) the construction of use scenarios: define contexts, reasons, and ways of interaction with the site. It is on the basis of these scenarios that the site is imagined, designed, developed and constantly updated and improved; 3) the evolutionary design: the site is submitted to an evaluation by the panel on the basis of a number of complex scenarios. The evaluation is aimed at defining new requirements and new purposes. The definition of the new purposes should be done interactively through the production of even low level prototypes, but such that they make it possible to evaluate solutions, identify limits and establish feasibility. A constant confrontation with the panel allows us to have an in-progress evaluation of the solutions and gives an advance idea on the final evaluation of the project. Finally the panel becomes an observatory of the use of the site and thus aims at its continuous update and improvement; 4) monitoring: as we have already said, because it is important to ensure that the site , as regards its contents, does not remain the same for too long a period of time, there must be a continuous monitoring for its improvement especially relative to the dynamics of its requirements and interests. The formation of the panel is therefore the central element of the methodology because: it guarantees a level of realism, but also of consensus and communication on the project. From this viewpoint it could have two dimensions of representativeness: disability and professional categories; it produces data and ideas and makes it possible to make empirically founded decisions. From this last viewpoint the panel is a place for experimenting opportunities, but the limits of dedicated technologies for access and interaction.".

<http://www.pubbliaccesso.gov.it/biblioteca/documentazione/studio_lineeguida/index.htm>.

2.6.2.1. *The meter*

The meter, generally used in traditional media, is a device for measuring quantities (*metering device*) in the form of software downloaded and installed in the computers of the subjects to be monitored   . The idea of applying this monitoring technique in the sphere of informatics dates to 1994, when it was used by a group of researchers for measuring the diffusion and use of application software, since the only information available was sales quantities..

Meters were installed on a panel of users for automatically recording the use of the application programmes on personal computers (e.g. Word, Excel). It was noticed with surprise that the meter not only recorded this type of information but also the navigation routes of the individuals being monitored. So it was also possible to count the number of web pages visited.

Thus the PC meter was born: the first automatic passive monitoring device of Internet navigations to be used in sample investigations.

This measuring system entails a minimum involvement of the subjects to be analysed, so that on the contrary to server-centred and browser-centred systems (*devices-based measurement*), aimed at analysing "machine users", it is effectively "user-centred" (*user-centric measurement*). It is no longer the machines and their software that is monitored, but the single individuals with their social-demographic and behavioural specificities.

Fundamentally there are three processes on which monitoring software by meter placed in the PCs of the panellists is based: univocal identification of the individual that navigates; recording of the information regarding his navigation route; sending of the recordings to the companies who asked for the measurement analyses.

Measurements based on *panels* with a *meter* are currently the best for gathering data on the navigators' profiles, the ranking of sites and audience fluctuations among sites (*source&loss*).

Measurement operations by *panel* and *meter* are basically the following:

1) definition of the target and behaviour to be measured (for example, individuals between the ages of 20 and 40 who have used Internet and digital application media from home in the last six months);
2) quantification of the size of this population;
3) *panel* recruitment;
4) data gathering by *meter*;
5) expansion of the data gathered on the total population.

The advantages of this type of analysis are:

- social-demographic profiling
- analysis of the competition
- fluctuation monitoring (*source&loss*)
- grouping by sectors
- measurement of the pages in memory cache
- identification of unique users
- automatic exclusion of non-human traffic

The disadvantages are:

- measurement only from certain places;
- measurement limited to sites with significant traffic
- considerable investments
- data measured not always proprietary
- difficulty in profiling parts of the limited traffic sites

2.6.2.2. *Standardized interview – Static textual questionnaire*
The most extensively used method of investigation for carrying out research on media audiences, including those of web sites and portals, is a standardised interview. This is done by proposing structured questions to all users or to a group of chosen individuals. This measuring system therefore entails the direct involvement of the subjects to be analysed. The aim is to investigate their preferences, habits and behaviour, in order to verify effectiveness in terms of satisfaction of choices made and for studying particular behaviour during network navigation, in other words, to build a "profile".

The choice of those to be interviewed can be casual or not casual, according to whether or not the choice of those to be interviewed should be probabilistic or not.

The following are among the casual methods for choosing a panel:

- *entertainment survey* or *polls*: short requests for judgement on various subjects
- *unrestricted self-selected survey*: usually present on portals and sites with a lot of traffic, they are invitations to participate in a *survey.*
- *volunteer opt-in panel*: self-proposed volunteers recruited through sites and portals who, after being registered and profiled, are subsequently contacted at the beginning of the actual investigation.

Among the non-casual methods for choosing a panel are:

- interviews intercepted among a site's navigators (*intercept survey*): questionnaires self-compiled by the visitor and randomly "intercepted":
- panels based on lists of known names (*list-based sample*): more or less detailed questionnaires submitted to lists of users with Internet access (for example, those registered with a newsletter, or with a library, the friends of a museum, etc.)
- *pre-recruited panels*: recruitment of users that are not self-chosen or volunteers, but chosen with methods of probabilistic sampling

The interviews can be made by telephone or in person, sent by e-mail (*e-mail survey*), directly through the web (*web interviewing*, *web-based survey*), using a graphic interface, of simple and immediate use, for visualizing the questions and gathering the answers.

An on-line questionnaire can be systematically submitted using the technology offered by the web (at the time of entering or leaving a site, the specific amount of time spent on a site, specific navigation behaviour, every access to the site, etc.), but it is important that a visitor is not constantly exposed to invitations to participate in an investigation.

Normally an on-line questionnaire can be visualized on a full screen or inside various sizes of windows (*pop-up*). It is formed of a series of questions posed in different ways (open, closed, single, multiple, etc.) and with which we can interact through interactive graphic solutions (buttons, drop down menus, boxes, advancing arrows, etc.).

In order for the interview to be effective and to have high quality results, it is suggested that a simple language is used and that a certain amount of care is dedicated to the functionality and aesthetics (*look and feel*)of the questionnaire. It is advised that the duration of the interview be communicated: we should remember that the users are being asked to dedicate some of their time to helping us!

The sequence of the questions should be coherent and dynamic, preventing multiple answers, up to the conclusion of the interview and the final thank-you page. The thanks can be confined to two lines written at the end of the questionnaire, or to an e-mail of reply with a text along the lines of: "Thank you! Your email has been sent to us successfully..."

The aim of a pleasant presentation and an effective structure is the achievement of a greater number of completed interviews, minimizing the rate of refusal or incompleteness.

The questionnaire can be a chance for winning over a user by registering him with the newsletter or for recompensing him for the energy spent in compiling it, "making him a present" of resources that would usually be subject to payment or reserved (digital and non digital gadgets, inscriptions to newsletters, the privilege of cooperating in the contents, etc.).

The results can be used through statistical processes or by extracting individual suggestions for intervening on one's web application.

Once the analysis has been completed, it is advised that the results of these surveys (*website feedback survey results*) be published with an indication of the number of questionnaires analysed and the suggestions that will derive or which have already been collected and implemented on the web application.

The following are the advantages of this type of technique:

- limited costs
- rapid planning and completion times
- capacity to reach users all over the territory
- possibility of using multimedia contents (audio and video)
- control of the processes in real time.

What is really critical is the truthfulness of the statements provided by the interviewee regarding his identity, a question that has been rendered even more complicated by the

new reality of Internet that witnesses the increase of "virtual beings" (role games, chat, avatar, nicknames, etc), although studies in this sector are not yet consolidated.

2.6.3. Audience metrics

The main objective of audience metrics, that were originally started within the sphere of advertising and marketing, is that of providing qualitative and quantitative numeric indicators that are useful for analysing and understanding the effectiveness and performances with respect to the contents and to the services proposed by one's own web application.

Audiences translated into numbers are defined as *ratings.*

Although in traditional media measurement systems are by now standardized (for example, average minute for TV, average quarter of an hour for press, etc.), this is not the case as regards Internet and the Web. Let us consider the differences.

In traditional media, the relations between the means (TV, radio, cinema, press etc.) and the public (TV viewers, radio listeners, readers) is identified through measurement of the *exposure*, without a close study of the motivations and effects of this exposure; starting from the Nineties, in the case of Internet, new metrics (*e-metrics*, *web-metrics*, *net-ratings*) were identified for investigating and quantifying relations between users and digital content. The new *medium* is no longer characterized by just an "exposure" logic, but becomes an "interactive" space of action. The "viewer" is transformed into an "active user".

In terms of concept, by "interaction in Internet" we mean the use on the web of a space of variable size in which to put data (informative, promotional, advertising, multimedia, etc.) so that the user is not confined to just looking at them but is encouraged to interact providing a form of reply. This strategy can be defined as a "Call to action", in the sense that the contents are published in the network inviting the user to "do something!" and also specifying "what to do". Closely linked to this idea there is also the so-called "funnel process": the user is involved in various processes that bring him from being a simple visitor to initiating interactive procedures so reacting to the communications to which he has been exposed. Of particular importance in the sphere of e-commerce, this process thus makes it possible to verify in real time the effect of a communication on navigators' behaviour.

There are many forms of interaction: click on a banner, fill in a form or questionnaire, make a purchase order, download applications, participate in a community tool, insert files, use a contents collector, etc.).

Within the sphere of *exposure metrics*, the following are the main indicators, each one of which is in its turn connected to more specific metrics:

- *Impressions :* number of banners inserted, fixed or variously animated, seen by the user
- *Page views* : number of web pages requested and visualised by the user
- *Visits* or *sessions* : number of visits to a site made by users. By visit or session we mean the visualisation of a series of pages by a user without there being a period of over thirty minutes of inactivity between one page and another.
- *Unique visitors* : number of single users that have visited the site, net of duplications.
- *Time spent* : time spent in minutes and seconds for navigating or visualising the pages of a site or for using a digital application.
- *Frequency* : average number of visits to a site or of use of a digital application by a single individual

Within the sphere of *interactivity metrics* we can distinguish between:

- passive exposure, that can be investigated by calculating *page views*, and active exposure, identifiable with the *click* action, corresponding to the characteristics of the navigator, or *viewer* or *clicker* (Google/Yahoo confrontation);
- metrics for monitoring the use of the contents (*content metrics*) and metrics for monitoring activities connected with e-commerce (*commerce metrics*).

"Interactivity" metrics are used especially in the marketing rector, but they can also be important in the sphere of cultural web applications. The most important indicators are:

- *Click-through* (the act of clicking on an announcement or banner): absolute number of click actions carried out during a promotional campaign, which in the field of marketing is also linked to the concept of *pay by click* (payment for the clicks generated).
- *Click-through rate*: within the sphere of a single campaign, relation between clicks generated by a banner and the total visualizations of the same announcement
- *Conversion*: successful completion of the phases of a process aimed at a network result (e.g. inscription to a newsletter, download of a media, purchase of a product, etc.)
- *Conversion rate:* relation between the conversion operations carried out with success and the total of potential conversions
- *Interaction rate* (time spent in interaction): average time spent in interaction with an announcement.

Obviously, to make a correct analysis of the results, the indicators that analyse the negative results must be considered:

- *Abandonment rate*: percentage of processes not concluded with respect to the number of processes begun;
- *Churn rate* (cancellation rate): percentage of cancellations (for example, to a newsletter)
- *Bounce rate* : percentage of missed deliveries (for example, of e-mails)

Within the sphere of interactions, it is important to understand other concepts:

- *Inquiry* (information requests): number of information requests sent directly from the user by web
- *Lead* (profiled user): concept that indicates that a user has provided information on his preferences in the network
- *Search* (information search): number of searches that the user makes on a site using a research system that is internal to the web application
- *Registration*: number of registrations made by users for access to information or services;
- *Order*: number of orders made by users for purchasing products or services.

Although they are not studied in depth in this context, we should not forget the indicators relative to communication costs, or the investments made to generate attention (costs for exhibiting information) or to generate action (costs for enticing interaction).

2.6.4. Log file analysis

Servers that host web applications send users textual contents, images, multimedia files, etc. In order to increase users' satisfaction rate, navigators' requests must be carefully monitored and analysed. Normally, management systems for network contents offer the chance to collect and file the information regarding the activities of the server web,

recording all the processes. Every provider of server solutions includes his own systems for logging capabilities that aim at collecting detailed information on the users' use of the site. This is then analysed by different professional figures, in relation to the different areas of responsibility (technical, scientific, research, marketing).

The interpretation of the information on network traffic makes it possible to extract indicators relative, for example, to the number of accesses, the navigation routes, behaviour models, technical configuration of the devices used for connecting.

The web page requests made by users are memorized in the form of *log files* that therefore contain the results of the recording of the activities carried out by a server web. Due to the considerable size of this type of file, their processing is usually carried out by specific software called *log analyzers*. The latter classify *logs* by type, that is to say access logs (page requests that reach the server with the time and date of the request as well as the IP addresses of the computer that request the resource and the name of the resource requested by the user, all memorized); errors log (recording of the bad functioning in resource requests); reference log (recording of the URLs from which the user comes, the research engines used and the key words digited); agents' log (recording of the information regarding the browsers used by the client).

The analysis of the log files, of the census and not sample type, must however consider wide margins of approximation in the information gathered through the server webs.

The *advantages* of this type of analysis are numerous:

- special installations are not required
- the information gathered proprietary and both current and historical information is always available
- all events that happen in the server are memorized
- even low traffic sites are analyzed.

The most obvious *disadvantages* are the following:

- difficulty of standardizing the metrics
- an important part of the resources visited escapes the server measurement (difficulty in measuring dynamic pages[47]; no measurement of traffic from memory or *cache*, deriving from mechanisms of duplication and temporary filing of the resources visited by users, who can recover them without the direct aid of the server, but rather through *proxy servers* or *cache webs* installed in computers with a local network linked to Internet
- difficulty of calculating the time really spent on a page (the request of a resource does not necessarily involve its visualization)
- lack of socio-demographic information
- lack of information on competition
- lack of certification or check of information taken from third parties, since all the processes are managed directly from the software platforms.

2.6.5. Protection of privacy

On-line audience measurement activates processes for acquiring personal data of users who navigate in the network.

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[47] Recently some Content Management Systems (CMS) include watchdog modules to monitor the web site, capturing system events in a log to be reviewed by an authorized individual at a later time. The watchdog log is simply a list of recorded events containing usage data, performance data, errors, warnings and operational information. It is vital to check the watchdog report on a regular basis as it is often the only way to tell what is going on.

When researching samples of individuals interviewed or metered, monitored users should be warned beforehand of the on-going audiometric procedures so that they are aware of the operations for gathering information that regard them; in the case of web analytics techniques, the measurements are automatic and the individuals "measured" are not aware of the procedures taking place.

In both cases the legislation regarding rights to privacy and protection of personal data in Internet should be taken into consideration.

The Directive number 2002/58/CE of the European Parliament and of the Council of 12th July 2002 regarding the treatment of personal data and protection of privacy in the sector of electronic communications[48] foresees that the use of data gathering tools must be made known to the subjects being monitored so that the gathering is transparent and at the same time it highlights that these tools, if used legitimately exploiting the informatics potential of digital technology, can be considered legitimate for improving on-line services destined for users.

The World Wide Web Consortium (W3C) proposes the use of a standardized solution known as P3P (Platform for Privacy Preferences Project)[49], a project that allows web sites to state how they mean to use the information gathered from users navigating in the network.

Circulation Audit Board. *Rules & Guidelines for Interactive Publishers*, 2000.
<http://www.auditbureau.org.au/CAB/pdf/CABwebrules.pdf>

Diamond, Fran. *Web Traffic Analytics and User Experience.* 28 July 2003.
<http://www.boxesandarrows.com/view/web_traffic_analytics_and_user_experience>

Double Click. *Internet Audience Dynamics: How Can You Effectively Use Online as a Reach Medium?.* September 2004.
<http://www.doubleclick.com/insight/downloadResearch.aspx?fileName=dc_internetauddynamics_0409.pdf>

Esomar. <www.esomar.org>

Web Analytics Association. *Web Analytics Key Metrics and KPIs*, Version 1.0, 2005.
http://www.webanalyticsfacts.nl/wp-content/documents/waa-kpi-definitions-1-0.pdf

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[48] For the text of this directive and other relevant legislation consult the site of the European Data Protection Supervisor, <http://www.edps.europa.eu/EDPSWEB/edps/lang/en/pid/17>.
[49] <http://www.w3.org/P3P/ >

3. The importance of using metadata

3.1. Why use metadata for describing websites?

MINERVA's seventh principle of quality states: "A good quality cultural website must: be committed to being **interoperable** within cultural networks to enable users to easily locate the content and services that meet their needs".

In order to guarantee interoperability between systems, **metadata** must be correctly compiled.

According to *MINERVA Technical Guidelines for Digital Cultural Content Creation Programmes* "Metadata can be defined literally as 'data about data,' but the term is normally understood to mean structured data about resources that can be used to help support a wide range of operations on those resources.

If a web application is created using certain standards this will facilitate interaction and interoperability with other web sites and with other on-line bodies (search engines, portals).

A resource may be anything that has its own identity, and a resource may be digital or non-digital. Operations on digital resources might include, for example, disclosure and discovery, resource management (including rights management) and long-term preservation. For a single resource different metadata may be required to support these different functions"[50].

The daily work of the research engines spiders consists in searching and indexing metadata on the web pages that they visit. Our use of common search engines consists in providing metadata so as to identify resources formed from web pages. Unfortunately the metadata managed by search engines is limited or not structured and therefore we often find among the results a number of references that have nothing to do with our search.

If, for example, we want to make a search on Google about MINERVA project and we digit only the word "MINERVA" we see how the result which is interesting for us is not present in the first six results (research made on 20th May 2008).

If however the information published on the web has been "classified" in a more or less structured manner, the research is more effective.

3.2. Benefits of using metadata

Metadata is used according to standard rules for:

- making it easier to find one's contents from among a large number of agents (portals, aggregators, search engines)
- allowing aggregators to promote material
- increasing the visibility and awareness of one's available resources

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[50] http://www.minervaeurope.org/publications/technicalguidelines/metadata.htm.

- allowing potential users to determine the relevancy of resources even before accessing them
- facilitating production of interoperable services
- improving the visibility of one's contents in search engines such as Google, Google Scholar, Yahoo etc.
- increasing traffic and business towards web sites
- exposing resources to new markets

.
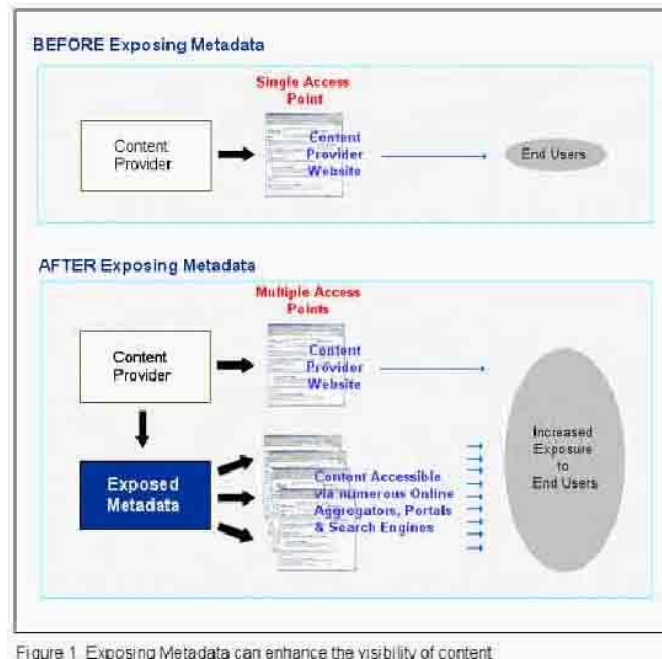
Figure 1 Exposing Metadata can enhance the visibility of content

Source: http://www.icbl.hw.ac.uk/perx/advocacy/exposingmetadata.htm

The advantages listed are similarly valid:

- both for the providers of contents that provide the resources free of charge
- and for providers of contents on payment or with access restricted to registered users.

Unfortunately people do not always understand that by providing metadata they become more visible and create traffic towards their web site. Every day, it is the sharing of metadata and not the creation of a data monopoly that makes one's contents more precious.

3.3. The Dublin Core standard
http://www.dublincore.org

In this sphere the standard defined by the Dublin Core Metadata Initiative (DCMI) is essential. This organization develops and promotes the adoption of standards for the definition of metadata for the description of digital resources. DCMI has in particular developed a standard vocabulary for indicating the main properties of the most common online resources. Originally founded for the description of bibliographic references, this vocabulary was generalized and adapts to the description of a vast number of resources. Under the guidance of the NISO (National Information Standards Organization), the Dublin Core Metadata standard was established as the ISO 15836:2003 regulation. The publication of the ISO regulation forms an official acknowledgement for the use of the set defined by Dublin Core that by now, starting from the first conference in March 1995 in

Dublin (Ohio), has been translated into over 20 languages and is used worldwide for integrating various types of information.

The Dublin Core standard is composed of a group of elements for describing properties regarding resources.

This first group of elements, originally conceived for the descriptions generated by authors of web resources, was subsequently the object of considerable interest from various communities, among which museums, other public institutions and commercial enterprises, so establishing the necessary consensus for standardization at all levels.

The success of Dublin Core is due to the ease of comprehension of its elements, its universally accepted semantics and the ease of its application to different languages.

Dublin Core can moreover be extended by using Refinement Elements: Qualifiers and Encoding Schemes.

By following some guidelines it is possible to extend it, including other tables within it. The Simple Dublin Core level foresees the fifteen basic elements:

Element	Description
DC.title	A name given to the resource
DC.creator	An entity primarily responsible for making the resource.
DC.subject	The topic of the resource
DC.description	An account of the resource: description may include but is not limited to: an abstract, a table of contents, a graphical representation, or a free-text account of the resource.
DC.publisher	An entity responsible for making the resource available
DC.contributor	An entity responsible for making contributions to the resource.
DC.date	A point or period of time associated with an event in the lifecycle of the resource.
DC.type	The nature or genre of the resource
DC.format	The file format, physical medium, or dimensions of the resource.
DC.identifier	An unambiguous reference to the resource within a given context, i.e. URL, ISBN number, etc.
DC.source	A related resource from which the described resource is derived
DC.language	A language of the resource
DC.relation	A related resource
DC.coverage	The spatial or temporal topic of the resource, the spatial applicability of the resource, or the jurisdiction under which the resource is relevant.
DC.rights	Information about rights held in and over the resource

Using these elements we can describe a resource as a group of element/value couples.

For example, to describe this chapter we could use the following sequence of element/value couples:

DC. title="The importance of using metadata"
DC.creator="MINERVA WP5 Quality Accessibility Usability"
DC.publisher="MINERVA Project"
DC.type="text"
DC.format="html"
DC.language="English"

All the elements of the language are OPTIONAL and can, if necessary, be REPEATED. For example, when there are more than one author the element DC.creator can be repeated.

The Qualified Dublin Core level adds other elements and introduces a group of qualifiers that permit refining the semantics of the base elements.

Element	Description
DC.audience	Group of bodies for which the resource is useful
DC.provenance	Information on possible changes from the creation of the resource
DC.rightsHolder	Indicates who holds the rights to the resource's use
DC.instructionalMethod	Indicates the learning process for which the resource is suitable

DC.accrualMethod	Indicates the method with which the resource is accrued to a group
DC.accrualPeriodicity	Indicates the periodicity of a resource to a group
DC.accrualPolicy	Indicates the policy that regulates the accrual of the resource to a group

The qualifiers make it possible to describe the information provided through the base elements in more detail.

They are shown by the **Element Refinements**, that is elements that better specify certain characteristics, and by the **Encoding Schemes**, that is references groups for the standard interpretation of the values of the elements. For example, we can rewrite the description of this chapter with greater precision in the following way:

DC. title="The importance of using metadata"
DC.creator="MINERVA WP5 Quality Accessibility Usability"
DC.publisher="MINERVA Project"
DC.type="text"
DC.format="text/html" extent "62 kb"
DC.language="Eng"

With respect to the previous description we have indicated the type as text, referring to the standard *Encoding Scheme DCMI Type Vocabulary*, the format as text/html, referring to the MIME Type standard and the language as eng, referring to the standard. The **DC.extent** element was also used. This makes it possible to define the dimensions of the resource. The indentation of the extent element indicates that we are dealing with a supplementary indication (**refinement)** of the format element.

The language defined by the Dublin Core standard is independent from any special regulation and we can choose the terminology that best suits us.   We could, for example, make the language elements correspond to the fields of a table of a database or to the properties of an object in a programming language. The

DCMI in any case provides some indications for the use of a common syntax for the description of online resources, such as for example a web page. This can be described through the Dublin Core elements expressed with the **<meta>** tags in the XHTML document of the same resource, obviously quoting the source/UTL of the scheme adopted.

  For example, this article can be described with the following XHTML code, collecting the metadata in the <head> section of the XHTML source code of each page and using the <meta> and <link> elements:

```
<head>
<link rel="schema.DC" href="http://purl.org/dc/elements/1.1/" />
<link rel="schema.DCTERMS" href="http://purl.org/dc/terms/" />
<meta name="DC.title" lang="it" content=" The importance of using metadata" />
<meta name="DC.creator" content="MINERVA WP5 Quality Accessibility Usability " />
<meta name="DC.publisher" content="MINERVA Project" />
<meta name="DC.type" scheme="DCTERMS.DCMIType" content="Text" />
<meta name="DC.format" scheme="DCTERMS.IMT" content="text/html"/>
<meta name="DC.format" scheme="DCTERMS.extent" content="62kb" />
<meta name="DC.language" scheme="DCTERMS. ISO639-2" content="eng" />
</head>
```
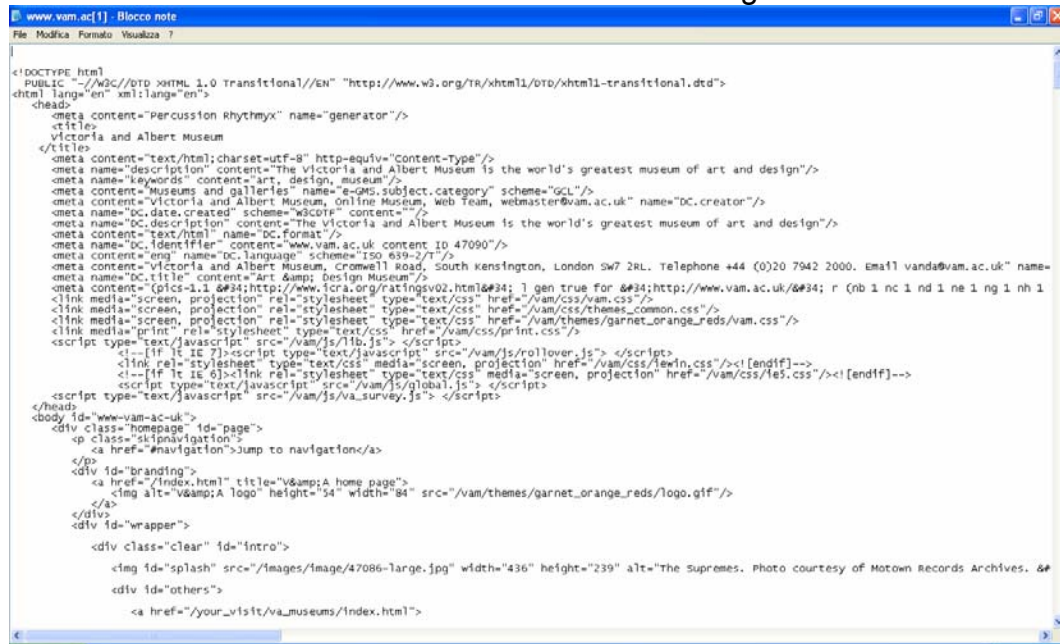
In this example, the <link> elements indicate the schemes used for the elements of the *Simple Dublin Core* (DC) and for the *Qualified Dublin Core* (DCTERMS), while each <meta> element corresponds to the element/value couples used in the first examples.

When possible, the data of some elements should be chosen from a "controlled vocabulary", that is a series of terms carefully defined and opportunely used. This can greatly improve the research results, because computers are able to identify the individual words but find it difficult to understand concepts, associations, synonyms...

Without basic controls of terminologies, incomplete or incorrect metadata can lead to poor quality in the results of a research.
Controlled vocabularies and thesauruses can be used through ENCODING SCHEMES.

```
www.vam.ac[1] - Blocco note
File  Modifica  Formato  Visualizza  ?

<!DOCTYPE html
  PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html lang="en" xml:lang="en">
  <head>
    <meta content="Percussion Rhythmyx" name="generator"/>
    <title>
    Victoria and Albert Museum
    </title>
    <meta content="text/html;charset=utf-8" http-equiv="Content-Type"/>
    <meta name="description" content="The Victoria and Albert Museum is the world's greatest museum of art and design"/>
    <meta name="keywords" content="art, design, museum"/>
    <meta content="Museums and galleries" name="e-GMS.subject.category" scheme="GCL"/>
    <meta content="Victoria and Albert Museum, Online Museum, Web Team, webmaster@vam.ac.uk" name="DC.creator"/>
    <meta name="DC.date.created" scheme="W3CDTF" content=""/>
    <meta name="DC.description" content="The Victoria and Albert Museum is the world's greatest museum of art and design"/>
    <meta content="text/html" name="DC.format"/>
    <meta name="DC.identifier" content="www.vam.ac.uk content ID 47090"/>
    <meta name="eng" name="DC.language" scheme="ISO 639-2/T"/>
    <meta content="Victoria and Albert Museum, Cromwell Road, South Kensington, London SW7 2RL. Telephone +44 (0)20 7942 2000. Email vanda@vam.ac.uk" name=
    <meta name="DC.title" content="Art &amp; Design Museum"/>
    <meta content="(pics-1.1 &#34;http://www.icra.org/ratingsv02.html&#34; l gen true for &#34;http://www.vam.uk/&#34; r (nb 1 nc 1 nd 1 ne 1 ng 1 nh 1
    <link media="screen, projection" rel="stylesheet" type="text/css" href="/vam/css/vam.css"/>
    <link media="screen, projection" rel="stylesheet" type="text/css" href="/vam/css/themes_common.css"/>
    <link media="screen, projection" rel="stylesheet" type="text/css" href="/vam/themes/garnet_orange_reds/vam.css"/>
    <link media="print" rel="stylesheet" type="text/css" href="/vam/css/print.css"/>
    <script type="text/javascript" src="/vam/js/lib.js"> </script>
        <!--[if lt IE 7]><script type="text/javascript" src="/vam/js/rollover.js"> </script>
        <link rel="stylesheet" type="text/css" media="screen, projection" href="/vam/css/ie7in.css"/><![endif]-->
        <!--[if lt IE 6]><link rel="stylesheet" type="text/css" media="screen, projection" href="/vam/css/ie5.css"/><![endif]-->
        <script type="text/javascript" src="/vam/js/global.js"> </script>
    <script type="text/javascript" src="/vam/js/va_survey.js"> </script>
  </head>
  <body id="www-vam-ac-uk">
    <div class="homepage" id="page">
      <p class="skipnavigation">
        <a href="#navigation">Jump to navigation</a>
      </p>
      <div id="branding">
        <a href="/index.html" title="V&amp;A home page">
          <img alt="V&amp;A logo" height="54" width="84" src="/vam/themes/garnet_orange_reds/logo.gif"/>
        </a>
      </div>
      <div id="wrapper">

        <div class="clear" id="intro">

          <img id="splash" src="/images/image/47086-large.jpg" width="436" height="239" alt="The Supremes. Photo courtesy of Motown Records Archives. &#
          <div id="others">

            <a href="/your_visit/va_museums/index.html">
```

Dublin Core is too general for suitably describing specific resources; we are often forced to personalize the scheme in order to satisfy particular requirements with the result that, even while using the same regulations, the metadata is not directly interoperable, unless by mapping the respective application profiles. What can appear as a limit is rather the strong point for Dublin Core. Whoever applies Dublin Core is not limited to an excessive strictness in the registration of the characteristics of a resource, but can create more detailed specifics only if the information that must be described requires it.

3.4. Another way for exposing resources: Syndication (distribution of contents)

There are alternatives to the solution described that foresee a separation between the resource (in our case the article) and its description. According to these alternatives the description of the resource is expressed in XML or RDF/XML in an external file and there will be a reference to this description in the resource through a <link> tag. This procedure is called **Syndication**.

'Syndication' is often used through RSS format, because this file format makes it possible to expose the contents for their reuse.

RSS, a format based on XML, stands for Rich Site Summary, RDF Site Summary or Really Simple Syndication, depending on the version used.

An RSS file (also known as RSS feed or RSS channel) consists in a list of elements (ITEMS), each of which contains a TITLE, a DESCRIPTION and the LINK to a web page.

These are metadata, with contents completely available separately and accessible from the link in the RSS file.

The use of the RSS feed is immediate. Once an RSS file is available on a web site, the parties involved can simply take a file from the site and reuse its contents in a variety of ways.

There are various versions of RSS, but RSS applications usually support any RSS version. An RSS allows potential users to see the data of some contents providers without necessarily visiting their site.

For example, many daily newspapers offer their contents with the RSS system (Really Simple Syndication), a simple and easy way for being informed in real time. Thanks to the RSS feeds, you can receive on your computer updates on the latest news published by

the site. What's more, anyone who has a blog can spread the news of that daily in a simple and immediate manner.

To access the RSS contents in a few easy steps it is sufficient to have an Internet connection and a special programme called "aggregator". There are many that can be downloaded on one's PC or that can be used through the web.

Some aggregators integrate perfectly with the main browsers and with the most commonly used electronic mail programmes.

3.4.1. Feed readers

A feed reader is a programme that is able to carry out the download of an RSS feed (the user only has to indicate the URL of the feed to the programme), do its *parsing* and visualize its contents on the basis of the user's preferences.

Feed readers often have advanced functions; for example they can automatically detect if the feed producer has done updates to the feed, carrying out their download at regular intervals.

Many feed readers can be freely downloaded from the net, for example
- Feedreader Windows
- Sharpreader Windows
- Sage plug-ins FireFox/ThunderBird
- Urss plug-ins Mozilla
- Steaw Linux
- Netnewswire Lite Mac OS X

www.24hourmuseum.org.uk/home.rss
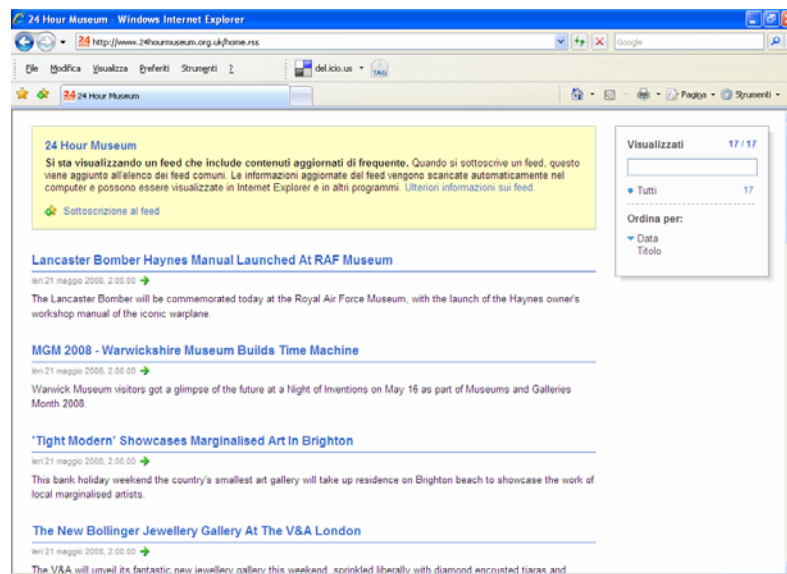
3.5. Towards semantic integration

The web is not a collection of documents, it is a group of places set in a virtual territory.
The places of the web are points of entry for interaction between individuals and individuals, between individuals and organizations, between organizations and organizations.
The interaction occurs through the exchange of information and documents and access to services.
The basic problems of the web therefore consist in finding the relevant places and in exploiting the information and services available.
Search engines (OPACs, the interrogation masks of our information systems….) are essential for moving in the web but they are rapidly becoming insufficient: sometimes we end up with too many results, most of them useless; sometimes we have no results; results depend on the vocabulary used (search by word or sequence of words); one page at a time is localized.
The ambiguity and subtleties of language must also be considered. For example, "net" means quite different things for a web designer or for a fisherman; a violinist is part of an orchestra and his fingers are part of him, but are his fingers part of the orchestra? If I say the teaspoon is in the cup, do I mean that it is resting in the concave part of the cup, or that it is included in the actual material of the cup?
For a human-interpreter statements are always disambiguated from the context, because we reason by deduction, but for a computer?
One solution could be to teach machines to disambiguate the statements present on the net, through the construction of ontologies.
An ontology is a hierarchical description of the relations between concepts in a certain domain plus an unambiguous description of the concepts themselves.
Ontology is a term taken on loan from philosophy that refers to the science of the description of the *type of entity* of the World and of how they are *related to one another*.
Often ontologies are limited to specific domains of awareness, so that an entity assumes one meaning rather than another (we think for example of the net, but also of terms such as document, layer, web, etc.)
The subsequent step is integration between ontologies.
The overall solution is called "semantic Web".

3.5.1. The semantic web
What is the semantic web? Tim Berners-Lee, James Hendler, Ora Lassila defined it "A new form of Web content that is meaningful to computers" (The Semantic Web, *Scientific American*, May 2001).
But what does it mean? It permits the localization of information and services by concepts rather than by key words and permits the complete automation of the services.
The problem is that the World Wide Web was originally constructed for being used by man and, even if everything in it can be read by machine, this data cannot be understood by the latter.
It is really difficult to automate anything on the Web and, because of the quantity of information contained, it isn't possible to manage it manually.
The solution is that of using *metadata for describing the data* contained on the Web. We must remember that on the Web the distinction between *data* and *metadata* isn't absolute.
It is a distinction that was originally created by a specific application and sometimes the resource itself can be interpreted simultaneously in two ways and the metadata can describe other metadata. Almost always *data* and *metadata* are based on specific syntax (logical structures) so avoiding every possibility of equivalence.

To describe the data contained on the Web, models must be defined for representing the knowledge, that is to say we must study how it is possible to represent knowledge of the world and what kinds of reasoning can be done with that knowledge.

The formal definition of a set of concepts with their logical relations is called *ontology.*

Basically, we must exploit the potential of informatics to the full. In order to be considered intelligent, a system must be able to represent and process "imprecise" and "incomplete" knowledge, solve problems even in the presence of fragmentary and ambiguous information, learn…

A knowledge base contains knowledge of the system and on the contrary to a data base it can contain partial information. It can be expressed in a declaratory symbolic language, it allows the introduction of new facts starting from those it already contains.

In order for these functions to be active, a scheme for representing knowledge is necessary.

In the semantic web, information and services are directly accessible to the software applications, not only to the users. The main difficulties consist in defining standard formats for assuring the interoperability of the applications and in the possibility of making deductive reasoning in a completely automatic manner starting from the information available.

The current web is a structure organized only to a limited extent. It foresees that our analyses of the documents and of the capacities available are based on the search for key words and they are encouraged by an intelligent use of the connectivity of documents and by the use of opportune models. The entire mass of this information is unmanageable without strong support tools.

To give an example, if we search for information on "marsupials", the textual search engine identifies all the pages where the word "marsupial" (as it is written) is present, while a semantic search engine localizes a photo of the *wolf of Tasmania* (which is a marsupial) in a page where the word "marsupial" does not appear, because it finds an ontology of belonging of that subset to that set.

But where are we now? The Semantic Web hypothesized by Tim Berners-Lee cannot exist yet for a long time. However, web sites, intranet, extranet that provide information services are already numerous and technologies based on descriptive logic are by now ready for representing knowledge in textual form and for providing automatic reasoning services. It is therefore already possible to take the first steps towards a Semantic Web creating simple applications based on the descriptive logics that provide services for our web sites.

3.5.2. Towards OWL

How may we build a web ontology? The ontological language OWL was designed for providing a language that can be used for describing the classes and relations that link them and that are inherent to documents and to web applications.

The Web Ontology Language is a markup language to explicitly describe meaning and semantics of terms with vocabularies and relations between the terms. This description of terms and relative relations is called ontology (informatics). The objective is to permit software applications to develop the content of the information of the documents written in OWL instead of just presenting information to humans. Together with RDF, of which it is an extension, and other components, OWL forms part of a project, still in progress, of the semantic Web.

3.5.3. Resource Description Framework (RDF)

Resource Description Framework (RDF) is the basic tool for codifying, exchange and reuse of structured metadata, and permits interoperability between applications that are exchanged on the Web *machine-understandable* information.

RDF provides a model for describing the resources that have properties (that are defined also as attributes or characteristics). RDF defines a resource as any object that is univocally identifiable through a Uniform Resource Identifier (URI). It provides interoperability between applications that exchange metadata and is targeted for many application areas including: resource description, site-maps, content rating, electronic commerce, collaborative services, and privacy preferences.

The RDF data model, that permits representing statement RDF in a syntactically neutral manner, is very simple and is based on three types of object: resources, properties e statements.

Resources: Anything described by an RDF expression. A Web page, or part of one, or an XML element within the source document. But also an entire collection of web pages, an object that is not directly accessible by Web.

Properties: A property is a specific aspect, a characteristic, an attribute, or a relation used for describing a resource. Every property has a specific meaning, it defines admissible values, the types of resource that it can describe, and its relations with other properties. The properties associated with a resource are identified by a name and assume values.

Statements: A resource, with a property identified by a name, and a value of the property for a specific resource, forms an RDF statement. A statement is therefore a triple composed of a subject (resource), a predicate (property) and an object (value). The object of a statement (that is the property value) can be an expression (sequence of characters or some other primitive type defined by XML) or another resource.
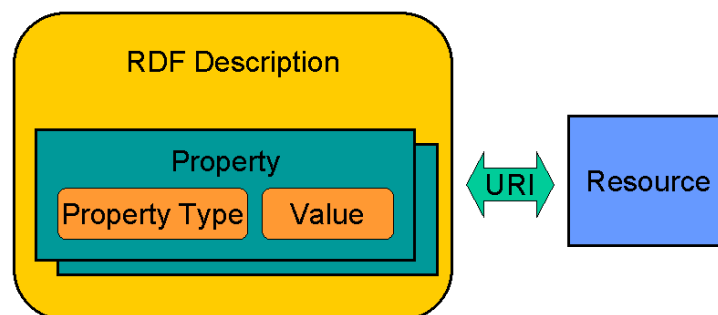
For example, the statement "William Shakespeare is the author of Hamlet" can be expressed in RDF like this:

```
<rdf:RDF
 xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
 xmlns:au="http://description.org/schema/">
 <rdf:Description about="http://www.gutenberg.org/dirs/etext98/2ws2610.txt">
  <au:author>William_Shakespeare</au:author>
 </rdf:Description>
</rdf:RDF>
```

The semantic Web and systems based on descriptive logics are the immediate future, due to the resistance of many communities to full interoperability, but numerous software tools are already available on the market (free, often):

- for the use of RDF or OWL ontologies by software applications (e.g. *Jena*[51])
- for the definition and update of RDF or OWL ontologies (e.g. *Protégé*[52])
- for the automatic execution of deductive reasonings in OWL DL (e.g. *Racer*[53])

3.5.4. The semantics for cultural heritage: CIDOC CRM

Let us come to the applications of descriptive logics in the field of cultural heritage, certainly a domain of knowledge by definition extremely complex, varied and slippery as regards the ambiguity of the terminological meanings and at the same time the importance of the contextualization of every statement.

The main semantic project is undoubtedly the CIDOC Conceptual Reference Model (CIDOC CRM), promoted by the International Committee for Documentation of ICOM (International Council of Museums) and arrived at a stable model after a decade of work.

The CIDOC Conceptual Reference Model (CRM) provides the extensible ontology for concepts and information in cultural heritage and museum documentation. It is the international standard (ISO 21127:2006) for the controlled exchange of cultural heritage information. Archives, libraries, museums, and other cultural institutions are encouraged to use the CIDOC CRM to enhance accessibility to museum-related information and knowledge.

This is therefore a formal ontology aimed at facilitating integration, mediation and inter-exchange of heterogeneous information on cultural heritage.

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8th March 2006, <http://www.icbl.hw.ac.uk/perx/advocacy/exposingmetadata.htm>
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[52] http://protege.stanford.edu
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4. Practical tools

Two practical tools for cultural subjects who want to evaluate the users' point of view.

4.1. A self-evaluation questionnaire for planning a user-centred web application

This handbook is based on a concept that has been often been reasserted in MINERVA tools – that is that the quality of a cultural project implies decisions that must be dealt with from the earliest stages of that project. This is also true as regards interaction with users and their satisfaction, which on the other hand is a central goal of a high quality web application.

This questionnaire, that to some extent recovers the check-points of the *Handbook of quality principles* but for the most part is based on the contents of the manual that you are reading, is addressed to those cultural subjects that are about to develop a new web application (or want to update one already on-line) and whose objective is to seriously evaluate user's expectations, their satisfaction and the possibility of foreseeing advanced forms of interaction for them. It is suggested that the questionnaire is used not only in the initial stages of the project, but also in the subsequent phases, including that of maintenance of the on-line application (for checking quality in the interaction with users in the various life stages of an application, see here chapter 2.3).

The first two parts (GENERAL INFORMATION and APPLICATION QUALITY AND USERS) are aimed at guiding the project designer of the web application in evaluating if and to what extent some (strategic, technical, legal and organizational) questions are being considered, seeing as how these will have an obvious impact on the possibility of the users making use of the application. The questions are organized under sub-titles that follow a precise path of self-evaluation, within which the questions are arranged in consequential order.

On the other hand, in the subsequent parts of the questionnaire, different options are suggested to the subject carrying out the self-evaluation that are taken from the typologies proposed in chapters 2.4-2.6 of this Manual, but without a logical order, without any sense. The third part (HELPING THE USER FINDING HIS WAY: PROFILING AND CUSTOMIZATION) aims at presenting the most common profiling logics of users/uses of cultural web applications, in order to make the most opportune choices (see also chapter 2.4).

The fourth part (INTERACTIVE SERVICES) guides the cultural subject in choosing the actual forms of advanced interaction of the users with the web applications. This can be inserted in his site for strengthening users' satisfaction (see chapter 2.5).

Finally, the fifth part of the questionnaire (AUDIENCE MEASUREMENT) presents the evaluation techniques of the use of the application and subsequent satisfaction. A more detailed report on this is found in chapter 2.6.

1. GENERAL INFORMATION

What cultural subject/project am I?

Archive
Library
Museum
Widespread cultural heritage
Management and governing institution
Centre for research and training
School
Portal, cultural project, digital library, cultural tourism portal
Temporary exhibition event
School

Which digital application do I want to realize?

Static Web site
Dynamic Web site
Web application
Forum
Blog
Wiki
Web portal
Database
Information system
Web service
Online social network
Web game

2 APPLICATION QUALITY AND USERS

2.1 Users evaluation strategy

1) Have I recruited a dedicated user focus/panel group?	Yes	No
2) Does my user group truly reflect your target audience?	Yes	No
3) Are all major elements of my target audience represented in my user group?	Yes	No
4) Has my focus group reviewed prototype Web elements?	Yes	No
5) Has the Website concept and aims been clearly communicated to my user group?	Yes	No
6) Has my user group provided feedback?	Yes	No
7) Has the feedback been formally documented and included in the design process?	Yes	No
8) Has this feedback been reflected in later prototypes?	Yes	No

2.3 Effectiveness

1) Have user groups or other user representatives been consulted as to the choice of content which would make the site as effective and useful as possible for them?	Yes	No
2) Have formal content criteria been drawn up, and followed, which reflect the target audience requirements?	Yes	No

2.3 Accessibility

1) Was the site planned from the start to support universal access?	Yes	No
2) Does the site comply with your national rules on ICT services accessibility?	Yes	No
3) Does the site appear comply with W3C WAI guidelines?	Yes	No
4) Has the site been evaluated by automatic or half-automatic tools?	Yes	No
5) Was the site planned from the start to support access from a wide range of delivery channels?	Yes	No
6) Does the site make sense and still have value without any images?	Yes	No
7) Does the site rely on proprietary extensions or plug-ins?	Yes	No
8) Are multiple browser types supported?	Yes	No
9) Are mobile and handheld devices supported?	Yes	No
10) Are slow Internet connections supported?	Yes	No

2.4 Multi-linguality

1) Was multi-linguality planned into the site from the very start?	Yes	No
2) Does the site have a stated multi-linguality policy?	Yes	No
3) Is the site been reviewed by expersts or user goups against such a policy?	Yes	No
4) Does the site mission, identity and profile material appear in more than one language?	Yes	No
5) Is there any material presented in sign language?	Yes	No
6) Is there any material presented in non-EU languages which are used by prevailing immigrant populations?	Yes	No
7) Is the site's non-static information available in multiple languages?	Yes	No
8) Is the static (cultural) information available in more than one language?	Yes	No
9) Is the site structure logically separate from the language in use?	Yes	No

2.5 Management (Privacy, IPR)

1) Does an end user code of conduct exist?	Yes	No
2) Must the user actively endorse it?	Yes	No
3) Does the end user code of conduct include protecting the overall database, as well as the content in the database?	Yes	No
4) Are steps taken to restrict the potential unauthorised reproduction or exploitation of content?	Yes	No
a) Limited image resolution?	Yes	No
b) Visible watermarking?	Yes	No
c) Digital watermarking?	Yes	No
5) Is a user privacy policy available?	Yes	No
6) Is it (or a link to it) prominently displayed for the end user?	Yes	No
7) Are records kept of user access or user information?	Yes	No
8) Are these records necessary?	Yes	No
9) Are these records protected in accordance with privacy legislation and directives?	Yes	No
10) Is the site content available under a Creative Commons license?	Yes	No

3. HELPING THE USER FINDING HIS WAY: PROFILING AND CUSTOMIZATION

Do I want to organize the content of my web applications according to user types (personas)?

Yes
No

In positive case, which among these audience groups do I want to represent?

    General public
    School students
    School staff/teachers
    University/College students
    University/College Staff/Teachers
    Researchers
    Professionals/Businessmen
    Librarians
    Journalists
    Tour/Travel professionals
    Public officers
    ICT Professionals
    Kids
    Teen agers (or young adults)
    Parents
    Suppliers
    .....
    .....
    .....

Do I want to organize the content of my web applications according to use scenarios?
    Planning a visit
    Searching the catalogue
    Finding didactic material
    Buying
    Playing
    .....
    .....
    .....

Do I want to organize the contents in thematic areas?
    Theme 1 (Ex. Archaeology)
    Theme 2 (Ex. Art)
    Theme 3
    Theme 4
    Theme 5

4. INTERACTIVE SERVICES

Do I want to include interactive communication services with the intermediation of the information provider?

    Mailing list
    Newsletter

Forum
Virtual reference services (Ask a librarian)
SMS/MMS
Blog
Instant messaging
Videoconference
Streaming

Do I want to include interactive learning services?
Online tutorials
Online help
Virtual interactive tours

Do I want to include commercial interactive services?
E-commerce
Ticketeria
Reproductions

Do I want to include interactive forms?
Subscritions
Reservations

....

Do I want to include user-side services?
Podcasting
Social bookmarking
Social tagging/folksonomies
File-sharing (texts, images, video)
Mash-ups
Story-telling
Interacive games
Masterpiece on your desktop
Add a comment
Send to a friend
Votes and polls
Save a search
Travelogue service
Personalised agenda and calendar
Personalised map
Personalised visitor plans
Personalised web gallery/The virtual curator
Virtual postcards
Learning environments

Do I want to share resources with other sharing sites?
Flickr
YouTube
Ecc.

5. AUDIENCE MEASUREMENT

Do I want to use audience measurements techniques in order to evaluate users needs and satisfaction?

    Yes
    No

Which audience measurements techniques do I want to use?

    Web analytics
    Meter
    Standardised questionnaire

How do I want to select people to be intervieved?
    Casually
    Through volunteer opt-in panels
    Through pre-recruited panels

How do I want to give interviews?
    On phone
    In person
    Leaving a form on the desk
    By e-mail
    By interactive form

Do I want to reward people who answered to the interview?
    Yes
    No

In which way?
    Offering him the possibility to benefit from a service?
    Offering him a gadget
    Inviting the user to participate in a draw

Do I want to diffuse the results of my surveys?
    Yes
    No

In which way?
    Diffusing a report
    Putting a list of FAQ online

4.2. Websites and portals feedback form

On the basis of what was explained in chapter 2.6, and bearing in mind similar versions that are already available on the web, this manual proposes a standardized interview model to be distributed to users of web sites and cultural portals. It can be used as a reference for the construction of a personalized questionnaire, that responds to the requirements of one's own web application.

The questionnaire model was divided into various inherent sections:

1) data protection;
2) personal details;
3) visit;
4) reasons for the visit;
5) technical and graphic aspects;
6) identification of the web application;
7) quality of the contents and research methods.

Moreover, there is a section in the final part dedicated to the possible granting to the user of discounts, prizes and gadgets as a way of thanking him/her for having devoted time to filling out the questionnaire.
Finally a webliography follows that is dedicated to the sources from which this model of questionnaire is taken.

The entries with an asterisk (*) cannot be used in questionnaires regarding portals.
The entries with two asterisks (**) are particularly suitable for portals.
The term "personalisable" means that the question can be adapted to one's own specific requirements.
The term INSTITUTION NAME refers to the name of the institution that proposes the questionnaire.
The term SITE/PORTAL NAME refers to the main name of the web application (site, portal, database, web service, etc.) that is object of the questionnaire.
The term LIST indicates that a list of elements may be added.

Example:

Thank you for taking the time to answer some questions about the SITE NAME.

The questionnaire will take about __ minutes to complete.

Your comments will be greatly appreciated and any answers you provide will be anonymous and treated as strictly confidential.

DATA PROTECTION

I agree that INSTITUTION NAME may collect details for the purposes of processing this form

I agree

YOUR DETAILS

Your gender:
  Male
  Female
  Not answered

Your postcode ....

How old are you? (PERSONALISABLE)
  Under 16
  16 to 24
  25 to 34
  Etc.
  Over 65
  Not answered

Your occupation (PERSONALISABLE)
  School student
  School staff/teacher
  University/College student
  University/College Staff/Teacher
  Researcher
  Professional/Businessman
  Journalist
  Tour/Travel professional
  Public officer
  ICT Professional
  Home maker
  Retired
  Amateur of something
  Parent
  ...
  Not answered

Your level of education (PERSONALISABLE)
  . Primary school
  . Secondary school
  . Degree
  . Master

Other _____

Your activity field (PERSONALISABLE)
Archives
Libraries
Museums
Research
Teaching
Tourism
Culture heritage administration
Publishing/Audiovisual
...
Not answered

What country do you live in?   LIST

What region/city do you live in? (EVENTUAL LIST)

Which languages do you know? (EVENTUAL LIST)

Your connection to the Internet
Modem
Broad band (DSL, cable modem, T1)
Not sure

If you are you disabled, from what kind of disabilities do you suffer?
Visual disabilities
Hearing disabilities
Learning disabilities
Mobility disabilities

How often have you visited our website/portal?
   First time visitor
   Seldom
   Monthly
   Weekly
   Daily

Have you visited INSTITUTION NAME in person? *

   Yes
   No

What did you know about INSTITUTION NAME before visiting the website? *

   Nothing
   The name, but little else
   Some idea of what the Museum/Archive/Library is and how to visit
   A great deal about what the Museum/Archive/Library offers and how to visit

Comments -----------

* *Not usable for portals and virtual exhibitions*

REASONS FOR VISITING OUR SITE

Why did you visit this website? MARK ALL THAT APPLY (PERSONALISABLE)

   to learn about the INSTITUTION NAME (what it is, what it does, its history, and its mission, contacts)
   to arrange a visit to the INSTITUTION NAME*
   to conduct research (if necessary it's possible to specify, i.e.: genealogy, tourism, digitisation, etc.)
   to find information for my thesis or dissertation
   to find help with homework
   to find a job
   to use online services (subscriptions, reference, reservations, etc.)
   to view online exhibitions
   to learn about events and news
   to learn about educational activities and available materials
   to use the e-learning platform
   to visit the online store
   to consult the digital library/the online databases etc.
   to download texts/images/video/audio
   to download forms
   to play games
   to make a donation
   just to browse
   to use the communities tools (blogs, chats, forums, wikies, etc.)
Etc.

* *Not usable for portals and virtual exhibitions*

Do you regularly use the following databases? MARK ALL THAT APPLY
(PERSONALISABLE)

   x

   y

<mark>**RATE THE TECHNICAL ASPECTS AND THE LOOK/VISUAL APPEAL**</mark>

Navigation/Organisation of the website
   Like it a lot
   Like it
   Neutral
   Don't like it
   Really don't like it

Design/Overall look of the website
   Like it a lot
   Like it
   Neutral
   Don't like it
   Really don't like it

Colour scheme
   Like it a lot
   Like it
   Neutral
   Don't like it
   Really don't like it

What do you like or not like about the look of our site?

What operating system are you using? LIST

At what resolution is your monitor set? LIST

What browser are you using? LIST

Please rate the download time of the homepage

   Fast
   Average
   Slow

<mark>**MISSION TRANSPARENCY**</mark>

Is the mission statement prominently displayed?   . Yes . .

**Does the mission statement clearly state the aims, nature,
owner and content of the site?**   . Yes .

**Does the homepage state clearly the identity of the organisation
Responsible for the creation and maintainance of the site?**   . Yes .

<mark>QUALITY OF CONTENT AND SEARCH MODE</mark>

Can you say in 1 or 2 sentences, what you think the aim of SITE/PORTAL NAME is?<mark>**</mark>

If you had to describe the range of the content covered by SITE/PORTAL NAME to a friend or a colleague in 1 sentence, what would you say? <mark>**</mark>

If you had to explain to a friend or colleague about the sources used for the content of SITE/PORTAL NAME, what would you say? <mark>**</mark>

What kind of information were you looking for? LIST

Did you find what you were looking for?
    Yes
    Yes, but just browsing
    Yes, but with difficulty
    No

Do you think this is the right website to make your research?
    Yes
    No

When you visit the website, how often do you find the information you are looking for?
    Always
    Most of the time
    Some of the time
    Rarely
    Never

How easy is it for you to find information on our site?

    Very easy
    Easy
    Neutral
    Difficult
    Very difficult

What was the last thing you looked for on this website but you could not find? ---

How would you rate the content of our site?
    Very good
    Good
    Average
    Bad
    Very bad

How do you evaluate our search tools?
    Very good
    Good
    Average
    Bad

Very bad

How do you evaluate our language style and the terminology?
   Very good
   Good
   Average
   Bad
   Very bad

What do you like most about our site? ....

Would you like if our website could allow more interaction on contents (Web 2.0)?
   Yes
   No.
   Not answered

Would you be interested in these features in a restyled website/portal? (LIST)
(PERSONALISABLE)
i.e.
   RSS feeds for new information
   Videos/Podcast
   Blog
   Wiki
   Online video tutorials
   Image sharing
   Games/quizzes
   Competitions
   Ability to listen to oral histories online
   Bookmarking tools
   Etc.

How likely are you to use our site again?

   Yes definitely
   Probably
   Never
   Not answered

What digitised contents would you like to be included in the website?
   ...
   ...
   ...
   ...

Would you use the search box on a site like this?
   Yes
   No

Which search functions do you use most often?
(PERSONALISABLE)
i.e.
   By author
   By chronology

By institution By collection By map By simple search By advanced search
<mark>**COMMENTS AND SUGGESTIONS**</mark> -- -- --
<mark>**THANKS PAGE**</mark> Example: Thank you once again for your assistance. Please, leave your e-mail address below to enter our prize draw to win/receive a ???????? as a thank you for your help. This will not be passed to any third parties or used for any commercial purposes. **Would be willing to take part in future surveys as the SITE/PORTAL develops?** Yes No

Web references

Last consultation: February 2008

Cotswold District Council Online - Museum Website Feedback Form
<http://www.cotswold.gov.uk/nqcontent.cfm?a_id=2733&tt=cotswold>

Charles Sturt University
<http://yourlibrarycsu.blogspot.com/2007/04/complete-library-web-site-survey-enter.html>
Con blog

Wintec Library Website Survey
No more online

Kansas City Public Library Website Survey
<http://www.kclibrary.org/promos/websurvey/questions.cfm>

Question Pro – Online research made easy>
<http://www.questionpro.com/akira/showLibrary.do

Glasgow Metropolitan College Library Services – Website Survey
<http://www.surveymonkey.com/s.asp?u=302712136806>

Newburgh Free Library Web Site Survey
http://www.surveymonkey.com/s.aspx?sm=E_2ffGu42x8DLYEa6DxsO1bQ_3d_3d

Western Australian Museum – Website Feedback
http://www.museum.wa.gov.au/aboutus/feedback/website.asp

Queensland Museum - Web Site Feedback
http://www.qm.qld.gov.au/inquiry/contact/feedback.asp

Kavanagh Websites Feedback
http://ktransit.com/feedback.htm

Tenement Museum Website Feedback
?????

The Jewish Museum – Website Feedback
http://www.jewishmuseum.org.uk/feedback/websitefeedback.asp

Museum of Australian Currency Notes – Feedback Form
http://www.rba.gov.au/Museum/Visitors/feedback.html

Australian Museum Audience Research Centre: Website Feedback
http://www.amonline.net.au/amarc/feedback.htm

Arizona State Museum – Website Feedback Survey
http://www.statemuseum.arizona.edu/feedbk/index.shtml

UC History Digital Archives User Survey
http://sunsite.berkeley.edu/~ucalhist/feedback.html

Victoria and Albert Museum – Website Feedback

MICHAEL Questionnaire

Europeana.eu – online Questionnaire
http://www.irn-research.com/surveys/euro.htm

ANNEX

1. Study on users and usages of Michael-fr[54] website
1st survey (June-July 2006)

The object of the survey is to identify the users and usages of the *Digital Heritage (Patrimoine numérique)* site and to obtain an initial view of the perceived quality of the service. It was carried out through an online questionnaire (87 answers) and 9 semi-directive interviews[55]. The following elements summarise the study that also includes an analysis of the service in terms of the quality criteria of the Minerva guide and a number of work directions.

This study presents limitations: it coincides with the launch of the new service and was carried out over a relatively limited time-span (5 weeks), the interviewed persons used the catalogue for the first time, the sample of interviewed persons could be broader, yet the data gathered allows us to note a number of significant points and paths for development.

1 User profiles

More than half of the web users that answered responded to the questionnaire are not heritage conservation professionals (55 out of 87 or 63%). 55 non professionals responded for 32 professionals. This given allows us to believe that the catalogue spans beyond the institutions. This audience was made aware of *Digital heritage* through the notice on the home page of the Culture.fr portal (as of late July the ad was seen 16 700 times) or through the information relayed by the sites specialised in genealogy.
We note that the majority of institutions that answered are closely concerned by digitisation: 27 institutions out of 32 are involved in a digitisation operation.

Do you have an activity in the field?

Archives	**16,60%**
Libraries	**15,40%**
University research	10,71%
Teaching	8,30%
Museum	5,90%
Tourism	3,50%
Culture administration	2,30%
Publishing/Audiovisual	0%
Others	**36,90%**
Number of persons that answered the question	84
Did not answer	3

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[54] Study carried out by Emmanuelle Chevry and Martine Tayeb
[55] Panel composed of: a high school teacher, a communication agent of a tourism office, a research director, three librarians (one from a municipal library with a regional mandate, a head of the digital library in a large public library, a head of unit at the ministry of culture), an researcher at the direction of books and publishing at ministry of Culture, a professional genealogist, an artist (representing the "general public")

What search did you do?[56]

Genealogy	**31,50%**
Curiosity / discovery	**30,20%**
State of digitisation in other institutions and regions	17,10%
University	11,80%
School	1,30%
Production of editorial products (DVD, CEDEROM…)	1,30%
Tourism	0%
Other	6,50%
Number of persons that answered the question	76
Did not answer	0

The institutional users

Reflecting the type of institutions represented in the catalogue, the archives and libraries arrive in first place with over 30% of the answers, followed far behind by museums (6%).

The curiosity/discovery not only motivates the non-institutional public but also figures in a good number of searches made by institutions. At the heart of the interest: the state of digitisation in other institutions and regions.

We note the small number of answers coming from institutions included in the catalogue (10 in over 100), but also the good match between *Digital heritage* and the institutions: most of them are ready to participate by contributing and by formulating propositions for perfecting the professional space and facilitating updates.
Two other audience segments stand out: genealogists and persons involved in teaching and university research.

Genealogists

A number of entries have genealogy for activity (a professional and amateurs), as well as historical searches. Indeed genealogy searches are the most frequent (31.5% of answers), the motivation coming in second being curiosity/discovery (30.2%).
A number of comments come from genealogists. They know precisely what they are looking for and formulate precise expectations.
This public is demanding on the conditions and mode of accessing documents. Precise demands concern free access and the consultation delays. The question of on-line access to necessary documents is often asked.

These results corroborate the conclusions of the surveys on archive service users: genealogy is one of the principle goals of searches in city and county (French *département*) archives (56%)[57] as well as in the National archives (a third of readers)[58]. These searches are general carried out on an amateur basis. These amateur genealogists, curious of their family origins, have contributed to the growing public use of archives over the last thirty years. A part of the users carry out simultaneous searches in history and genealogy, some being only interested in local history, which genealogy

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[56] Only 2 questionnaires contained this question: the n°1 general public questionnaire and the n°2 institution questionnaire.
[57] *Développement culturel*, n° 137, October 2001
[58] *Développement culturel*, n° 151, January 2006

searches naturally leads to, while others carry out more general historical searches: these practices concern one in five readers in the city and county archives. The most frequently consulted documents are the parish registers and those on civil status, especially at the county archives (60%)

Researchers and teachers

University research and teaching represent an important part of the answers (19%). University research is mentioned by 12% of users. The "café pédagogique" website spontaneously signalled the *Digital heritage* site.

A diversified public

One notes the diverse origins of a segment of the users, namely including managers and technicians (transport, sales support technicians, construction, consulting, computers, advertising…), and people with free time (retirees, students…). An interest for heritage seems to motivate this public.

Diversifies access modes

Though the survey period coincided with the launch of the new catalogue, one notes a diversification in the access modes to the site. A number of announcements were made through emails to correspondents, and mailing lists, which entails the relatively high percentage of this mode of information (18.7%).

The Culture.fr portal brought in 12.5% of web users: an announcement was posted on the main page of the portal the first two weeks of July, this announcement was seen 16 700 times.

Search engines come in 3rd place, with 11.2%: the records of the data-base being indexed one by one on Google, *Digital heritage* can appear as answer to diverse searches.

2 Representation and usages

What is the catalogue for, according to you?

Exploring the wealth of heritage in France	**69,1 %**
Localise the sites that offer access to digital works	62,9 %
Publicising your digital collections	40,7 %
Discover the state of digitisation policy advances in France	38,2 %
Conduct your digitisation policy	9,8%
Others (to specify)	1,2%
Number of persons that answered the question	81
Did not answer	6

Two roles stand out: exploration and access to digitised collections and documents

In the user representations, it is the exploration of the wealth of heritage that appears as the principal usage of *Digital heritage* (two thirds of answers, 69%). This answer can be crossed with the motivation of curiosity/discovery that represents 30% of searches. The curiosity/discovery not only motivates the non-institutional public, but also a good portion of searches carried out by the institutions.

The localisation of sites that offer access to digitised collections is an option chosen by in a significant part of the answers (63%), with the ambiguity of the word "site", that can also be an actual place, or a collection as well as a website. Certain interviewed people noticed this orientation of meta-catalogue.

Professional usage

The catalogue is seen as a tool for the promotion of collections (40.7%), namely for a majority of the institutional public (close to 70%). On the other hand only 4 institutions in 32 see the catalogue as a tool at the service of their digitisation policy; none of the institutions registered in the catalogue answered positively to this point. For 38.2% of answers, it corresponds to a search on the state of advancement of digitisation policies in France.

The services proposed in the professional space, specifically dedicated to the players in digitisation, only obtained a satisfaction rate of less than two institutions in three. These services must certainly be made more explicit, sometimes more visible (rss)…
It can be seen as paradox to note that the institutions that are most interested in establishing a personalised link to the catalogue from their site (65%) rather than a pdf publication of their own file (53%)! The RSS thread is judged useful by 61% of them.
A number of comments concern the services for professionals. They point to data development and the proposed information.

Frustration in terms of "classic" catalogues?

The title *Digital heritage: catalogue of digitised collections* often gives the impression that the site allows search and access to the documents and works. The hiatus between this kind of expectation and the catalogue content, the different granularity between a catalogue of documents and objects and *Digital heritage* can explain the lack of satisfaction for certain search results (37.5 of unfruitful searches). The strong expectations for images of the documents, further maintained by the presence of illustrations on the site, also generates deceptions.

A tool for professionals or for a wide audience?

The catalogue overhaul, in the context of the European Michael portal, had the goal of opening the catalogue to a new public, in the framework of a broader public access to digitised documents and to information on digitisation. Is it possible to combine a data-base of interest to a wide audience and a professional tool? How to articulate such different uses? This first survey shows that *Digital heritage* effectively reaches a public of amateurs and curious users. Yet the multiple targets of the catalogue were soon noticed and its final goals, according to some, need to be more explicit.

What perspectives?

Digital heritage reflects the evolving digitisation landscape that is constantly being developed. Its goal is to tend toward an exhaustive approach. Marked by the French national digitisation plan, it covers data pertaining to "heritage", a notion which can easily have shifting definitions… The partnership with the *national Education* ministry, the European digital library can bring about changes in the initial concept.

On questions concerning the perimeter, the answers tend toward a broadening of scope, be it for new document types or the extension to the collections of other European countries, desired by 78% of web users.

What other types of digitised collections would you like the catalogue to describe?

Thesis	**65,60%**
Recent newspapers and magazines	55,20%
Classes	37,30%
Administrative forms in digital format	26,80%
Others	16,40%
Number of persons that answered the question	67
Did not answer	20

Do you intend to consult this site again?

Yes	95,1%
no	3,6%
Number of persons that answered the question	83
Did not answer	5

Despite the searches that do not always yield a result, the near unanimity of positive answers to the question "Do you intend to consult this site again?" shows that the catalogue answers the needs and uses of a variety of audiences.

3 Usability

What do you think of the following aspects of the site?

	Satisfactory	Unsatisfactory
Contents of the home page	**87,30%**	**6,30%**
Graphic design of the home page	77,20%	10,10%
Download speed of the pages	70,80%	13,90%
Site navigation	**68,30%**	**26,50%**
Graphic design of the records	63,20%	16,40%
Entry fields of the quick search	60,70%	12,60%
Professional space	60,70%	15,10%
Entry fields for the advanced search	54,40%	20,20%
Search result order	50,60%	18,90%
Number of persons that answered the question	79	79
Did not answer	5	5

First impressions

The majority of users reacted rather positively to the home page (in the same graphic style as the Culture.fr portal): the aspects that satisfied over three quarters of the web users that answered the questionnaire are the content and graphic design of the home page.

Though the presentation does not does not satisfy all users. Despite the statement of the mission on the home page, the object of the site is not always clearly perceived, especially in the initial phase of site discovery.

It should be noted that the graphic design is appreciated by a higher percentage of the non-institutional public. Users accustomed to accessing catalogues and data banks, namely library professionals, expect more sober interfaces presenting only the search forms.

The space dedicated to images on the home page is significant and most of the collection records contain illustrations. These images are meaningful, contribute to the site's attractiveness and play a role in inciting users to browse and discover.

The numerous navigation choices that the designers included in the home page are underlined by the multiple choices made by the users who were interviewed. They namely explored the map, search by institution, the search engine, the editorial section, the professional space… The observation of the navigation shows that, according to their interests or their habits, the users rather quickly undertake a search, some through the quick search, others through the menu, the map of France or the editorial propositions…

The site navigation is only satisfactory to 26.5%, a number of users having experienced difficulties. The articulation of the lists and site records, cd's and dvd's, are not well understood.

4 search modes

There is no significant difference between the search modes that satisfy around two thirds of the users (between 65% and 70%). These figures can be crossed with those of users that declared having found what they were looking for: 64.2% vs 35.7%.

How do you find the following search modes?

	SATISFACTORY	UNSATISFACTORY
By institution	66,20%	22,90%
By collection	71,60%	18,90%
Search engine	64,80%	16,20%
Map	75,60%	14,80%
Advanced search	67,50%	13,50%
Number of persons that answered the question	74	74
Did not answer	14	14

Did you find what you were looking for?

No	64,2%
Yes	35,7%

Number of persons that answered the question	84
Did not answer	3

The search engine is the search mode that the users most spontaneously and directly use.

An important segment of those interviewed first use the map. Search by map is considered satisfactory for 75.6%. This search mode attracts strong interest.

There is criticism concerning the advanced search. It must be noted that it is the "or" value that is the default mode, hence the many deceptions concerning non-pertinent search results compared to a result with the "and" value.

5 Next steps

Before undertaking a new survey phase there will a number of minor modifications made to certain pages as well as a communication campaign targeted toward the various user groups.

The quantitative data gathered in the survey will also be precious for completing the qualitative data of the survey. It must be noted that in January 2007 *Digital heritage* counted 19 000 single visitors and 32 463 visits.

In light of the reflections and the evaluations on the European portal, a new survey phase will be programmed.

Questionnaire

1. Do you have an activity in this field?
   - ☐ Archives
   - ☐ Libraries
   - ☐ Publishing/Audiovisual
   - ☐ Museum
   - ☐ Culture administration
   - ☐ Teaching
   - ☐ University research
   - ☐ Tourism
   - ☐ Other (to be specified)

2. What search did you do?
   - ☐ Curiosity / discovery
   - ☐ School
   - ☐ University
   - ☐ Tourism
   - ☐ Genealogy
   - ☐ Production of editorial products (DVD, CD…)
   - ☐ State of digitisation in other regions
   - ☐ Digitisation financing
   - ☐ Others (to be specified)
3. Did you find what were looking for? Yes No

4. How did you get to know this site?
    - ○ By entering the site URL
    - ○ Promotional e-mail
    - ○ Through the Culture.fr site
    - ○ From a search engine
    - ○ From the site of an institution
    - ○ From a portal or index
    - ○ Other (to be specified)

5. What is the catalogue for, according to you?
    - ☐ Explore the wealth of French heritage
    - ☐ Localise the sites that offer access to digitised works
    - ☐ Discover the state of digitisation policies in France
    - ☐ To publicise your digital collections
    - ☐ Steer a digitisation policy
    - ☐ Other (to specify)

6. How do you judge the site?
    - ☐ Home page content
    - ☐ Home page graphic design
    - ☐ Site navigation
    - ☐ Fields proposed for advanced search
    - ☐ Professional space
    - ☐ Quick search fields
    - ☐ Search result order
    - ☐ Graphic design of the records
    - ☐ Download speed of the pages

7. How do you judge the following search modes?
    - ☐ By « collections »   satisfactory result: yes no
    - ☐ By « institutions »   satisfactory result: yes no
    - ☐ Advanced search   satisfactory result: yes no
    - ☐ Search engine   satisfactory result: yes no
    - ☐ Map   satisfactory result: yes no

8. What other kinds of digitised collections would you like the site to describe?
    - ☐ Thesis
    - ☐ Classes
    - ☐ Newspapers and magazines
    - ☐ Electronic administrative forms
    - ☐ Others (to specify)

9. The *Digital heritage: catalogue of digitised collections* will be integrated in the European Michael portal. Will you likely search for information on digitised collections in Europe? Yes No

10. Will you consult this site again? Yes No

11. Your comments and remarks:

We thank you for answering this survey. If you accept an interview on this subject please leave your coordinates:

Your phone number: Or your e-mail:

The four following questions are destined for professionals that work in an cultural heritage conservation institution.

11. Do you regularly use the following data bases?:
- ☐ SUDOC
- ☐ Joconde
- ☐ Mérimée
- ☐ Gallica
- ☐ Other(s) (to specify)

12. Are the following services useful for you?
- ❑ Rss thread to be notified of the latest record entries
- ❑ Pdf publication of your institutions records
- ❑ Personalised link to a catalogue from your site
- ❑ Publication of digitisation tables

What other service(s) do you see as useful?

13. Is your institution involved in a digitisation operation? Yes no

14. Are you willing to contribute to the *Digital heritage* catalogue (signal digitised collections, propose links…)? Yes no

2. "Digital Library Users: Results of a Survey on Needs, Expectations and Skills"

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Abstract

An evaluation of the results of a survey to identify users' needs by Fondazione Rinascimento Digitale. The aim of the survey was to stimulate a culture of excellence in the different cultural institutions involved. The primary objective was to establish and test a methodology with which to evaluate digital libraries. A secondary objective was to obtain feedback from the users on their satisfaction level, to find out what their needs and expectations are and to give them an opportunity to make suggestions.

Questionnaires and interviews were used to gather the data. A questionnaire was also distributed to the managers of the cultural institutions involved.

The survey's results indicated that different users have different needs and they tend to use the services of more than one cultural institution. Overall, there is a positive attitude towards the digital libraries, the survey also underlines that users often don't know how to use the libraries and are unaware of all of the services offered. The accessibility of the interface was considered important, but as it becomes more sophisticated to offer more services it will require more staff assistance. The survey also served to experiment with quality indicators and inquiry methodologies that focus on library users.

In conclusion, this paper evaluates the implications of these results for digital libraries in general, and, specifically, the value of a cooperative approach to the identification and evaluation of digital library users.

1. Introduction and background

 The Fondazione Rinascimento Digitale[59] is a young and ambitious institution, established to encourage the cooperation of various organisations, experiences and know-how in the digital sphere, with the goal to promote the use of new technologies in cultural institutions by establishing a high quality standard. The Digital Libraries Applications Project, begun by the Foundation, aims at evaluating the services currently offered by digital libraries in Italy to identify the actual state of the art and eventual obstacles to improving their services in order to stimulate greater cooperation between different cultural institutions. To realize this aim, a Study Group was established in the summer of 2005. It was composed of a wide group of experts, representing different cultural institutions that offer digital services

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[59] The project Digital Libraries Applications is part of the activities of Fondazione Rinascimento Digitale entitled: Management of and Access to digital libraries. A report on the state of digital libraries and other documentary material is available on line: <http://www.rinascimento-digitale.it/>

or make their collections accessible digitally and projects dealing with digital library themes.

The approach chosen by the Study Group was to evaluate the complexity of the digital library from the user's point of view. Surely the user has a primary role in every digital library project, nonetheless it is not always easy to know what users real need and above all if the user is satisfied with the digital resources and services available.   The supposition that the survey is based on is that a digital library, to justify the necessary efforts to establish and manage it, must offer a significantly superior value when compared a traditional library: this added value must be measured not only quantitatively, for example the number of uses, but also qualitatively, based on research on the users themselves. The goal is to stimulate a culture of excellence with the user as the main focal point. To accomplish this goal, the Study Group set the following obiectjves:

- Create and test an evaluation method, to identify and measure the expectations, perceptions of the service and user satisfaction with available digital resources and services;
- Launch a user survey comparing a diversified number of case studies in the area of humanities

Specifically, the Study Group posed these questions:

- What needs are considered to be priorities by which group of users?
- In relationship to these needs which services and resources are essential and which are considered desirable?
- How can digital libraries be useful to their public?

Among the analysis already carried out there were two useful surveys, by the Istituto e Museo di Storia della Scienza, (Museum of the History of Science - IMSS) and the other by the Biblioteca Nazionale di Firenze (National Library of Florence - BNCF) from which the study group took useful methodology suggestions. From literature and documentation on the subject, the Study Group noted that many of the evaluation experiences had been realized developing quantitative indicators but that few of these surveys studied the users opinions. The Study Group took as their reference points some of the most important studies, including the Project E-measures of SCONUL[60], Project by ARL called E-Metrics[61] and Project COUNTER[62].

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[60] The goal was to produce a set of statistics to estimate the use of digital services in the university libraries of the UK. The project is based on the periodic survey achieved in the all English university libraries. After two years of research the Project suspended the data-gathering, because they had no significant outcomes to understand the real performance of digital libraries. The Society of College, National and University Libraries (SCONUL) implement periodically the Annual Library Statistics, where the criteria developed within the Project during its existence are recorded. Cf TOWN STEPHEN, 2004. *E-measures: A comprehensive waste of time,* "VINE", 34 (4): 190-195.
[61] MILLER RUSH, SCHMIDT SHERRIE, 2001. *E-metrics: Measures for electronic resources, Keynote Delivered at the 4th Northumbria International Conference on Performance Measurement in Library and Information Services*, Pittsburgh, 12-16 August, ARL <http://www.arl.org/>, <http://www.arl.org/stats/newmeas/emetrics/miller-schmidt.pdf> (30 November 2006).
[62] Working Group on Database Vendor Statistics enquired how to gather data from the data-base vendor statistics. From the Group's outcomes started up COUNTER project Cf BLIXRUD JULIA C., 2002. *Measures for electronic use: The arl e-metrics project*, *IFLA Satellite Conference "Statistics in practice - Measuring & managing"*, Loughborough, UK, 13-25 August, Loughborough University <http://www.lboro.ac.uk/>, <http://www.lboro.ac.uk/departments/dils/lisu/downloads/statsinpractice-pdfs/blixrud.pdf> (30 November 2006); BLIXRUD, JULIA C., 2003. *Assessing library performance: New measures, methods, and models, IATUL Proceedings "Libraries and Education in the Networked Information Environment"*. Ankara, Turkey. 2-5 June, IATUL <http://www.iatul.org>, <http://www.iatul.org/conference/proceedings/vol13/papers/BLIXRUD_fulltext.pdf> (30 November 2006). COUNTER project established the standard criteria that rules the availability of digital resources managed by the vendor statistics.

The Project eVALUEd[63] proved particularly interesting to the Study Group as it had developed a toolkit to facilitate the assessment of digital libraries. The aim of the Project eVALUED was to simplify a first reading of qualitative data, without abandoning the gathering of quantitative statistics. The Study Group used a methodological approach that integrated these international experiences with the experimental approaches of the IMSS and BNCF.

[1] MILLER RUSH, SCHMIDT SHERRIE, 2001. *E-metrics: Measures for electronic resources, Keynote Delivered at the 4th Northumbria International Conference on Performance Measurement in Library and Information Services*, Pittsburgh, 12-16 August, ARL <http://www.arl.org/>, <http://www.arl.org/stats/newmeas/emetrics/miller-schmidt.pdf> (30 November 2006).

[1] Working Group on Database Vendor Statistics researched data collecting from the data bases of its suppliers; from this Group results has been starter after the Project COUNTER Cfr. BLIXRUD JULIA C., 2002. *Measures for electronic use: The arl e-metrics project*, IFLA Satellite Conference "Statistics in practice - Measuring & managing"*, Loughborough, UK, 13-25 August, Loughborough University <http://www.lboro.ac.uk/>, <http://www.lboro.ac.uk/departments/dils/lisu/downloads/statsinpractice-pdfs/blixrud.pdf> (30 November 2006); BLIXRUD, JULIA C., 2003. *Assessing library performance: New measures, methods, and models*, IATUL Proceedings "Libraries and Education in the Networked Information Environment"*. Ankara, Turkey. 2-5 June, IATUL <http://www.iatul.org>, <http://www.iatul.org/conference/proceedings/vol13/papers/BLIXRUD_fulltext.pdf> (30 November 2006). Project COUNTER defined the standard meaures that digital access service suppliers actual make available.

[1] Begun in 2001 and finished in 2004, it tried to go beyond the mesurement of the indicators of performance to address the evaluation of the results in relationship to the supply of electronic information services. THEBRIDGE STELLA, 2003. *Evaluating electronic information services: A toolkit for practitioners*, "Library and Information Research", 27 (87): 38-46, E-LIS <http://eprints.rclis.org/>, <http://eprints.rclis.org/archive/00003421/> (30 November 2006).

[1] Described by: MCNICOL SARAH, 2004. *The evaluated toolkit: A framework for the qualitative evaluation of electronic information services*, "VINE", 34 (4): 172-175.

2. Methodology

The Fondazione Rinascimento Digitale survey has been divided into three phases. The first phase was dedicated to gathering information on existing digital libraries, and at the same time gathering the contributions of experts to define a theoretical context and reference model for digital libraries. These results were used in the second phase to develop measurement tools to gather data proposed for three areas:

1. Contents, services and their uses
2. User satisfaction with digital resources and services
3. Impact measurement

Finally, in the third phase a User Survey Subgroup carried out the survey and analysed the data.

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[63] Began in 2001 and achieved in 2004, it sought to go over the measure of the performance indicator to tackle the evaluation outcomes related to the supply of electronic information services. THEBRIDGE STELLA, 2003. *Evaluating electronic information services: A toolkit for practitioners*, "Library and Information Research", 27 (87): 38-46, E-LIS <http://eprints.rclis.org/>, <http://eprints.rclis.org/archive/00003421/> (30 November 2006).

From the beginning of the survey, the Study Group had to allow for its limited resources and time considering the scope of the survey, and therefore chose to carry out various case studies, in order to compare the final results, instead of a broad quantitative survey. The survey had other limitations as well:

- It was limited to users on site at the institutions and therefore did not consider remote users;
- The results would have been more useful if they also included non- library users.

Normally the evaluations of user satisfaction, use measurement and service impact with digital libraries are done separately. Nonetheless, the Study Group believed that the three measuring and evaluation processes should be complimentary, and surely the comparative results wouldn't be in conflict. Therefore a methodological toolkit was developed, and the methodological results are probably among the most interesting of the user survey.

The context chosen by the Study Group was that of three humanistic cultural institutions and the survey was repeated in participating institutions with the same methodology. The case studies included the Mediateca of the Tuscany Region, the Humanities Library of the University of Florence and the Library of the Museum of the History of Science; the results were later compared to those obtained by the National Central Library of Florence.

2.1 *Collections, digital services and their uses*
Traditionally the most common measurements, because they are easily obtainable, are concentrated on numbers and data like the budget employed, the number of titles in a digital collection, etc. Because these types of statistics don't give data on the user and their normal activities in a digital library, the Study Group did not take them into consideration. The questions were aimed at identifying the users' expectations of the services offered like: available hardware, on line catalogues, access from home, portal/site, users' educational background, promotion, and staff assistance. The resources were liked to the following: electronic journals, e-books, databases, CDROM, learning materials, audiovisual and multimedia, thesis and students' work. Additionally, the survey attempted to identify cultural institutions other than the surveyed institutions, where the users regularly go virtually. The Study Group wondered if enlarging the size of the collection is necessarily correlated to users' needs, but they did not arrive at a final conclusion; moreover it is difficult to understand if the single research session on a digital library is truly useful to (or if it has had an impact on) the user. Therefore it was decided to evaluate the perception that users have of how resources are employed as well as the digital services available.

2.2 *User Satisfaction*
Despite the fact that it is essential to develop a tool to measure how digital libraries services contribute to the user's success, this is very difficult to assess. Therefore the Study Group chose to define user success as closely tied to the success of the institution that the digital library belonged to, as it is expressed in their mission or in other project documents. This necessitated finding a tool capable of identifying the critical criteria of the specific mission of each individual digital library, one that preferably included a definition of user activities. To identify and measure the impact, the Group limited itself to evaluating the specific digital library services in the case study, which ones were provided in such a way as to be a support (or if one like useful)

to the activities of the users and their regular research activity and information use. The impact, therefore, is not a value of the resources or of the services in and of themselves, but more pragmatically, a measure that identifies activities that would be impossible to accomplish without the use of the digital library. Impact measurement defined in this way was researched in the comments section of the survey and in specific question asked during the interview. Of particular interest to the Study Group were qualitatively negative or neutral (those that were not negative or positive) comments.

The tools employed in information gathering were a questionnaire and structured interviews. The following data represent the results:

Analsis Factors	tools	Data collected
Who are digital library users?	Questionnaire Interviews	Demographic data
What are users' expectations for digital resources and services? How satisfied are the users with the resources and services? What is the impact of the resources and services?	Questionnaire Interviews	The users' priorities for digital reources and services Impact on the users' productivity User satisfaction with digital services and resources
What is the users' perception of the service? What do the users' find unsatisfactory?	Questionnaire Interview	Level of Internet knowledge Level of knowledge of what a digital library and web site are Frequency with which they are used Problems with user accessing the digital library and related problems
What are the users' suggestions to improbe the quality of the services offered?	Questionnaire Interview	Open answers Cooperation between cultural istiutions User education courses

The methodology employed could be used periodically to correlate the results obtained from user surveys and improvement in services.

The following table synthesizes the model chosen for the evaluation:

Cultural Institutions	User Information	Output	Outcomes (Impact)
Approaches and strategies applied by digital libraries - Experts' contributions to the discussion - Activities and state of the art in the Italian digital libraries - Digital Contents and services currently available	- Needs, priorities and perception of services - Demographic analysis of the users - Socio-economic factors with an impact on the utilisation of the applications of digital libraries	User satisfaction (measured as GAP between expectations and perceptions) Frequency with which digital assets and services are used	Achivement of the Cultural institutions' mission Measure: - How do digital libraries support thier regular users' activities? - What wouldn't be possible to do without digital libraries?

3 Results

Here we analyse the data for the comparison between the single case studies, while the full survey is availble in the online report.

3.1 Who are the users of the cultural institutions
Users were classified by age, gender, nationality, profession and hobbies. In the Humanities Library of the University of Florence the users chosen were undergraduate and graduate students, with an age that ranged between 25 and 40; they have an average knowledge of Internet and they frequently use the on line library system, but they rarely use the Ateneo's Digital Library. The users at the Library of the Institute and Museum of the History of Science are professionals and employees with a post bachelor degree and an age that ranges from 32 to 76; they have a good or excellent knowledge of Internet and they frequently use the Digital Library. Mediateca users are primarily students and the youngest in age, from 19 to 25; they use the Mediateca weekly, also from home. All of the users replied that they also use the services of other libraries: the users of the Library of the Institute and Museum of the History of Science and the Mediateca users access from remote locations other national and international institutions with the same specialisation; the University students use primarily local services of the Florentine Public Library system. The result that was prospected from this first part of the survey is the importance of definition of the user because upon it depends the choice of service and digital resource priorities. Even within the limits that have already been underlined, we can say that the users of different institutions have different service priorities.

3.2 Comparision of the results
Even with a wide range of different uses some results were common to all groups and can be compared.

3.2.1 What are the service expectations?
Through a careful examination of the service expectations, correlated to the user satisfaction with those same services, it was possible to identify which services users consider to be unsatisfactory and therefore know where it is necessary to concentrate our efforts to improve. These are:

- The promotion of resources and services;
- On line tutorials;
- User education;

- Staff assistance.

It should be noted that need for promotion of services available was expressed by all users .

The services that received the highest level of **satisfaction** were:

- Remote access;
- On line portal.

University students prefer remote access, but contradictorily they also appreciate the help of staff and information literacy courses with an actual teacher, more than online tutorials. The IMSS users prefer remote access and the portal, together with on line tutorials, but they see staff assistance as their first priority. Mediateca users, also due to the unique characteristics of the current service that is mainly local, decidedly prefer a local access and are the users that demonstrate the greatest appreciation of staff assistance even though it is a remote access, the portal and the tutorials are also regarded as important.

3.2.3 What are the priorities for digital resources?

By repeating, for the digital resources section, the correlation between the satisfaction for individual resources it was possible to identify the resources that are **not considered priorities.** They are listed in inverted order, starting from the less used:

- E-books;
- Audiovisual materials;
- Learning materials;
- Theses.

The resources that were listed as **priorities** are:

- The OPAC catalogue;
- On-line databases;
- Electronic journals.

Regarding resources, the priorities demonstrate biggest differences between different types of users. For example, University students mainly use the on-line catalogue and the databases; the IMSS users are the ones that prefer the e-book and CD-ROMs more than the others; Mediateca users tend to prefer the audiovisual material.

3.2.4 Impact

The impact was underlined by users regarding primarily the advantages of the digital library like: the speed of access to digital resources, a greater number of resources available (even if this is not yet considered to be sufficient), and personalization.

3.3 What interventions are possible for improvement

It can be stated that new users want to be independent to do their research and they want remote access: this is demonstrated by the general expectation of a good orientation through a portal, even in the case that the user regularly goes to a physical library.

Databases and on-line catalogues are areas that need particular attention, in order to meet the users' priorities. A service that users view as particularly important is information retrieval. In the suggestions that were made it seems particularly relevant to underline the request for a greater functionality of the OPAC. Users expect to find and locate digital resources quickly and easily.

In answer to the question: which services would you like to find in a digital library? most of the users interviewed answered: a greater number of digital resources available. Other answers were regarding the possibility of integrating the different databases available, with for example a link from the OPAC to a preview of the cover, copyright page, and contents of the book. The personalization of the service was also viewed as important, as well as the possibility of having more functionalities available, to manage a personal digital collection.

In answer to the question on the need for greater cooperation between cultural institutions, the indication was that the current situation is definitely unsatisfactory and insufficient. The answers also underlined the need to improve the user skills to use digital resources along with the need for more promotion of their existence.

4. Conclusions

The results of the survey has made clear that users have different needs, which correlates to the different goals of the digital libraries' institutions. Nonetheless, users regularly use the services of more than one cultural institution and they share some common priorities. Users view the services offered by digital libraries in a positive light, but there is a lack of knowledge on how to use them and users are often unaware of all the services that are available to them. The accessibility of the interface is considered important, but the more sophisticated it is, the greater the assistance from the staff must be.

In conclusion, it is important to give users the possibility to say where the services should be improved, so that their expectations can be met better. Moreover, digital libraries can try to improve their services through a cooperative approach. In fact, with periodic user surveys, the single institutions could compare their own results with other digital libraries, that are positively evaluated by their users.

ANNEX

3. Europeana.eu online questionnaire

User testing on the Europeana Demo

The European demo of Europeana was taken through three phases of user testing:

- Over 200 professionals from across the domains attended the Frankfurt conference at which Europeana was launched. They were shown the demo in detail and asked to comment on each aspect of it in a series of workshops. The results of these expert groups were recorded and collated.
- The demo was put online with a marked path to the functions that had content behind them or had been made live. There were explanations of where users were going at every stage. At the end of the demo users clicked into a survey, in which they answered 12 questions about look and feel, navigation and their expectations of the site. They had opportunities for free text comments alongside many of the closed questions, and also responded to questions of age, gender, nationality and area of interest.
- Focus groups of up to 15 people were held in Amsterdam's new public library, Warwick University's European studies course, Stockholm's public library and in the Swedish national library. While some of these groups were expert users, including librarians, others were end users, for example students and library clientele.

The results of this survey are available online:
http://www.europeana.eu/user_testing.php

MODEL OF QUESTIONNAIRE

Thank you for taking a few minutes to answer some questions about the www.Europeana.eu demo portal that you have just been through. To remind you about some of the pages you have seen, you can click to see them again while you are answering some of the questions.
At this stage the demo portal is showing what users have asked to be built so far. It is still open for improvement, so your help will make the final version of the portal as user friendly and as useful as possible. Your comments will be greatly appreciated and any answers you provide will be anonymous and treated as strictly confidential.

Once you click on the ">" at the bottom of the page the first question will appear on the screen. The questions should take around 10 minutes to complete.

A. Name:
B. Country Location:
C. Gender:
D. Age Band: under 20 21-24 25-34 35-44 45-54 Over 55
E. General Area of Interest:

1. Now that you have gone through www.Europeana.eu, the first question is a general one. Can you say, in 1 or 2 sentences, what you think the aim of www.Europeana.eu is?

2. If you had to describe the range of the content covered by www.Europeana.eu to a friend or colleague in 1 sentence, what would you say?

3. If you had to explain to a friend or colleague about the sources used for the content on www.Europeana.eu what would you say?

4. If you click here CLICK you will see the www.Europeana.eu home page again. After looking at it, please say if you agree of disagree with the following statements and, if you can, briefly explain why you have given the particular answer.

Statement	Agree	Disagree	Reason Why This Answer Given
1. I like the colours, general appearance and location of the logo and strap line "Connecting Cultural Heritage".			
2. Europeana.eu is a good name for the site.			
3. The strap line "Connecting Cultural Heritage" offers a quick outline of what the site is about.			
4. The general layout of the home page is good.			
5. The amount of information given on the Home page is about right.			
6. The home page gives a clear introduction to what Europeana.eu covers.			

5. As you went through the demo, you were encouraged to browse, letting one idea link to the next as you explored the site. Did you feel that this was a good way of searching and moving around the site? Yes □ No □ 5a. If "No" why not?

6. Would you use the search box on a site like this? Yes □ No □ If "yes", would you normally use the search box in preference to browsing? Yes □ No □

7. You can see the "Search Results" page by clicking here CLICK. After looking at this again, please say if you agree or disagree with the following statements and give a brief reason for your reply.

Statement	Agree	Disagree	Reason Why This Answer Given
1. The search results as presented on the screen are displayed in a clear and logical way.			
2. The "Narrow your Search" option on the left is a useful and clear option.			
3. I would like to see more description and fewer results per page.			

8. The display box gives you a description of a specific item in www.Europeana.eu. Click here CLICK to see an example from the demo. After looking at this again, please say if you agree or disagree with the following statements.

Statement	Agree	Disagree
1. The information presented in the display box is clear and concise.		
2. I understand what "Social Tags" are and how they are added.		
3. "Social tags" are a useful feature of the site.		
3. The "Related items" option takes you to other items on the same topic.		

9. Here is the Timeline screen again CLICK. Moving to this from a display box allows you to search for content that is closest in years to the display box item. After looking at this, please say if you agree or disagree with the following statements and give a brief reason for your reply.

Statement	Agree	Disagree	Reason Why This Answer Given
1. I would use a screen that allows me to see what other content exists, from around the same time as the item in the display box.			
2. The way the Timeline items are presented in a carousel is a good way to show them.			

10. Here is the Map screen again CLICK. Moving to this screen from a display box allows you to search for items related by place (e.g. country, city). Is this a screen that you would be likely to use? Yes □ No □ 9a If answered "No" please say why?

11. From what you have seen of www.Europeana.eu so far how would you rate the following aspects on a scale of 1 to 5 where 5 is excellent, 4 is good, 3 is average, 2 is poor, and 1 is very poor:

	1	2	3	4	5
1. General look and feel of the site					
2. Navigation around the site					
3. Browse options of Timeline and Where					

11a. If you answered "poor" or "very poor" to any of the above please briefly say why:

12. Is there anything about www.Europeana.eu that you particularly dislike?

Yes □ No □

12a. If "Yes" what is it?

13. Bearing in mind that www.Europeana.eu is just a demo of what will be built and can only give you a feel of what would be covered on the portal when it is fully developed, does www.Europeana.eu feel like a portal that you would use:

Frequently □ Quite Often □ Sometimes □ Hardly Ever □ Never □ 13a.

Please explain briefly why you have given this answer:

Thank you one again for your assistance. Please leave your email address below to enter our prize draw to win an iPhone as a thank you for your help.

This will not be passed to any third parties or used for any sales purposes. If you would you be willing to take part in future surveys as the portal develops please tick the box below: