Handbook for quality in cultural web sites
Improving quality for citizens

Version 1.1 - Draft

edited by the Minerva Working Group 5
Identification of user needs, contents and quality criteria
for cultural Web Applications

10th of October 2003

Minerva Working Group 5
Identification of user needs, contents and quality criteria for cultural Web Applications

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Drafting to be coordinated by Fedora

1 Definitions, principles and basic recommendations

1.1 Definitions

The topic of Web quality in the area of culture and has various aspects. The Web, with its own specific conceptual, functional and linguistic expressions, faces the field of culture in its public aspect; that is to say, its specific role of conserving and exploiting the cultural and scientific heritage.

This union is still in an innovative and experimental phase. On the one hand we have the world of culture; a world which has been defined and classified by centuries of theoretical and practical formulation. On the other we have a new, revolutionary technology, which is having an extraordinary impact on communication and the spread of information and knowledge.

For these reasons, in the early phases of formulation of the handbook, it was both necessary and important to clarify concepts, areas, and subjects. The starting point was the practical need to find efficient definitions which were real and suited to their destined purpose.

1.1.1 Cultural Entity

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.

Cultural Entities (CE) can produce and disseminate knowledge. Refining, building, disseminating and producing are activities in which many different cultural agents can be involved and ideally, CE are there to assist these.

The definition of a Cultural Entity is deliberately generic in order to include different national characteristics, both political-administrative and technical-scientific. Cultural Entities are, in the first place, public institutions for conservation of the cultural and scientific heritage. However, the inclusion of various juridical entities which operate as organisations and associations of public interest; foundations, societies, projects aimed at specific activities and functions, greatly amplified the sphere of the definition.

1.1.1.1 *Identity*

The identity of a Cultural Entity is defined by:

- the history
- the institutional aims or mission

- the cultural content which is, conserved and diffused
- the-organisational structure
- the physical and geographical location of the entity

1.1.1.2 *Categories*

The sector of culture is vast and composite, and at the same time it presents so many specific characteristics that in order to produce useful quality criteria and guidelines, the task was limited to dealing with the categories of cultural and scientific heritage. Across the member states of the European Union, these categories have been formed in an essentially common historical process of cultural and of juridical-administrative definition, with the aim of managing – in the widest sense of the term – the cultural and scientific heritage.

- Archives
- Libraries
- Cultural heritage diffused on territory
- Museums
- Institutes for administration and safeguarding
- Centres for research and education
- Temporary exhibitions
- Cultural projects

Cultural Entity	**Cultural heritage**							
	Mobile					**Immobile**		
	Archivistic	*Bibliographic*	*Archaeological*	*Historic-artistic and Scientific*	*Intangible Ethnographic-Anthropologic*	*Archaeological*	*Architectural*	*Landscape*
Archives	X	X		x			x	
Libraries	X	x		x			x	
Museums	X	x	x	x	x	x	x	
Cultural heritage diffused on territory			x				x	x

Institutes for Administration and safeguarding	X	x	x	x	x	x	x	x
Centres for research and education	X	x	x	x	x	x	x	x
Cultural Projects	X	x	x	x	x	x	x	x
Temporary Exhibitions	x	X	x	x	x	x	x	x

1.1.1.3 *Goals*

A Cultural Entity achieves its stated mission and satisfies the needs of users by pin-pointing specific objectives. To achieve these aims the CE may use the Web.

1.1.2 Cultural Web Application

A Cultural Web Application (CWA) is considered to be every Web Application where the content deals with cultural and scientific heritage and its ramifications, and where at least one of the following aims are realised:

- supplying and spreading cultural and scientific information
- existing as an instrument for education and scientific research

A Cultural Web Application is one of the most effective instruments available to the Cultural Entity for fulfilling its mission and satisfying the needs of the widest possible number of users. A CWA must reflect the identity of the CE and at the same time guarantee technological standards that raise its quality.

1.1.2.1 *Goals*

A Cultural Web Application has its own specific objectives which form the base of the project. Some of these goals are general and necessary (present the identity of the cultural entity, its activity, its goals, the aims of the Web Application itself, spread cultural content, play an efficient role in the sector network), while others are strictly dependent on the goals which the CE aims to achieve through the CWA.

1.1.3 Users

A user is a professional or not, 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.

Generally speaking, in the field of Web Applications, the preliminary planning stage is dedicated to pin-pointing “user-profiles” which are then used as a basis for designing crucial aspects of the Web Application. It is

important to consider that Web Applications produced or promoted by entities or bodies working in the public interest are, by institutional mission statement, aimed at a vast, composite range of users which escapes the confines of pre-defined lists. The principle goal of a Cultural Web Application must therefore be considered that of diffusing culture to all citizens, thus favouring their growth. To this end, various strategies (such as multiple path interface) could be useful in many applications, but this depends entirely on the stated goal.

1.1.3.1 *User needs*

User needs constitute a complex pattern including the desire for content which is reliable, comprehensible, rich, and up-dated, and can be used to satisfy purposes as diverse as curiosity, personal and professional growth, and scientific research. The contents must therefore be produced and organised in such a way as to allow the user to access them with the greatest ease.
While it is not possible to predict all possible user needs, a Cultural Web Application must however aim for the widest possible satisfaction. All users should be able to choose the cultural and scientific content that most satisfies their individual needs.

1.2 Fundamentals

The general fundamentals listed below are the result of reflections on the role of a Web Application in the sector of culture, more specifically, in the field of cultural and scientific heritage. Besides defining the motives and basic usefulness of a Web Application, it is necessary to establish the position it must hold within the system of communication, information and cultural education, both internally and externally to the cultural entity, and in relation to its active participation in the Web community.

These general fundamentals, in as much as they are vital and basic elements for quality requirements of a CWA, must be evaluated during the initial development of the basic concept of the Web site, as meeting these fundamentals requires specific choices during the planning stage.

It is however, advisable to periodically verify the correspondence of these fundamentals during the course of planning, and further, on implementation of the Web Application. The verification is expected to be conducted with representatives of the users, possibly within pilot installations, where users feed-back can be more easily gathered and analysed.

1.2.1 Promote a widespread diffusion of culture

In the European Information Society the diffusion of culture is a fundamental instrument for raising the quality of life and for affirming the added value of a shared European culture.

Ideally, A Cultural Entity must belong to a community made up of all the other cultural entities which are working towards the progress of culture in the same specific cultural sector.

1.2.2 Exploit the effectiveness of new means of communication

Web Applications are important and innovative tools of communication, to be integrated with traditional instruments. In particular in the case of a Cultural Web Application, it is important to properly select, digitise, author, present and validate content to create an effective website for users.

1.2.3 Adopt an intelligent use of the Web

The rich potential of the Web must be used with full awareness in order to give a valid contribution to the growth of the European Information Society, in respect of democracy and cultural differences.

1.2.4 Conceive quality as the result of interaction between cultural entities and users

Quality criteria are a vital element in determining the effectiveness of a Web Application. Some quality criteria are generic to the Web, others are specific to cultural Web-sites. The latter are based on considered interaction among the aims of cultural entities, the needs of the user, and the characteristics of the Web Application.

Possible emergence of 'external' standard that is specific to cultural web applications would be monitored and encouraged by the Cultural Entities, as it would represent a useful reference for their developments on the Web.

1.3 Policies and strategies: some recommendations

In the form of recommendations, this chapter will deal with the policy and strategies underlying the whole project of preliminary development of a CWA. There are three distinct but related aspects to the topic:

- The **definition of a policy of appurtenance** to new Web communities, thus permitting – given evaluation of the pre-requisites of quality – access to a specific domain name (cf. 1.3.1.1. and 2).

- The **adoption of strategies for co-ordination** of information flow within the CE and co-ordinated and organic use of the various channels of communication (cf. 1.3.3 and 4).

- The **provision for planning procedures** which ensure efficient realisation of Web Applications which adhere to the internationally recognised standards and regulations.

1.3.1 Portals and cultural networks

In respect of the democracy of content and communication, a quality CWA must be actively present in networks and European thematic portals in order to be easily recognisable and thus to contribute to the creation of a European added value.

Portals and networks that are maintained by a CE can valorise certain aspects of culture and science. Culture is seen to be a relational, communal, local value and a source of identity. Culture is indeed, the epitome of a relational value; in as much as it cannot be exploited outside a social context. In this sense a CWA increases the potential of social relations between individuals and institutions organised in a "network". Culture is a "work of community" in the sense that, in a context of essential freedom, it involves all those who individually, separately or simultaneously consume or produce it.

In this sense a CWA, gathering together valid enterprises which the community undertakes, can enrich and consolidate the social heritage of a given community and in particular that of Europe. Culture is also a local public heritage. Thus are defined those assets which share some of the characteristics of "pure" public heritage, such as shared features and non-appropriability.

Because of dependence on a base of local resources, local heritage cannot be universally available, except in the sense that it can be offered to all those who are willing and able to visit the physical place where the heritage is located. A CWA therefore, can open new horizons for local and regional digital strategies, following the strongly supported current of European cultural policy; that of exploitation of cultural diversities, according to the concept of unity in diversity.

Digital networks and Internet portals sponsored by a CE may aim to promote regional goods and services, which are sustainable and competitive on the global market, thus overcoming problems of the "digital divide". Culture is a source of identity; it distinguishes one community from another and, as such, influences the economic success of a territory, attracting residents and visitors according to the richness of the cultural offer.

A CWA, through participating in networks and portals, can highlight and valorise policies of communication and spread of culture, presenting informative contents and on-line services which promote an original line of territorial development, based on a high level of local involvement and sharing the potentials of new competencies which emerge from the development of Information and Communication Technology (ICT).

THE FOLLOWING SECTION 1.3.2 IS UNDER VERIFICATION BY THE COORDINATOR OF THE WORKING GROUP ON INTEROPERABILITY

1.3.2 Inter-operability[1]

Inter-operability is one of the informatory principles of the web: the specifics of Web language and protocol must be compatible with each other and allow any hardware and software to operate together.

The Web must be able to encompass the progress of new technologies, evolving in a simple manner when necessary in order to incorporate new functions and meet new needs. In other words, it must guarantee scalability and this can be realised through planning principles such as simplicity, modularity and extensibility.

In terms of inter-operability, various stages of development and evolution can be identified: starting from a very low degree of integration, evolution moves towards wider solutions and true application integration.

These levels correspond with

[1] See (citare Minerva WG …..)

- The use of data converters
- The study, processing and adoption of standard formats of interchange
- The use of “open” data formats

Inter-operability can concern both “homogeneous” technologies (i.e. those of the same producer) and heterogeneous (the product of different companies).

One particular approach to representation and data exchange and interchange uses marking, by means of the XML standard, of the types of documents exchanged. Attention to XML as a useful technology for defining modalities of integration and inter-operability between public mediating informative systems, is becoming more wide-spread.

- Spread of mark-up languages in the exchange of structured information between public administrations. This supplies dimensional elements to establish costs and priorities for necessary intervention;
- organisation and modalities for building a repository of marked and structured information exchanged between public administrations through services of inter-operability or rather, clerical services; the proposal must also face the problem of optimising modalities for relating between spontaneous agreements and co-ordinated initiatives;
- analysis of the auxiliary tools for marking up documents, in the aspects regarding standardisation and maturity of the market;
- measures favouring a use of XML aimed at improving the supply of services to citizens and companies.

The aim is to create a Semantic Web. 'The Semantic Web is an extension of the current web in which information is given well-defined meaning, better enabling computers and people to work in co-operation[2]." “The Semantic Web **is the representation of** data **on the World Wide Web. It is based on the Resource Description Framework (RDF), which integrates a variety of applications using XML for syntax and URLs for naming[3].**

1.3.3 Recognisability and visibility of the quality-evaluation

Useful measures both for achieving maximum visibility on-line and for precise on-line identity should be activated.

Visibility can be achieved through an explicit policy of communication and information, such as press releases to media centres, messages specifically addressed to newsgroups and forums and co-ordinated description of the structure of site contents.

It would be advisable to adopt descriptive language (e.g. metadata structured according to the rules of the Dublin Core group) which ensures that search engines can trace and identify the CE. The definition of a set of metadata (both obligatory and optional) can be delegated to a group created specifically for this task.

A system of site denomination which ensures unequivocal appurtenance to a specific cultural domain would guarantee recognisable identity. To this end it would be advisable to adopt a specific Top Level Domain (TLD) such as “.museum” or activate, within the top-level domain “eu” (currently under completion), a second level domain – such as “arts” or “cult” - which renders the common European and cultural value explicit.

[2] *Tim Berners-Lee, James Hendler, Ora Lassila,* The Semantic Web*, Scientific American, May 2001*
[3] http://www.w3c.org/2001/sw/

National governments (and domain providers) have set aside certain sub-domain names for specific functions. This is the case of the restricted second level domain name ".gov" (.gouv in French) which has been activated by many EEC member countries. In Italy the body responsible for managing the country code ".it" had, until few months ago, reserved specific sub-domains – such as ".arts" – which are now unrestricted.

Activation of TLD's reserved for particular categories and therefore subject to "appurtenance" checks, is a recent development and the result of a long process of proposal, approval and technical organisation. Time required and the technical complexities related to domain provision and organisation, mean that activation of a TLD is not currently a viable proposal.

A policy of voluntary adherence to a certification project through acceptance of basic principles (cf. manual of quality criteria) and a system of checking maintenance of the essential quality criteria defined therein, would seem however, to be practicable. Checks could be carried out by a European group specifically created for the purpose (with periodic meetings and concession of a national stamp or logo). Participation in the project could be certified through numbered logos placed on the home page of the CWA and validated by a link to an updated register of approved CWA's. Every single application would have to be specifically validated.

In general terms it would be advisable to investigate the feasibility of creating an organising body for specific domains following the administrative and organisational guide lines of Musedoma, provider of the ".museum" domain. Technical organisation could even be guaranteed by a European provider. Choices should be made considering the fact that ICANN has received many proposals from these providers for running new domains, and that the technical management of the .eu domain is entrusted to a non-government provider.

1.3.4 Co-ordination of internal and external information flow

In order to guarantee the quality of a CWA, the flow of information within the Cultural Entity must, by means of appropriate technologies, be regulated together with external flow, thus ensuring necessary updating of the data and information.

The value of a Web Application lies in its communicative quality and in the close relationship, which it must maintain with, the activity of the Entity (or group of Entities) which produced or promoted it. The organisation of space in the Web Application of a CE is thus to be seen as strictly connected with the organisation of information and of documents within the institution.

Current possibilities for planning an integrated Internet/Intranet system, together with the powerful and versatile tools available for updating Web Applications on the part of administrators with differentiated priorities, allow a CE to plan in the Web environment as in a real organisational centre of documentary and informational systems, both internally and externally.

In the specific context of quality of a Web Application, it is important that the staff running the project must guarantee that contents be updated, credible and of quality from the point of view of appropriateness of language, reliability and responsibility. (The team of staff could be composed of internal, external, or both internal and external elements.)

In particular, it is important to create mechanisms for close co-ordination of the operative unit running the Web Application with the unit reserved for communication with the institute. Depending on the availability of human and financial resources, it may also be advisable to create various units: institutional communication, press office, Web.

In order to realise these services, it is important to consider that the Web staff should be composed not only of technical/informatics experts but also of specialists in the cultural and scientific mission of the institute. Experts in public communication should be involved and staff handbooks should be produced giving precise definitions of the operative modes and of information flow.

Considering that the subjects are CEs it is particularly important to establish precisely which services it is possible to out-source and which it would be opportune to run from within the organisation, thus avoiding the oft encountered risk of delegating expression of the very essence of the Web Application to external bodies. Thus, transmission of the meaning and substantial identity of the Entity remain in control of the Entity itself, independent of the body responsible for the material creation of the application.

1.3.5 Cross-over between various channels of communication

A quality Cultural Web Application must be co-ordinated with all the other systems of communication, both digital and otherwise, which are active in the Cultural Entity. Where necessary, an organic model of communication must be defined and should include the following aspects: the organisation of work, research activities, selection and production of information, delegation of services to third parties, and the role of external consultants.

The Web site of a Cultural Entity must be conceived as an instrument for transmission of information and for interaction with users. It must not only include the communicative experiences matured within the Entity (where this exists), the good practices realised in the sector, but also, because of its peculiar potential as information organiser, become an active (and interactive) archive for the Entity.

When considering an efficient communication strategy for a CE, it is important to work out models of co-operation and exchange between the various active channels of communication, taking into account both the specificities of the individual media and also the need for coherence and compactness in messages to the outside, hence preserving the identity of the Entity while accommodating the variations of its activity.

Essential differences between "live" communication and the typically mediated communication of Web tools must also be taken into account. For instance, the cultural contents which are the object of "live" communication are usually directly accessible to the senses (audio, visual and tactile) and so, considering that the communication is almost always located in the seat of the institute, more immediately exploitable.

A close connection between the identity of the institute and the cultural or scientific content that it conserves is here more easily made. Furthermore, the possibility of immediate feedback from users can aid adjustments in "direction" (consider the close non-verbal empathy, which is formed during guided tours, lessons, laboratory sessions, etc.).

"Direct" communication generally occurs on the basis of a sequential exhibition of contents: on the one hand the uniqueness and coherence of the path is ensured, on the other, it is necessary to enrich the language (taking steps to avoid a flattening of language while imposing a continuous work of reprocessing) and face the risk of producing text which is difficult, specialist, bureaucratic, prolix, formal and unsuited to the wide variety of users.

The message must be coherent both in time and quality. However, delegation of its communication to different communicative actors can lead to a variability that may hinder its efficiency. When considering the relations between user and Entity via the Web tool, it can be seen that contents are not directly accessible to the senses but are mediated by software and hardware, and, in the case of the Web, by the personalised view modes chosen by the user. Contents are separate from the event/place/document/monument to which they refer but can nonetheless be accessed, personalised and, in certain cases, reproduced.

This "de-localisation" of the communicative process would seem to break the link between the identity of the institute and its contents, and thus force its reconstruction through deliberately chosen communicative tools. Hence the need to construct a Web Application centred on the identity of the Cultural Entity. Analysis of feedback implies specific techniques and its lack of immediacy suggests long time scales for updating or re-directing.

This process must in no way be guided by the speed of change in "Web style" (the influence of the technology market) but by rethinking the nature of the process of communication. The use of hypertext and the exploitation of multimedia – a network of texts and icons, sounds, animation, films etc., - allows the construction of open communication along various different paths to be chosen by the user.

Care should be taken however, to ensure that communication is coherent and that paths be various both in the horizontal sense (i.e. the "narrational" sequence: personal choice between nodes) and vertically (i.e. the complexity of the communication which reflects the profile of the user). Certain messages may at times require specialist pathways and these messages should be clearly distinguishable from the basic information flow.

1.3.6 Planning, development and management of a Cultural Web Application

The realisation of a Cultural Web Application requires careful planning. The feasibility plan and the development phase must centre on organisation of contents, which includes providing for future maintenance of quality.

Particular importance – indeed centrality – of contents and their quality for a Cultural Web Application, must constitute a directional element in planning.

In the first place origin, strategy for maintenance and updating of data must be carefully considered:

The obligation to guarantee substantial integrity of information throughout the course of possible further development on the application, suggests planning which, as far as possible, separates the contents from their presentation, thus leaving open the possibility to change paths and format without altering the main quality of the data.

The development staff should include both content experts from the cultural sector in question, communication experts from the Entity itself and also experts in Web projects. During the planning stage, the development team should maintain an open channel of communication with the "creators" of the software in case their intervention should be required, in this way avoiding the risk that institutional and/or formal changes in the CE or CWA could result in a loss of contents.

Furthermore, the Web team of the CE, co-ordinated by a project manager specialising in cultural contents and on-line communication, must guarantee Web stability of communication with the Entity represented, working together with the Press Office and with traditional means of internal communication.

Continuous monitoring of audience reached must also be held in consideration.

The analysis of feedback must therefore be part of the project right from the start. It must become a tool for monitoring and a stimulus for immediate and visible intervention thus giving the CWA a strong sense of continuous processing, also in terms of adaptability of the service to users needs.

1.3.7 Respect of Copyright (IPR) and privacy in contents[4]

Contents diffused by a CWA concerning cultural and scientific heritage must guarantee the respect of the Intellectual Property Rights (IPR) and of the privacy of sensitive personal data according to current European and national regulations.

Changeover from habitual methods for acquisition and reproduction and from traditional analogical support, to new systems based on digital technology poses questions for protection of the Intellectual Property Rights

[4] See (citare Minerva…….)

(IPR) of digital documents which will be published and for preservation of respect of privacy concerning their contents. This is especially so in the case of Cultural Entities. Information and data banks on cultural and scientific heritage will have to provide differentiated levels for user profiles authorised to access given packets of services and contents, both on the basis of legal criteria and in virtue of commercial transaction. Sensitive data could be concealed from non-authorised users in order to ensure the safety of the heritage. Take, for example, the case of locating archaeological areas, submerged wrecks or heritage belonging to private collectors who do not intend to reveal the geographic location of the collection. Information on the locality could be filtered, e.g. by giving the province rather than the exact location.

Establishing laws concerning the contents of digital documents, similar to those governing analogical documents, could ensure protection of privacy of archival documents.

In the planning and development phase of a CWA it is important to select which material will be published, thence to identify copyright holders and finally send requests for authorisation to the institutions which are responsible for safeguarding (museums, ministerial bodies, etc.) or to the owners of the heritage and sensitive data with relation to privacy. There are ever more efficient practices and techniques for protection of the rights of authors over published contents (those connected with the ownership of items that are reproduced and those connected with the intellectual ownership of original scientific contributions).

Partial or synthetic versions of original scientific and cultural works can be made available, thus activating a process of differentiated access. Refined techniques of digital watermarking mean that a group of data can be given a logo, an appropriate code that guarantees correct and legal distribution of the digital or digitalised heritage by unequivocally identifying the legitimate owner, buyer or authorised user.

A system of specific applications – so-called "spiders" – make it possible to seek and trace protected contents lifted from a CWA without necessary authorisation. Insertion of a watermark should not however, lead to downgrading of the quality of the data; i.e. it should not lead to visible changes in the original content.

1.3.8 Long-term preservation of Web contents[5]

Cultural Entities must be in the forefront of the diffusion of good practices and standards for the long-term preservation of material published on Internet: an information heritage and legacy of our present for the future.

In all sectors the Internet is currently a primary channel for diffusion, processing, search and storage of information. If long term preservation strategies are not implemented, there is a risk is that this enormous mass of information could be lost, especially in those cases where Internet substitutes other channels of information. Consider, for example, all the information on the bibliographical heritage of many libraries whose catalogues are available solely on the Web.

If we consider that the average life of a Web page is currently estimated at 40 days, the challenge is to preserve sources which in a mere few years will be the objects of studies on cyber-culture. Awareness of the urgent need to define policies and strategies for preservation and storage of this heritage of digital information, has, over recent years, produced international research projects and experiments with encouraging results.

If the management of digital records and local data-banks can now – thanks to these enterprises – rely on solid technical and organisational reference points, there is still much to do as far as the content of the Web is concerned. The dynamic nature of the material, its strong interactive nature, the continuous development of new technological formats, and indeed the multiplicity of creators, renders preservation of Web contents even more complex.

[5] See citare Minerva….. e Erpanet ??

While all creators and developers are involved in this process, entities however, must play a *central* role; for particular care of records produced in the place where they are conserved and for which they are responsible, for their natural vocation as preservers of the memory of civilisation and also for their technical function as conservers of archives and bibliographies.

The Entities involved in long-term preservation are then, primarily the private and public Web creators, who must create and manage their digital archives using international standards. Then come National storage institutes (usually National archives and National libraries) which are able to guarantee long-term availability and tutelage of authorship, copyrights and privacy of content.

Lastly, considering the global nature of the Web, a continuous co-operation both on legal and technical implications is necessary on an international level.

Concerning which contents to preserve, an appraisal strategy similar to that employed in traditional appraisal systems must be adopted. It should be based on criteria that are recognised at least on a national level and are compatible with technological and economic feasibility.

2 Quality in Web Applications: general principles and operative proposal

2.1 Introduction

Now in its tenth year, the Web has reached the maturity of a product of mass consumption.

First conceived in the scientific community as an instrument for gathering together public and scientific documents, it soon became a ready tool for vast scale communication, up-to-date learning, commerce, entertainment and culture.

Initially, the Web imitated the techniques and methods of communication of existing media; foremost among these were the Press and Television. Subsequently however, following its explosive growth, the Web discovered its own new methods and techniques, more suited to its specific characteristics.

The innovative and experimental phase is over, and planning and execution of good Web sites now seeks that characteristic common to all successful ventures: quality.

The Web product can be said to be a grouping of digital information that is accessible to the user via computer, through graphical or textual interface and may be both inter-active and non.

It is therefore, a software product that can be subject to the regulation; ISO/IEC 9126-1 – *Information Technology. Software product quality: quality model.* Quality is here defined as "the capability of the software product to enable specified users to achieve specified goals with effectiveness, productivity, safety and satisfaction in specified contexts of use."[6]

This definition highlights the fact that the quality of a software product lies not in the absence of faults, richness of functions, or technical innovation, but that it should be accessible according the needs of the users in the context of use.

The Web is much more widely diffused than other software products and therefore the types of users and contexts of use are many and differing. In order to meet the required standards it is therefore important to examine the two following characteristics of quality:

Accessibility of content, which takes into account the diverse types of users and contexts of use

Usability: a set of attributes bearing on the needs for effectiveness, efficiency, safety and satisfaction.

2.2 Accessibility of contents

A Web site is considered to be accessible when the informational content, navigational modes and all the interactive features present are accessible to all users, regardless of disabilities and independently of technology used to access the site and of the context in which they are working whilst accessing the site.

To give an idea of the vastness of the definition, it is worth while quoting the situations described in the introduction to “Guide lines - Web Accessibility Initiative (WAI) World Wide Web Consortium (W3C).”

“For those unfamiliar with accessibility issues pertaining to Web page design, consider that many users may be operating in contexts very different from your own:

- They may not be able to see, hear, move, or may not be able to process some types of information easily or at all.
- They may have difficulty reading or comprehending text.
- They may not have or be able to use a keyboard or mouse.
- They may have a text-only screen, a small screen, or a slow Internet connection.
- They may not speak or understand fluently the language in which the document is written.
- They may be in a situation where their eyes, ears, or hands are busy or interfered with (e.g., driving to work, working in a loud environment, etc.).
- They may have an early version of a browser, a different browser entirely, a voice browser, or a different operating system.

Content developers must consider these different situations during page design.”
In the contexts described above, particular attention is paid to disabled users or users with specific disabilities, both in terms of reference to instruments which these users may employ for computer use in general, and for navigation on the Web in particular.
It would be opportune to define “disability”

2.2.1 Disability

The WHO World Health Organisation, in the International Classification of Impairments, Disabilities and Handicaps (ICIDH-1, 1980), gives the following definitions:

Impairment: "any loss or abnormality of a psychological, or anatomical structure or function".

Disability: "any restriction or inability (resulting from an impairment) to perform an activity in the manner or within the range considered normal for a human being".

Handicap: "any disadvantage for a given individual, resulting from an impairment or a disability, that limits or prevents the fulfilment of a role that is normal ... for that individual". The classification of handicap is a classification of circumstances that place individuals "at a disadvantage relative to their peers when viewed from the norms of society". The classification of handicap deals with the relationship that evolves between society, culture and people who have impairments or disabilities, as reflected in people's life roles.

In 2001 the WHO presented a new document for the definition of disability, the International Classification of Functioning, Disability and Health (ICF [ICIDH-2], 2001) To sum up, this document

- refers to “human functions” in general and not simply to disability. Functioning is related to the state of the individual not only at the level of body functions, but also in terms of the activities of the individual and of participation in society.
- Moves away from the consequences of a “dysfunction” to components of “health”, grouping them together under the heading of “health domain” (this includes sight, hearing, movement, learning) and “health-related domains” which includes mobility, education, participation in social life, etc.)

The model is universal; i.e. it does not concern only people with disabilities, but all people. This makes the need to plan accessible Web sites even clearer.

2.2.2 How do disabled people use the Web?

Certain types of disability can be catered for with compensatory or so called “enabling” technology. This can be hardware or software which:

- effect “equivalent” conversion of the information from one sense organ to another. Some examples are:
- from the computer monitor (sight) to touch (Braille bar for visually-impaired users)
- from the computer monitor (sight) to sound (vocal synthesis for visually-impaired users)
- from sound (audio documents) to sight (text documents) (vocal recognition for motor-disabled and deaf users);
- permit different ways of using certain tools, for example:
- special mouse (for motor-disabled);
- special keyboard (for motor-disabled);
- compensate for disability of a sensory faculty, for example:
- enlarging the text on the computer monitor (for the visually impaired)

Specific tools are available to compensate for other types of disability: in these cases access can be effected through the use of specific technical and editorial tools during the realisation of the Web site.

Some examples are:

- for users with difficulty in distinguishing colours, for example, it is important to avoid giving information solely through use of colour and also to guarantee sufficient contrast between the text and the background.

- for users affected by photosensitive epilepsy, it is necessary to avoid moving images at those frequencies that could provoke an epileptic fit;
- for users with learning difficulties or language difficulties it would be necessary to develop clear navigational mechanisms and to use clear and simple language in the documents.

2.2.3 The Web Accessibility Initiative (WAI)

The Web Content Accessibility Guidelines of the WAI project are constantly referred to in the search for quality accessibility in a Web site.
The WAI project deals with Web accessibility in the lay sense; that is, not only as far as regards contents, but also in terms of the tools used to realise the Web pages, the browser and, more generically, technologies for Web access. For example, for this purpose, all the images in a site "must provide text equivalents for images and other multimedia content", and "non-text equivalents of text (e.g., icons, pre-recorded speech, or a video of a person translating the text into sign language) can make documents accessible to people who may have difficulty accessing written text, including many individuals with cognitive disabilities, learning disabilities, and deafness".

The Web Content Accessibility Guidelines (WCAG)[7] version 1.0, 5 May 1999, is particularly important for accessibility of content.

The document consists of 14 GuideLines. Each of these presents typical situation that could present difficulties for disabled users. In every Guide Line a certain number of checkpoints are defined and explain the specific way the guide can be applied to developing content. The Guidelines introduce the concept of priority and thence the concept of conformity. These concepts are thus defined by the WCAG:

“Each checkpoint has a priority level assigned by the Working Group based on the checkpoint's impact on accessibility.

(Priority 1]

A Web content developer ‘must’ satisfy this checkpoint. Otherwise, one or more groups will find it impossible to access information in the document. Satisfying this checkpoint is a basic requirement for some groups to be able to use Web documents.

[Priority 2]

A Web content developer ‘should’ satisfy this checkpoint. Otherwise, one or more groups will find it difficult to access information in the document. Satisfying this checkpoint will remove significant barriers to accessing Web documents.

[Priority 3]

[7] "Web Content Accessibility Guidelines" (http://www.w3.org/TR/WAI-WEBCONTENT/)

A Web content developer 'may' address this checkpoint. Otherwise, one or more groups will find it somewhat difficult to access information in the document. Satisfying this checkpoint will improve access to Web documents.

Some checkpoints specify a priority level that may change under certain (indicated) conditions.

Respect of the above points leads to the concept of conformity:

Conformance Level "A": all Priority 1 checkpoints are satisfied;
Conformance Level "Double-A": all Priority 1 and 2 checkpoints are satisfied; Conformance Level "Triple-A": all Priority 1, 2, and 3 checkpoints are satisfied.

The list of checkpoint of the WCAG 1.0 can be found in the appendix. The checkpoints are grouped by priority and by type of elements that may be present on a Web page.
The list is especially useful in the planning phase in that potential barriers and obstacles to access that may result from various functions of the application can be identified.
Furthermore, the list can be used to evaluate the degree of conformity in the realisation of the page.

Besides this list, various tools for evaluation of the accessibility of Web contents are commercially available. These automatic tools are not alone sufficient to guarantee conformity to the degree of accessibility required. Indeed, many guidelines require a degree of subjective evaluation that no automatic tool can supply.

2.2.4 Indications of the European Union

The European Union places great importance on accessibility to Web sites of Public Administrative offices:

The eEurope action plan 2002 (June 2000) specifically states;

"Public sector web sites and their content in Member States and in the European Institutions must be designed to be accessible to ensure that citizens with disabilities can access information and take full advantage of the potential for e-government."[8] (objective 2 point c)

In later resolutions the Council of Europe invited the Member States to implement specific measures to reach the objective of accessibility of Web sites of public administrative institutions and indicated the adoption of the WAI guidelines as one of these measures.

While not all Member States have formally adopted the WCAG 1.0 for the realisation of Public Web Sites, it is universally accepted that these must conform to at least Level A as defined in the GuideLines.

2.3 Usability

2.3.1 Definition and methodology

The definition is that of the standard ISO 9241-11 "*Ergonomic requirements for office work with visual display terminals - Guidance on usability" in which usability is defined as: "the extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use."* This definition is very similar to that already quoted in quality of software product [ISO/IEC 9126-1] and for the meaning of the terms therein, we can say that:

Effectiveness *in the use of the product indicates the accuracy and completeness with which the user can attain the specified results.*

Efficiency *in the use of the product indicates use of resources in relation to accuracy and completeness with which the users achieve specified results.*

Satisfaction *indicates freedom from unease and obligations and a favourable tendency in the user towards the product.*

Context of Use *is that of the context of the user, the aim or task, the hardware resources and software used, the physical and social environment in which the product is used.*

The 'product' is the Web site as it has previously been defined.

The essence of the ISO regulations (ISO/DIS 13407 – *Human centred design process for interactive systems* in addition to the two mentioned above*)* is that planning of interfaces, interactive modes and the organisation of Web contents, must be user-centred: No-one knows the competencies, culture, needs, limits, attitudes of users better than the users themselves. It is thus important to provide for involvement of the users in all stages of the planning, realisation and running of a Web site.

A planning methodology based on the centrality of the user contains the following points:

a) the creation of a representative group or panel. A panel can be considered representative when its components are chosen on the basis of various roles and goals for which a user may be interested in a site. Among the members of the panel there must be disabled users in order to verify the accessibility of the contents:

b) the construction of situations of use: define context, purpose and modes of interaction with the site. The site will be created, planned, evaluated and continuously updated and improved on the basis of these use-situations.

c) evolutionary planning: the site will undergo evaluation on the part of the panel on the basis of various complex use-situations. This evaluation aims at the definition of new requirements and new goals. The definition of new goals should be undertaken repeatedly, through creating approximate prototypes that are, nevertheless, able to evaluate solutions, identify constraints and establish feasibility. Continuous feedback and discussion with the panel allows in-progress evaluation of solutions and anticipates the final evaluation of the project. The panel finally becomes an observer of the use of the site and aids continuous up dating and improvement.

Constituting the panel is thus a central element in the methodology for the following reasons:

a) it guarantees the level of realism, and gives also consensus and communication on the project,

b) it produces data and ideas and allows empirically guided decision-making. From this latter point of view, the panel is a place for experimentation with appropriacy and also with technological constraints to interaction and accessibility,

2.3.2 Principles of Usability

It is not always possible to plan and realise a Web site using the methods described above directly. This is because the organisational, financial and human resources (sample users, experts on usability etc.), required are not always available.

From experience using this methodology, experts in usability have proposed a series of Principles and Criteria that can guide decision making in planning in order to reach effectiveness, efficiency and satisfaction in the realisation of a Web site.

The principles of Usability tend to group problems in general categories. The most common principles are the following:

Visibility: *give users visual clues to understand how to use the site. for example: a word or phrase underlined in blue indicate the presence of a link, underlining in purple indicates that the link-site has already been visited.*

Affordance*: ensure that objects behave in a manner that their appearance suggests. In order to complete the function assigned to them a button should require to be pushed and not, for example, to be highlighted.*

Natural Mapping*: establish conceptual correspondence between command and function. For example, for the layout of a form in a search function, the text should be typed into the input field and the "Return" button should be pressed**.***

Constraints*: reduce the number of ways in which a certain action can be carried out and plan the commands for functions in a way that renders their use easily understandable.*

Conceptual Models*: the user has a notion of how things work, based on his/her experience and knowledge. A good conceptual model in a Web site is one where the proposed functions correspond as far as possible with the user's notion of those functions.*

Feedback*: indicate the users' position in the operation or task, his/her result, be it positive or negative. For example, when the user downloads a file, indicate time required and time remaining for the operation. When the user sends a form, confirm receipt.*

Safety*: as far as possible limit the risk of error on the part of the user. In the case of error, give information as to possible causes and remedies.*

Flexibility*: give users the possibility to execute an operation in various ways. For example through various navigational routes to reach a document.*

2.4 Criteria of Usability for Public Cultural Web Applications (PCWA)

For the definition of quality in PCWA's, applying these principles to the planning and realisation of Web sites has led to the selection of *Criteria of Usability*. These criteria further address and define the problem.

The Criteria are divided into Categories that represent user needs to be satisfied.

2.4.1 Make contents visible

The user must be able to recognise that the site visited is a PCWA rather than another type of site; the general content must be immediately clear and thence users can proceed to details; contents must be of good quality.

2.4.2 Recognise that the site is a PCWA

Institution image. *The application should include all the information needed to give the user a view of what the cultural subject is, its initiatives, and its organisation. This information contributes to creating a sense of trust in the institution, and supports the establishment of the right "image" of the institution itself.*

Institution responsibility. *It should be clear which cultural subject is behind the web site, who has the responsibility for the overall site and in particular for its contents.*

IPR policy. *The application should include all the information about the IPR strategy and technology adopted by the cultural subject to protect the contents sources made available in the application.*

Advertising policy. *The advertising, if any, should not overshadow the contents and where advertising is a source of funding this should be clearly stated. The site should display a brief description of the advertising policy adopted. Advertising and other promotional material should be presented to viewers in a manner and context that facilitates differentiation between it and the original material created by the institution operating the site.*

2.4.3 Recognise the aims of the site

Application mission *evidence There should be some statement of the mission of the application, its main goals, its main target users.*

Responsibility for the application. *There should be some description of who is responsible for which aspects of the web site (this is sometimes reported in a "Credits" section). In particular - who is responsible for the overall editorial aspects, who should be contacted for further information, complaints, technical support and help in general.*

Evidence of maintenance strategy. *There should be some description the maintenance strategy of the web site, how frequently it has been updated, when the last update occurred.*

Evidence of technical strategy. *There should be some description of the technical aspects of the site which improve the use of the application functionality. In addition, it is essential to inform the user about the physical size of the contents, if it is large. When a large file can be downloaded, the user should be informed of its size before the file begins downloading and should have the opportunity to cancel the download.*

2.4.4 Gain a general impression of the site before proceeding to a detailed visit.

Appropriateness of grouping. *Content elements of a cultural Web Application are typically grouped according to different criteria (e.g., theme, time, author…). The information should be well composed and arranged logically and consistently, but the appropriateness of organization criteria depends upon other factors: the characteristics of the cultural subject and adherence to the end-user's level of knowledge, conceptual model, and goals.*

Appropriateness of nesting. *Groups of information are typically organized hierarchically, resulting in a layered structure where the actual contents are on the bottom. The levels of nesting should be intuitive, logical, intrinsically coherent, and easy to understand. Once again, they must be appropriate for the conceptual model and the goals of end users, the nature of the contents domain, and the characteristics of the delivery channel. Nested structures must support efficiency: the identification of the needed information within the hierarchical structure of nested groups must be performed successfully and quickly. For example, the most relevant subjects for the user should not be hidden inside over-nested groupings, and should be more directly accessible than less relevant information.*

Appropriateness of splitting. *Large amount of information can be divided into a set of individual pages, but each page should be self-sufficient, i.e., it should cover a specific topic or aspect without the need to access a different page to understand its core message. When complex contents are stored on a single page, good headings and a short introductory synopsis may help users to graph immediately the core information of the page immediately .*

Evidence of organisation. *The grouping criteria must be clear and the semantic relations among group elements have to be evident to end users. They must be explained to them. There should be some description of what a group of "contents objects" is about (using a synopsis, a comment, as summary, etc.), how the contents have been organized, what are the main contents that the user can find (or cannot find - to avoid creating wrong expectations), which languages are available, and so on. Tables of contents and indexes, site-maps and similar elements are useful for providing global views of the site organization (and also for orientation and navigation purposes). Some obvious visual cues can be adopted - for example, different page backgrounds of nodes to distinguish among different types of contents, or textual labels to indicate the groupings to which current contents object belongs. These cues are also useful for context orientation.*

Evidence of membership evidence. *In a group of elements, it should be clear for the user which are the elements in the group, by means of proper descriptors (textual or visual) that identify the group members.*

2.4.5 Be able to exploit quality conents

Consistency. *Consistency is a very general meta-principle for quality, which also applies to all application dimensions. For contents, it states that similar pieces of information are "dealt with" in similar fashions.*

Currency. *The concept of currency relates to the time scope of the contents validity. However, the idea of currency of information is rather more complex than simply "is it recent." To be current, information does not have to be "new" - sometimes older information is still widely accepted as valid and reliable. The site should therefore present the most currently available data and the currency of the information must be appropriate for the specific field or topic. The site should avoid the presence of outdated information. The links used by the site should be up-to-date (e.g., avoiding the presence of links to empty or under-construction pages, or "dead" or unavailable sites). In addition, currency properties must be evident to the user. This implies that the time scope of the contents validity is clearly stated, and that the maintenance policy should be dated.*

***Completeness**. The concept of completeness is strongly related to user profiles and goals. It defines the level of information coverage of the application with respect to the characteristics of the cultural subject and of the intended users. By definition, completeness strongly depends on the nature of the cultural subject, on the profile of the intended end users, on the goals of both, and on the potential scenarios of use. An application should not omit "crucial" information (needed by all possible users) but the amount of available resources should be appropriate and well balanced for the specific user needs. It should cover all relevant aspects of a topic and lead into the appropriate level of details for the specific topic and field, but the appropriateness of the depth of a specific topic is relative to the user needs. (For example, a "simple" user may need less information than the user that is expert in a particular topic). Completeness applies both to pieces of contents as well to links, in the latter case referring to the amount of links that the application provide to pages of external sites.*

***Comprehensiveness**. The information is clear and easy to understand. Again, this criterion is usually strongly related to the user needs. The language complexity should be appropriate for the cultural level, experience, and interests of the end users. (According to Nielsen, "Speak the user language" is one of the cornerstones of usability)."*

***Conciseness**. This "rhetorical" principle mainly apply to textual contents: texts should not be too long and redundant (reading on a computer is much more tiring than reading on paper) and should convey the key message using the minimum amount of words.*

***Richness**. In some cases, richness of interesting information (many examples, data, links to other resources…) and use of multiple media to convey it can be an added value per se, even if it is not strictly needed for the intended users. It may increase the "image" of the cultural subject, stimulate interest and curiosity, and provide reasons for the users to return. Still, the richness of multimedia must be "appropriate", as discussed in the following criterion.*

***Soundness of dynamic media**. The use of multiple dynamic media (audio, animation, video, 3D graphics) can enforce richness (see above). Still, the choice of media should be "sound", in terms of the "format" (e.g., as resolution, indicative size or duration), appropriateness of the medium per se and the rhetoric style adopted to convey the contents message.*

***Multilingualism**. In an intrinsically global world, at least the crucial information should be given in more than one language, to reach and appeal to a the largest possible audience. The success and the popularity of an application is strongly impacted by its amount of multilingualism. The multilingualism allows the review and use of the site from individuals of different nationalities, promotes and elects the cultural heritage of each country outside its borders, respects and promotes the European Strategies for the Information Society.*

***Accuracy**. Accuracy has to do with the evidence of bias or mistakes at any level, both syntactical and semantic. Textual contents should be correct in terms of grammar, spelling, and composition. All types of contents should avoid incongruities, non necessary duplications and repetitions. Obviously misleading statements or outrageous must be absent.*

***Authority/Responsibility**. This criterion refers to the evidence of who (individual or group of individuals) is the author of the domain contents and of its competence in relation to the subject. Identification of the sources (e.g., by means of valid up-to-dated references and bibliography) should be provided.*

***Objectivity**. Information should be "objective" and "politically correct". Unsupported claims made by the authors, one-sided arguments about controversial issues, "messages" by individuals or groups with vested interest in the topic, should be avoided. The application should clearly specify what are author´s personal opinions (if any) and distinguish them from more objective, factual information.*

***Uniqueness**. In the world-wide proliferation of Web Application almost on any cultural subject, providing domain contents which is unique, original, peculiar, is a source of attraction and interest for the user, and a good reason to return to the site.*

2.4.6 Presentation of Contents

Presentation of graphics in a PCWA must be functional with Contents; it is the inter-face through which the user accesses all the information.

2.4.6.1 Functional layout

***Consistency**. Users should not have to wonder whether different words, situations, or actions mean the same thing. Once users see a link, they expect when they see it again it will look the same, be in the same location, and function the same. If it has changed, users may be forced to relearn the button, which will delay their completion of tasks. Maintaining consistency allows users to develop a set of skills. Concepts can be learned once and then applied in a variety of situations.*

***Efficiency**. The most efficient viewing and use of information should be ensured on each page of the site. Developers should evaluate the most common use of each page and make design decisions that ensure the best possible performance.*

***Spatial organization**. Navigation and identity should be displayed in the top and left areas of the screen Users are comfortable and familiar with this design. The use of tables and images wider than the defined image-safe area should be avoided, users often become annoyed if they have to manipulate a horizontal scrolling bar to see contents.*

2.4.6.2 Functional graphic elements

***Minimalism.** Pages should not contain elements which are irrelevant or rarely needed. Every extra element in the web site competes with the relevant and diminishes their relative visibility.*

***Use of colours**. When background and text colours are close to the same hue, they may provide insufficient contrast on monochrome displays and for people with certain types of colour deficits. The text and graphics should be understandable when viewed without colour. Avoid using image as background colour, this may obstruct readability.*

2.4.6.3 Functional multimedial elements

***User controls**. The users should always have the control for all playable files: Play, Pause/Resume, Stop, Rewind, Fast Forward and Volume.*

***Use of animations**. Animation is a wonderful tool in web design, but in some cases can be over-used. Animated graphics can be too big and too busy, If there are too many animated elements, your page can be difficult to read and information can be difficult to find. Lots of animation makes your page take longer to load.*

***Objects size**. The size of media objects should not make the site heavy to download. Instructions for downloading media objects should include the file size, the media type, and a description of the subject matter. This information will help users determine whether they want to wait for the download.*

2.4.7 Site Navigation

Tools for navigation within a site, if well planned, are essential for fast and reliable finding of information.

***Link evidence**. The meaning of links should be clear, i.e., it should be easy for the user to understand both the relationship represented by the link and the link destination - before traversing it (expressive link labels and link descriptors are useful for this purpose). In particular, links to external sites should not just identified by urls, but shortly described by meaningful labels or comments.*

***Link soundness**. Links should only bring to relevant material (e.g., not to "inaccessible" or expired pages). There should not be any "dangling link", or link which brings to a missing page, or to a page "under construction" (this misbehavior should be evident to the user before the link activation, to avoid loading a useless or empty page, or a page just containing an error message).*

***Link coverage**. This criterion refers to the amount of links available to improve efficiency of access. From a given starting point, users should quickly locate and access the items that are needed for their task, without navigating through non-relevant material; alternatively, they should quickly discover that those items are not in the application. Efficiency of access is strongly related to the organizational schema adopted for the content which is reflected by the links. But it is improved by the presence in the pages of "non semantic" links to the most relevant portions of the site (oftentimes called "navigation bars", "landmarks" or "accelerators") which speed up navigation by providing jumps to different portions of the site.*

***Backtracking soundness**. Whenever the user reaches a given point in the web site, it should be easy to access previously visited points and to continue navigation without restarting the session from scratch, or without scanning backward all the previously traversed pages using the browser backtracking button. In particular, in guided tours it should be clear what happens at the end of the tour, and how to return to the starting point.*

***Context evidence**. This criterion refers to the need for the user of understanding his/her current navigation context, to reduce the risk of "getting lost in the hyperspace" (a typical syndrome of large hypertextual structures). Users should be always aware of the actual status of their navigation session, they should be able to understand their current position within the current cluster of objects they exploring and the entire application. For this purpose, many hypermedia use active maps and overview diagrams, with indications of the user´s current location (and of previous steps), or some perceivable visual cues - for example, different page backgrounds of nodes to distinguish among different types of contents, or textual labels to indicate the groupings to which current content object belongs.*

***Media control soundness**. This criterion refers to what we can call "navigation in the small", i.e., interaction with multimedia element and modification of their dynamic state. Media control soundness is the possibility, for the user, to control the state or the behavior of multistate media objects such as images (which can be zoomed in-out), video or sound (which can be played, stopped, suspended etc.). The commands designed for the user to manipulate the state of a multimedia elements depend on the nature of the element (e.g., a picture can be zoomed in or out, but the same commands make no sense for a sound) and on its physical properties such as resolution, size, duration. Control commands such as "start", "stop", "pause", "re-start", "forward", "backward" are meaningful, in principle, for all dynamic element slots, but a video or a sound comment might require no interaction if they are very short. Ultimately, the degree of control must be appropriate to both the nature of the medium and the actual need of users, based on their experience with digital multimedia and their goals in using the system.*

***Media control evidence**. Whatever multimedia control actions are offered, they should be evident to the user, and their meaning and effects should be clear.*

2.4.8 Searching

Navigation is oftentimes complemented by search mechanisms, that allow users to specify some characteristics of the information they are looking for and to retrieve a list of pages

matching these characteristics. We will not discuss here the aspects concerning the technical quality of the adopted search engine (the soundness of the search algorithm and of its implementation, which we consider a purely technical problem). We will focus here on the features that directly impact on the ease of use of the search, considering the following sub-criteria.

Comprehensiveness of query forms. It should be clear for the users which characteristics they can specify for the searched objects, and how they can be specified. Different types of search specifications should be available for different skill levels and preferences.

Comprehensiveness of query results. It should be clear for the users which objects have been retrieved, by complementing page address with short descriptors that identify their meaning (see also Link Evidence Criterion).

Navigability of query results. It should be easy to navigate the set of retrieved objects. Most search mechanism only support "forward index navigation", allowing users to access each of the retrieved page from the list of search results. In some cases, there is no direct link to return to the list of retrieved objects, unless using the browser back option. A search should support the possibility of returning to the last search results at any time, and also of navigating directly across the retrieved objects, forward and backward, like in a guided tour.

2.5 Patterns and the language of patterns

The principles of Usability, in as much as they are generic, are often difficult to apply and the Criteria that supply more detailed instructions can be interpreted in different ways or are tied to a specific technological area. These problems, though to a lesser extent, are also found in the application of GuideLines to Accessibility.

A different approach to the concrete problems of planning and realisation of Quality Web Sites is that of using Patterns to resolve recurring problems through noted and consolidated solutions. By now, the Web product has reached a degree of maturity such that the solutions to certain problems related to its use are considered common to all planners.

Furthermore, Patterns can be a useful reference point for those involved in Web site construction while not being experts. Indeed, in this case, Patterns can constitute a common language for communication between professionals to indicate what is required and why, regardless of how the solution is reached from the technical point of view.

Patterns neither eliminate nor substitute the need for involving users. On the contrary, by definition, they benefit from the concrete experience of users.

2.5.1 Definitions

The paradigm of Patterns was developed at the end of the ‘70’s by Christopher Alexander, professor of Architecture at the University of Berkeley in order to meet the complex problems related to urban planning and construction. According to Alexander, the poor quality of architecture in the ‘60’s was partly due to the lack of formal method in planning. He noted that urban planning and construction did not take concrete experience into account and the projects themselves were detached from the real needs of the users. This led to the idea of Patterns that establish relations between a context – a group of conditions or constraints tied to that context – and a solution which would resolve problems with those conditions and in that context

From the mid '90's, the idea of using the language of Patterns to assist planners, gained new credibility thanks to the enormous success of its application to the field of software engineering and "object oriented" planning. The paradigm of Patterns has recently been applied to the field of Human Computer Interaction (HCI), with extension to the world of the Web.

Patterns aim to provide a rigid method for describing a planner's experience through formulating a solution to a common problem.

What characterises this approach is the choice to not give "pre-codified" solutions to the problem, but rather to try to accurately describe both the context and the solution, grouping the experience and the solutions adopted (also by other planners in similar experiences) together under the same title.

A Pattern is made up of three parts:

- ***Context****:* this is the whole of the conditions and the surroundings, the environment of the action, all of the forces in action that the pattern has to consider and which constrain the choices of solution.
- ***Problem****:* is a recurring situation in the context that creates imbalances between the forces at play,
- ***Solution****:* is an algorithm, a piece of technology, an organisational structure, a well-known method, a model of reference which can resolve the recurring *problem* in that context.

It should be noted that a Pattern is made up of three parts: this implies that a problem alone is not a pattern, neither is a solution.

In a sentence: a Pattern is a proven solution to a recurring problem in a specific context.

Further elements are required to complete the definition of a pattern.

- ***Name***: a pattern must have a meaningful name. Naming something is the first step towards being able to communicate about it.
- ***Conditions***: descriptions of the conditions (or constraints) present in the context.
- ***Notes*****:** considerations (both positive and negative) on the consequences of the use of the current pattern.
- ***Related patterns****:* relations between the current pattern and other patterns used in the referral system.
- ***Known uses****:* detailed reference to practical applications of the current pattern.

The language of Patterns groups together Patterns which work together to resolve problems in a given context.

The general context of reference to which we intend to apply the language of patterns, is the planning and realisation of Public Cultural Web Applications that must be Accessible and Usable – that is to say; of good quality.

Having established the common reference conditions, it is necessary to organise the Patterns in some way in order to use them.

Here it is proposed that a *Catalogue of Patterns* be created, with the aim of identifying general categories of problems to be faced. Within each of these categories, the patterns that define and resolve a particular problem will be placed.

2.5.2 The Catalogue of Patterns

The same general categories grouped under Criteria and Usability will be used to create the Catalogue of Patterns to apply to the planning and realisation of an Accessible and Usable PCWA. To these are added:

Interact with the User: When a PCWA is present on the Internet with a Web site, it opens a window to the public. Interactivity, seen as the possibility for direct communication between citizen and Public Cultural Entity (PCE), becomes an important and vital function.

The Catalogue of Patterns and their definitions can be found in the Appendices.

Most of the Patterns presented in the Catalogue were inspired by the work of Martijn Van Welie (http://www.welie.com/patterns/), who wrote Patterns for the Web, paying particular attention to the Principles of Usability, bearing in mind the needs of both the user and the planner.

At http://iawiki.net/WebsitePatterns can be found a bibliography of collections of patterns for the Web.

2.5.3 How to consult Patterns

How are Patterns used?

In a chapter of the book "A Pattern Language", Alexander suggests a path to follow, at the end of which a list of patterns necessary to the project at hand will have been compiled. The steps of this path are as follows:

- Examine the whole sequence available, the catalogue of patterns.
- Identify by name the pattern that best defines the project/problem to be faced.
- Read the description carefully: here, patterns related to the current one are listed. In this way a list is produced; a list where the lower level patterns (more specific) should be marked, while in general, the higher level patterns (less specific) should be ignored.
- Read the next pattern highlighted on the list and again note the low-level patterns related to it.
- If in doubt as to the usefulness of a pattern, this should be excluded. Otherwise, the list would inevitable become over-long and this could lead to confusion. Including only the patterns considered to be useful would produce a list of sufficient length.
- Continue in this way until all patterns useful for inclusion in the project have been identified.
- At this point the list must be supplemented, if necessary, by adding its own elements.

- Finally, consider carefully adaptation and change in patterns according to the needs of the project on hand.

2.5.4 An example of the use of the Catalogue of Patterns

A site already present on the Web wants to offer a Newsletter service to users.

In the Catalogue, under the category *Interact with Users***,** the Pattern *Newsletter can be found.*

This is the definition

NEWSLETTER

CONTEXT: The site deals with various themes. These can be events, publications, news and links of interest on the themes of the site but external to it.

CONDITIONS: The user trusts the site, recognises its authority in the context of the subjects it deals with, wants to be regularly informed of news, is not able to visit the site daily. Problem: How can the user's trust be rewarded?

SOLUTION: Make a regular Newsletter available. The Newsletter should be in a form that makes its origin easily recognisable, easy-reading and not too "voluminous"
Typical elements of a Newsletter should be the following:

HEADING: this should clearly indicate the identity of the sender. It would be better if the **Newsletter** used the same headings (**Page Layout)** as the site;

DETAILS OF PUBLICATION: Year of publication, date and number of issue:

INDEX OF ARTICLES; titles of the articles, each linked to the corresponding article.

ARTICLES: should be no more than 10. Each article should have a **Meaningful Name,** a brief summary, be written in plain, clear language and have links to related documents;

INSTRUCTIONS FOR ENROLMENT: these should include functions for change of e-mail address, cancellation of the **Newsletter,** organisation of **Registration** data (where required), sending comments;

MODES OF USE: authorship rights, privacy, policies for security adopted. This may be an explicit declaration or a link to a page of the site dedicated to **Modes of Use.**

The user can enrol for the Newsletter by filling in a **Form** with details of the e-mail address for receipt. If opportune, **Registration** could be required. In any case **communicate the Results** of the operation.

The Newsletter service should be clearly visible on the **HomePage** or as a function of **Main Navigation.** There should be a page dedicated to describing the aims of the Newsletter, its issue dates and users should be able to access the functions necessary for enrolment, cancellation, change of address, access to published back-numbers of the Newsletter, view the Newsletter on-line. The page dedicated to the Newsletter must also figure on the **SiteMap.**

Notes: Respect of dates of issue is an indispensable factor for success of a **Newsletter**. The **Newsletter** should not substitute the function of **Site News:** the aim of which is to supply broader information on the themes contained in the site.

Related Patterns: Form, Registration, Communicate the Result of the action.

Examples: www.nytimes.com , www.governo.it

This definition gives much useful information for facing the problem:

1. from the Context, Conditions and propositions of the problem, it can be ascertained whether the Pattern is suited to the case in hand;

2. concrete indications for how to realise the Newsletter can be found in the Solutions. For example; how to offer to service to the user and what organisational problems may arise;

3. in the Patterns, the descriptions of the Solutions are in **bold** type: some are at a more general level (for example: **Page Layout, Main Navigation, Modes of Use)** as they refer to problems related to the site in its entirety; others relate to functionality which are considered similar or relevant to the question in hand (for example: **Site Map, Site News);**

4. then, in the Solutions indicate the Patterns for **Form, Registration, Communicate the Result of the Action,** which are considered Related to the Pattern in question. These differ from the previous ones in the sense that the Related Patterns are considered essential for a correct solution to the problem at hand, while the Patterns indicated here define the environment of the intervention;

5. reading the definitions for the Related Patterns (which are not listed here for reasons of space) gives further information and further Related Patterns can be identified. Among these there may be Patterns which have already been examined and which will therefore be listed only once;

6. the end result is a list of patterns such as the following:

- Newsletter
- Form
- Controlled Input
- Registration
- Login
- Communicate the Result of the Action

7. The list, complete with its definitions, constitutes a document that can be used to realise the functionality of a Newsletter.

8. Checks can be made by visiting the sites listed in the Examples (the examples refer to the realisation resulting from Patterns or some of their aspects. They do not refer to the sites in their entirety).

3 Minerva quality framework for Cultural Web Applications

3.1 Considerations

Besides the need to consider general issues of quality applicable to all Web Applications, (cfr chap. 2) the mission of the Cultural Web Application requires that attention should be paid to specific quality criteria.

In adherence with the general Principles and Recommendations (cf. chap. 1), there follows a list of the main objectives of a Cultural Web Application. For each case, specific characteristics for correct and efficient treatment of contents and organisation are defined.

The quality of content is reached when the goals of Cultural Entiy and the on-line strategies of communications are clear, bearing in mind that these goals are the direct result of interaction between the goals of the Cultural Entity and the goals of the users.

3.2 Goals of the Cultural Web Application: definitions

3.2.1 Representation of the identity of the Cultural Entity

The ability to pin-point and communicate those constitutional elements, which have, through time, contributed, to forming the unique features of a Cultural Entity, as they are defined within the entity and are perceived from the outside.

The identity of a Cultural Entity is given by its cultural content, the historical context of its education, the place in which it is contained, its mission and organisational function, and its internal and external relations.

Cultural content is to be considered the body of cultural and scientific heritage which the entity conserves, safeguards, administrates, and exploits, represented in the historical context of its education and gathered in homogeneous collections etc..

The place is to be considered its architectural location, and plays a significant contribution to the identification of a CE.

The mission and the consequential organisation of work and services, is an aspect of internal and external relations between the community and the CE.

Representation of the identity means, therefore, a harmony between the various components taken as singular aspects but belonging to a complex whole. Finally, identity is also defined by specific material or immaterial aspects which, through time, have favoured or determined recognition of CE in the “world”.

3.2.2 Transparency on the activities of the Cultural Entity

To publish any information which is part of the realisation of the mission of a Cultural Entity.

In their various forms, Web Applications are useful tools for information on the activity (programmes, projects, funding, procedures, realisation phases, results) which is constant and updated and plays a part in achieving the goals of a CE.

3.2.3 Transparency on the mission of the Cultural Web Application

To guarantee users access to sufficiently complete information on the Web Application, i.e. on its objectives, responsibilities and competencies, strategies for maintenance and updating and technological strategies.

Information for application users is essential for three reasons:

- Its public origin carries an obligation for transparency on choices made concerning formation and maintenance;
- the application must be a point of reference and stimulus in the field of Information and Communication Technology (ICT), a role which all pubic entities must play;
- belonging to sector networks (both public and cultural) implies obligation to collaborate and exchange experiences in organisational and technological strategies.

In a sector such as ICT, where innovation is fast and strongly influenced by the market, diffusion of the use of efficient standards, good practices and specific solutions, is the key to guaranteeing efficient development of the Society of Information and Knowledge.

3.2.4 Efficiency in the sector networks

To stimulate the definition of common areas through collaboration and production of “highly specialised” content. To study techniques for further accessibility (or knowledge) of databases which are preferably multi-lingual and may differ in structure but are all available on the Web.

To encourage the use of descriptive tools for existing databases and for each archive through descriptive metadata.

Sharing and promotion of the results, cohesion and collaboration with other similar on-line cultural projects (both current and concluded), putting Web references (data-banks, thesauri, linkopedie) into common use, all occur through the activation of thematic networks and portals (cf. 3.4.7)

Co-ordination based on co-operative participation (i.e. between equals and aimed at achieving a common objective) is the fundamental basis for the creation of sector networks.

Each site should activate a section which, via internal and external links, includes links to parallel resources available (those with the same objectives).

Thus relations between parallel institutions in different nations should be promoted.

Sharing common informative heritage is a fundamental aim, to be pursued through knowledge of the content of the data-bases and through sharing all information relative to accessibility (local and remote) of same said data-bases.

The definition of a single criterion and of a single language for administration of the databases is not a primary aim in that the definition of standard is as yet unclear.
In conclusion, the primary aim is to hold in common, general information through institution of a multi-lingual lexis and a set of specific metadata for describing the databases.

3.2.5 Presentation of standards and regulations of the sector

In the field of a CWA, it would be advisable to have updated references to the basic regulations in the cultural sector and on the mission of the CE, with the added value of an institutional picture of the cultural activity.
In the case of portals or Web sites for cultural entities at a regional or national level, it would be good practice to offer users as complete a picture as possible of the standards and regulations in use in that particular cultural sector.

Depending on the complete picture of the objectives of the application and of the mission of the CE with relation to users, various levels of services dedicated to standards and regulations can be identified:

- the minimum required level is a list of references to international, regional and local jurisdiction. It would advisable for this list to be annotated and have links to data-banks available on the Web;
- the second level could be an updated list of the regulations, organised chronologically or according to topic or type of regulation, with links to external data-banks or directly to the text of the regulation;
- the third level consists of data-banks structured on the basis of recognised standards for legislative descriptions, in which it is possible to find the details of the regulations through words in the titles, the headings or the text of the articles:

In the latter case inter-operability of data with other data banks at national level, or international topics could be conceived. It might also be opportune to provide on-line data with the text of given legislation as an additional, perhaps commercial service, for professionals or specialists.

3.2.6 Spreading of cultural content

To render information and the cultural, scientific, juridical, administrative and economic contents which are created and conserved by Cultural Entities, available to all citizens. This should be done within respect of privacy and IPR regulations, with the aim of promoting the move towards a digital economy based on knowledge and cultural growth.

Access to, and valorisation of the contents and information in the cultural sector developed in the Society of Information and Knowledge, constitutes a civil and democratic value. To this can be added an indirect but noteworthy importance for the economy and for employment.

Aspects, which can give maximum valence to information in the possession of a CE, must be considered and developed through the institution of minimum norms common to all EU countries.

3.2.7 Support of cultural tourism

To plan and provide services of information and high added value to sustain activities aiming to increment sustainable qualitative and quantitative exploitation of the cultural heritage, in synergy with territorial values and the exploitation of cultural heritage in the field of tourism.

In the economic and social scene that has formed over recent years, cultural tourism is becoming extremely important. This type of tourism is becoming a mass phenomenon and the direct and indirect benefits it produces are ever more evident.
These effects benefit not only the cultural field, but also generate a series of "positive offshoots" in the economic and social fabric that gravitates around cultural resources.
The availability of informative services and high added value are thus necessary in order to support and increase these tendencies.

3.2.8 Offer of educational services

Together with the values of preservation and valorisation, exploitation of the cultural heritage is one of the primary aims of a Cultural Entity. To this end, it is important that a CWA provide multimedia and inter-active didactic support aimed at transmitting the interpretation and historical reconstruction of the "context" from whence it gains the significance of its cultural heritage.

Elaboration of didactic services must be based on a study of user needs in order to identify profiles for which to activate didactic proposals. In particular the following themes should be considered:

- presentation of the heritage from the historical/critical point of view;
- suitability of the communication for the user profile;
- guide to consulting collections and documents;
- interfaces which are suitable for the disabled (e.g. the visually impaired);
- Increasing inter-activity in reply to the demand for auto training (e.g. through personalised paths and comparison).

Didactic Web itineraries between similar or related sites should be created, thus encouraging connections between cultural heritage and the territory. The creation of electronic magazines for diffusion of news and comments largely connected with the sector of the cultural Entity, is a relevant didactic Web service that a CE can offer.

3.2.9 Offer of services of scientific research

To provide services destined mainly to researchers consulting scientific documentation and using tools to establish a periodic or occasional information flow that is, nevertheless, complete with essential information.

Access to library catalogues, archive inventories, Museum catalogues (if available on the Web) are one of the most useful services.

A Web site of a Cultural Entity can provide services for scientific research by rendering the CE's existing data banks usable and accessible.

The Web itself was born of the necessity to render hypertextual and multimedia reports available to a vast community of researchers.

This goal is usually linked with the need to communicate in a synthetic but highly specialised language that is often comprehensible only within a specific scientific community.

Answers to interrogatives can be expressed in standard, pre-established codes.

Using the IPR principles, it will be necessary to distinguish between material freely available for consultation, and that rendered accessible to researchers under express authorisation. To this end, there should be an administrative system able to discriminate between functions and concessions to users according to the widest possible variations.

There should be areas for up and down loading files, access to data bases (according to authorisation conceded) and results should be saveable directly onto the user's computer (e.g. via e-mail).

Clear programming language and light (possibly dynamic) pages should be used in order to allow rapid access to databases. Search operations should generally be traced and saved.

Limits on the use of data and its ownership should be clearly expressed.

Discussion fora on specific topics may develop. The possibility to access data archives or bibliographies of institutions represents an extremely important and useful added value.

3.2.10 Offer of services to specialists in the sector

Differentiated on the basis of the categories of the CE, services will be aimed at specialists who operate in each sector of cultural and scientific heritage and to specialists who are interested in using information run by the CE.

To make available those services which support specialist activities such as research on data-banks, catalogues, file downloads, information relevant to work (public vocational exams, information on jobs, employment and mobility), registers, sector regulations, information on institutes for safeguarding, reserving services of the CE, diary of events (chronology of events, courses, seminars, didactic activities).

These services can be supplied on demand or through various enrolments. They may furthermore be reserved for authorised users, in respect of IPR criteria.

3.2.11 Offer of services of reservation and acquisition of goods

Provide the possibility to establish secure transactions, both commercial and non, guaranteeing users access to specific services provided by the cultural institutes (reservations) and via the Web (acquisition of goods and "downloading" of digital resources.)

The services which area offered via the Web are:

1. transactional – effected entirely on-line (free and commercial downloads of digital resources such as reproductions of objects, documents or monuments, or publications and research tools covered by copyright);

2. finalised to using traditional services in the seat of the cultural structure: booking tickets for museums, exhibitions, monuments, parks or sites, booking participation in particular events such as conferences, guides tours, lessons, presentations, etc. or booking consultations of materials in reading rooms of libraries and archives after consulting specific informative systems.

3.2.12 Promotion of Web communities in the sector

To establish strategies aimed at reaching specific user categories, at involving users and attracting their patronage through interactive tools on the CWA.

To establish a system of analysis and audience feedback with intent to optimise the services offered.

This objective includes all the actions necessary for the affirmation of an added European value.

The community of users can be implemented through activating precise strategies that must be agreed on the basis of the mission and objectives of the CWA. Methods could be: sending press releases to media centres, forums and sector mailing list, activities to promote and collaborate with other similar Web Applications.

Patronage can be attracted using various instruments such as registration, newsletters, mailing lists and discussion fora. Results obtained of information on the community of users should be constantly monitored in order to evaluate the adequacy of the services offered and new perspectives for development.

3.3 Specific description of the Cultural Web Application according to Cultural Entity categories

In recognition and respect of the intrinsic complexity of the cultural and scientific heritage, of the its specificities and in particular of the nature of Cultural Entities – in their diverse organisational, institutional and private forms – thematic aspects of the categories were further defined.

3.3.1 Archives

The archive sector was among the first to perceive the importance of the Web as a tool of communication of the existence, specific role and the contents preserved by these institutes, which connect juridical and administrative fields with culture and are therefore visible both to civil and political society.

The first archive portals go back as far as the dawn of the WWW and Unesco soon created a world level portal especially dedicated to the sector. There is still great need for the widest possible co-operation in archives, particularly concerning definition and diffusion of descriptive standards. In addition, good practices in strategies and techniques of the digitization of documentary heritage should be shared.

Through individual archive sites, of multi-institutional informative systems, and thematic or territorial data banks or portals, the Web has quickly become a particularly effective tool.

Archives and the goals of a CWA

1st (To represent the identity of the CE): Compared with other cultural sectors, representation of identity for archives at times need to "emerge" from the strictly local environment in which they are often tied due to the strong territorial connotations of the documents they conserve.

The identity of institutes of conservation of documents is given primarily by logistical factors (seat, responsibility, opening times for the public, modes of access and characteristics of the services offered), and also by origin, characteristics, consistence and the possibility of access to the heritage which is conserved.

2nd (Transparency on the activities of the CE): The activity of archives centres on service to the public, specialist assistance in creating research paths, and borrowing and/or analogical or digital copying of items.

The work of safeguarding and valorising archives consists in making inventories and, where necessary, re-ordering of series, activities which require serious study of the history of the originators.

In some nations, public archives also have the function of safeguarding and of consultation on conservation, re-ordering and organisation of documents and registers for public and private bodies.

Finally, alongside these activities are didactic and specialist vocational training, organisation of documentary exhibitions and participation in cultural projects.

In the **3rd Goal (Transparency on the mission of the CWA**) technical/scientific choices, especially concerning heritage information services, play a central role: archive description, the application of standards and the use of particular software, are at the centre of debate in the sector and render the spread of good practices necessary. As far as the long term conservation of digital contents is concerned, informative transparency becomes even more urgent, considering the real risks and the obligation to hand down the cultural heritage to posterity.

Goal n. 4 (An efficient role in the sector network): National and international co-operation over good practices in strategies and techniques of digitization of the heritage, particularly for the diffusion of descriptive standards, are of great importance in this sector. The active presence in existing networks of development of new spaces for orientation, debate and research, are objectives which an archive can efficiently pursue via Web tools.

Goal n. 5 (Present the standards and regulations of the sector): Considering that documentary heritage has a double historical and juridical value, following an ideal of continuity between past, present and future, the presentation of regional or national regulations on the formation, conservation, access and reproduction of documents and of official documents on descriptive standards represents a fundamental service in archive Web sites.

For the **6th Goal (Spread cultural contents)**, the main channels of cultural diffusion via archives through the Web are a more or less detailed presentation of the archival heritage and the processing of thematic paths to navigate it (e.g. the history of the territory, the history of emigration, life in convents, life in the Court, the birth of industry, etc.)

Goal n. 7 (Support cultural tourism): Cultural tourism organised by archives is, as a rule, achieved in strict connection and co-operation with other institutes or cultural projects of the same city or geographical area, on the occasion of particular events such as exhibitions, conferences, cycles of guided tours, or even the fact of archives being often housed in historical buildings.

For **Goal n. 8 (Offer educational services)** the didactic activity of archives is generally on certain themes:

- To show the dynamics of the formation of the documentary heritage and present tools available for efficient research:
- examine historiographic themes via guided path through documents;
- vocational training for specialists in description and management of archives on the basis of traditional disciplines and also of international standards. (ISAD, ISAAR, EAD etc.)

Concerning **Goal n. 9 (Offer of services for scientific research)**, support for scientific research is more typical of archiving services, which are destined above all to specialists in historical research who are able to navigate the complexity of documentary systems.

The creation and offer of archives and data-banks usually implies scientific respect of its complexity, i.e. the dynamic interconnection between series of documents, their creators and the research tools which they describe. This service can be accompanied by services for consultation and distance research.

For the **10th Goal, (Offer of services to specialists in the sector),** specialists who turn to the world of archives, either through traditional channels or through the Web receive these following services:

- for cultural entities interested in running their own archives; training services or consultation

- for *services* which carry out research for third parties under payment (genealogical, anagraphic, legal), the archives can – through special access modes – offer all the necessary data.

For the **11th Goal (Offer of services of reservation and acquisition of goods)** services which pre-suppose Web transactions with controls on the identity of the user can satisfy three main needs:

- book consultation of items in archives in the study room, choosing via consultation of analytical data-banks;
- consult and/or download search tools with copyrights;
- reserve and/or buy digital reproductions of publications or archive documents.

This latter service could be both on-demand, as is the case for traditional reproduction services, or limited to given archive series that have already been digitally copied.

In the **12th Goal (Promotion of Web communities in the sector)**, archives often serve the function of bringing together experts with similar research interests and who can thus meet in the study rooms.

This, and promotion of debate and diffusion of good practices and standards, can be efficiently run through the creation of a Web community with the simplest tools.

Archives and Web users

Distant users who could be interested in information and archive services, depending on the objectives of the 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 archivists: 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)

Policies of digitization in archives and the Web

In archives, the connection between development strategies and maintenance of Web Applications, and the digitization of the heritage, is very strong. For at least the last decade,

information technologies have been used for creating search engines whose importance is clear from Web publication of information systems dedicated to the documentary heritage.

Furthermore, archives must be prepared to receive, preserve and valorise documentary registers produced in digital form, where on-line access is foreseen.
Finally, copying of documents with digital techniques has definitively substituted microfilm:
If activated with opportune strategies of long-term preservation of digital resources offer on the Web of data banks and of high-quality reproductions of documents seems to be a strong point of networked archive systems.

3.3.2 Libraries

"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)

This definition of public libraries goes beyond specific definitions particular to each nation and touches on the real objectives of a " cultural entity". Indeed, 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 appurtenance to organisation or administration, and without having physical location in one or another country. Documentation centres are intended as belonging to this category.

Libraries and the goals of a CWA

On-line libraries should obviously supply all the services that traditional libraries already offer, and the characteristics of their Web Applications should be common to all cultural Web Applications, characteristics of quality that it would be opportune to differentiate from commercial characteristics.

Besides offering the usual services, the fundamental goals of On-line libraries are to knock down barriers and thus reach a vaster area of users. Thanks to new technologies, on-line libraries increase their main activity: the circulation of knowledge. In order to exploit information to the full, to spread it through various Web possibilities and to become a privileged supplier of content, the library must be able to gather and organise information carefully.

Traditional paper information must therefore go alongside various types of sources, which are for the moment considered non-conventional, such as audiovisual, multimedia, digital, etc. On-line libraries tend therefore, to become a sort of "electronic door" open to the world of information, of whatever type, offering constantly updated material and information of all types.

We thus have a VRD (*Virtual reference desk),* broadening loan services, supplying copies of documents, offering works in electronic *full-text*, supporting permanent education.

In particular, the Web is an important vehicle in training programmes, thus contributing to cultural development in the broadest sense.

The **1st Goal (Presentation of the identity of the CE)** can be attained through a description of the history of the institution and its role on the territory, together with historical-bibliographical information on the items in the collection, a physical description of the seat, information and description of reading rooms and catalogues, be they manuscripts, prints or on-line.

The **2nd Goal (Transparency on the activity of the CE)** is achieved by publishing the access modes to the library, its regulations and the opening hours of the library, hours and modality for distribution services, loan services, both local and inter-library loan, and the possibility to order loans from the Web site, bibliographic information (reference) and whether there is an indirect bibliographic service (via letter, fax, e-mail, on-line)

There must be some indication of the general organisation of the various offices, with a description of their functions, their referents, lists and descriptions of any specific projects underway, as well as valorisation of current novelties, together with information on activities the library may run (shows, conferences, courses etc.)

The **3rd Goal (Transparency on the mission of the CWA)** plays a secondary role in the sector of CWA's for libraries as it is clear from the very function of the institution.

The **4th (Efficiency in the sector network)** can be realised by actively participating in Inter Library Loan services. Involvement in wide range cultural projects (both national and otherwise) can strengthen this goal.

The **5th Goal (Presentation of standards and regulations of the sector)** is not applicable to the CWA's of libraries in that the standards and regulations of libraries are given by other entities.

The **6th Goal (Spread cultural content)** is attainable through a description of shows, conferences and various cultural activities in the institute, as well as publication of articles and material from the scientific community and the offer of full electronic texts.

The **7th Goal (Support cultural tourism)** can be attained via Web pages dedicated to local territory, with precise indications as to local libraries, with place and opening times, as well as the presence of pages in other languages in order to attract foreign users.

The **8th Goal (Offer of educational services)** is important in that it is often neglected by the CE, and is realisable through didactic on-line projects, with literacy programmes in the informatics sector and in the specific librarian sector.

The **9th Goal (Offer of services for scientific research)** is basic for libraries and is amply met by the presence of on-line catalogues such as OPAC (On-line Public Access Catalog) which make it possible to search in bibliographic databases. Recent resource discovery systems have been offering more advanced features, such as the integration of multiple bibliographic databases by specialised gateways (MetaOPAC), and also full text search of digital or digitized contents (indexing the content repositories).

Furthermore, researchers can be aided by the presence of specific Web pages dedicated to bibliographic on-line searches (*Virtual Reference Desk).* An on-line bibliographic information service (*reference)* will crown this goal.

The **10th Goal (Offer of services to specialists in the sector)** can be achieved by supplying specific instruments, such as Library and information science and their translation, together with specialist networks (Intranet), where specialists can find specific information on their daily work.
Finally, it could be useful to be able to download administrative documents and publications with descriptions of public bids for contracts.

The **11th Goal (Offer of services for reservation and acquisition of goods)** can be met through an on-line loan service, together with the possibility to request photographic reproductions, photocopies and reservations for access to the reserved sections of the library.

The **12th Goal (Promotion of Web communities in the sector)** can be realised by effecting forums and mailing lists which deal with technical problems typically encountered in the library environment, with the creation of topically specific networks, as outlined above in Goal n. 10 for newsletters.

Libraries and Web users

Considering the basic premise that access to information and knowledge is a fundamental right of the individual, on-line libraries must reach all locations, offering library and information services, providing material for supporting study, research and learning. The on-line library must provide appropriate interactive means for making these services usable. The *VRD Reference* service is therefore fundamental.

Library Web sites must therefore contain services, information and generic material, together with technical information and material.

Within the informative and cultural function, the services must be accessible to all types of user and also take into account different needs according to age: pinpointing therefore, groupings of users to which the network of different but co-operative services can refer.

Besides the eventual creation of a sub-sectioned information network, in the relationship with users, Web Applications can also aid the progress of computer/on-line literacy, which is by now an indispensable vehicle for best exploiting knowledge and overcoming the *digital divide.*

Policies of digitization in libraries and the Web

Web Applications are the natural destination of projects for the digitization of various types of documents, being they manuscripts, printed documents, prints, maps, music, manifestos, etc.

Through tools of *information retrieval* such as OPAC (On Line Public Access Catalog), various data bases can be consulted via primary functions:

1. Searching and finding works
2. selecting various typologies
3. Locating and receiving search results in various formats (digital format, full electronic text, photocopies, photographs, loans, etc.)

In order to spread information on current events and and to harmonise procedures, libraries are commended to share technical information and cooperate in digitization projects

Within the framework of libraries it would be hoped to create international standards and metadata for management and conservation of electronic archives, the lack of which produces scarce inter-operability between the various results and sharp increase in costs.

References

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3.3.3 Cultural heritage diffused on territory

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 naturalstic or landscape values.

In its broadest definition, the spread of information and knowledge of cultural and scientific values, and cultural emergence across the territory, takes on a determining role, not only in a general educational sense leading to awareness and growth in the public, but also as a vital tool for planning development and models of sustainable and economically productive urban, naturalistic and environmental planning.

Considering these factors, it is clear that there are varied and numerous creators of Web Applications in this field.

They go from Cultural Entities, in particular, not only to Insitutions dedicated to safeguarding and valorising heritage, or to institutes, bodies and organisms for scientific research and training, but also – and ever increasingly – to **C**ultural Entities (local bodies, foundations, associations, etc.) which, in the widest sense of tutelage and exploitation of heritage, are today the “leaders” operating in the field and which play a considerable role in the spread of culture and in actively involving the population.

Such differing entities can often meet through a common Project dedicated to the study of a specific territorial theme or which sustains an activity of cultural tourism.

Territorial cultural heritage and the goals of a CWA

The obviously multidisciplinary nature of the subject has been noted and it may lead to different applications in each case. A Monument or an Archaeological Park, rather than an Ancient Route/Itinerary, are taken as parts of a vast whole within a process of historical, cultural, and above all territorial contextualisation.

A Cultural Entity which is responsible for the safeguarding and valorisation of the territorial cultural heritage can use a Web Application as an efficient instrument of support for its activity, both to render internal inter-operability more efficient (judicial enquiries, projects, activities of research and itemisation), and also with respect to services offered to the outside (carrying out processes of authorisation, consultations, etc.)

Of note, is the way applications co-ordinated thus far in this sector, are still in experimental vein, both in terms of the need for organic planning, and for the need for financial investment in the field of technological innovations.

There are notable examples of quality applications which are, however, sectorial, for instance the fields of virtual reconstructions of archaeological heritage, of records of important restoration work or development of specific themes often related to temporary events or exhibitions.

However, a leap in quality in the sector would consist of planning Web Applications which effectively assume the role of everyday tools in the fulfilment of the institutional missions.

"Graduality" in loading the application is certainly one element of quality. It should follow a project plan leading progressively from a wide horizontal base extended to all the functions and then expand, going deeper into each topic.

If we analyse the specific objectives CWA's, the first aim (representation of the identity of the CE) takes on a secondary role in this sector, since the central interest of the application is cultural heritage on territory.

It is however important to stress the juridical situation of the heritage, its administrative ties with the Cultural Entity to which it answers.

In any case, the representation of the identity of an archaeological site, a monument or a park can be obtained describing the history of its formation and its identity as a cultural heritage.

The **2nd Goal (Transparency on the activities of the CE)** can be achieved by dedicating a part of the Web Application to precise information and updates on the activity of the administration, preservation, restoration and valorisation of the heritage in question.

From the point of view of spreading information on the as yet specialist activities which involve the archaeological, architectural and historical-artistic heritage, Web Applications centring on the (sometimes real-time) description of restoration works, have been particularly successful.

Enterprises of this kind are particularly interesting for the spread of innovative techniques and methodology which further on-line exchanges of skills and knowledge, creating Web communities and thus easing the growth of know-how.

The **3rd Goal (Transparency on the mission of the CWA)** can be achieved by giving a clear definition (of architecture and paths) of the three general areas (A, B and C) described below in Aim n. 6 which deals with the spread of culture.

The contribution of experience in cataloguing in the sectors of territorial heritage will be particularly useful in this sense.

In order to realise the **4th Goal (An efficient role in the sector network),** it is necessary to initiate Web research activity on the existence of Web networks, establishing useful contacts for active and deliberate involvement of the Web Application in these networks.

Attention to the use of common language (actively contributing, where appropriate, to the definition of shared thesauri) and inter-operative systems, are both fundamental elements.

Theoretical processing should be designated to an interdisciplinary work-group (archaeologists, architects, art historians and informatics and Web experts.)

The **5th Goal (Present standards and regulations of the sector)** probably plays a secondary role in this sector, since it is the CWA of the CE which will manage the territorial heritage in order to realise this goal.

It is however, important to guarantee links between the presentation of the territorial heritage, non only of the standards and regulations in the administrative-juridical district where the heritage is located, but the totality of the norms which, at various administrative levels, regulate the territory which houses the heritage.

Data on European and international norms and standards may also be useful reference points.

The **6th Goal (Spread cultural contents)** is a primary and central aim for Web Applications of territorial heritage. Three general levels can be defined:

A: *Provide information for basic knowledge*

Attention to this point is of primary importance, especially on the part of territorial institutions and bodies which often constitute the first and only level of cognitive approach to territorial heritage.

Basic Web Applications should be constructed with the aim of giving across the board access to “registers or files ” which are common to all categories and which include at least the following information:

name, location, top-level description, time-line, ownership, form or management.

Accuracy and completeness at this level of information are fundamental in a service Web Application, which may be used in various sectors, both of public utility (consider for example territorial planning, tourism etc.) and as a basis for further work.

The advantage of this type of approach is that of supplying a complete and essential corpus of information on the territorial heritage in question, in a relatively short time.

B) *Supply information and advanced documentation for educational and didactic activities and for supporting for cultural tourism*

The fields in this level are vast and diversified. This will lead to thematic and critical analysis and also advanced virtual processing.

The general objective in this level must be attention to the cultural quality of the product and must always be founded, and transparently so, on coherent scientific documentation (maps, surveys, photographs etc.)

In particular for virtual processing (e.g. reconstruction of archaeological remains or of the life phases in a given historical building) it is a fundamental for the quality of the application that the various levels of reconstruction be explicit:

a) ascertained level on the basis of available documentation;
b) supposed level presented on the basis of clues or comparisons with other ascertained cases;
c) un-ascertained level based on documentary and critical evidence, i.e. free interpretation.

C) Provide access to complex and georeferent data banks on the historical formation, scientific research, planning and territorial management.

As in other sectors that are much more advanced than scientific research, the field of research in cultural heritage must develop a systematic use of Web Applications, creating communities for exchange and topical study and also for the activity of scientific training.

Furthermore, it is the responsibility of cultural Web creators to ensure the inter-operability of data banks, carrying out qualitative and quantitative checks on the descriptive and critical documentation of monuments and territorial complexes. Updating from the point of view of the state of conservation of the heritage is also important. Where possible, precise geo-referential elements should be given in territorial information systems and topical networks should be sought and joined.

The diffusion of this data is of notable importance also for those applications concerned with risk and conservation of territorial heritage (safety, catastrophes, monitoring for conservation of constitutive material etc.)

For realisation of the **7th Goal, (Support cultural tourism)** it is of central importance to activate a synergy of forces which in this case would see the CE working together with cultural territorial and economic entities in the sector.

This goal can be realised on the part of the CE by co-ordination information flow present on the same Web Application (for each monument etc. there is a table of identification with basic data, locality, opening times, costs, booking, guided tours, temporary exhibitions, other events, services of e-commerce etc.) with other Internet channels of information specific to the sector of tourism.

The **8th Goal (Offer of educational services)** is very significant in field of territorial heritage because of its fundamental role in establishing a privileged relationship with various levels of scholastic education.

Co-ordination between teachers and experts in the subject is vital, in order to create didactic paths which are suitable for the various scholastic phases and which respect both didactic programmes and use appropriate language.

It cannot be stressed enough that didactic services must be accessible also to “weak” users and the disabled.

A quality approach to territorial heritage must needs pay great attention to the contextualisation of the heritage, from the point of view of the territory of appurtenance, of existing references to homogenous themes and finally, of chronological position.

Another element of quality in processing didactic Web Applications is clarity in virtual reconstructions, whose rules were outlined in Goal 6b. Inter-activity in without doubt a factor of quality in as much as in allows the school student to build a direct relationship with a world – that of CE to which the territorial heritage is entrusted – which is usually perceived as abstract and distant.

The **9th Goal (Offer of services for scientific research)** has been in part discussed under the 6th (Spread cultural contents) at point C.

Making existing data banks available and the activity of rationalising available documentation for realising new inter-operative products, are the basis for realising this goal.

To achieve quality however, it is necessary to take great care in planning the search/query system and the links with other complex data systems. In this sense, the ability of the CE to co-ordinate with other entities active in scientific research – such as universities and centres for specialist research in the various sectors – promoting productive synergy for competitive quality of the product, and the economic profile, are particularly relevant.

In the field of cultural heritage, for obvious security and copyright reasons, it is necessary to provide a system of controlled access (password) and availability of material in various resolutions (low resolution for material that is not available for direct download).

The **10th Goal (Offer of services to specialists in the sector)** is particularly useful for giving users access to all the data on territorial heritage which is necessary for correct planning for intervention on the territory, from the restoration of a building, to the planning of new buildings, studies to place large infrastructures (roads, railways etc.) to the predisposition of territorial and urbanistic plans.

It is clear that direct research in Web Applications on the fundamental cognitive data of archaeological, architectural, naturalistic, territorial heritage, and of the ties weighing on them, the general and specific existing regulations, at least in the initial phases of research, constitute an essential service. Completeness and validity of continuous updates in this respect, are important elements of quality.

Another element of quality is that of offering the possibility to download the data necessary for carrying out construction work and urban planning.

Providing basic indications (good practices) for realising restoration work on the territorial heritage (modes of intervention, methodology, sustainable techniques, choice of traditional material etc.) would be a useful service.

Naturally, a further useful service is the publication of pubic bid for contracts, for jobs in the territorial heritage and, later, the results of the above (in this way the goal of transparency on the activity is also realised)

The **11th Goal (Offer of services for reservation and acquisition)** was treated together with goals 1 and 7.

The **12th Goal (Promote Web communities in the sector)** is, in a certain sense, parallel with the other goals, as for example, those mentioned in the section on education, scientific research and services to specialists.

New instruments, under course of development and affirmation in the Web, e.g. fora, blogs and newsletters, are all valid for giving added value to the interactivity of the Web applicaiton.

Territorial cultural heritage and Web users

Having accepted the definition of Web user in this manual (cf. p.)during the discussion of the goals, certain interesting categories of users emerged. Among these are:

Professionals in the sector

(archaeologists, architects, art historians, historians, topographers, urban planners, geologists, etc.) who operate both within CE creators of Web Applications or in the university environment, or in centres for specialised research, or academics/researchers. These are critical, competent and demanding users.

Territorial managers and professional in the sector

(administrators of territorial Entities, urban planners, engineers, Architects, restorers, Surveyors, geologists, companies in the sector). These are specialist users who require provision of data, and in particular of ccomplete, updated ad reliable identification of juridical-administrative heritage.

Those in the field of scholastic education

(Teachers at various levels, didactic experts, animators, communicators).

This group of users needs help orienting the subject which is often complex and technical. The language (in the various meanings of the Web Application) must be clearly co-ordinated and codified.

3.3.4 Museums

"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 States and 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.

In the courts of the 16th and 17th century in Italy and Europe; creations of the princes who desired to thus represent (and communicate) their power to visitors. Thence, from the 19th century in particular, museums were open to all citizens, fully adopting the public function of conservation of cultural heritage and education that are still their role today. In this respect, the definition of "public" must be considered in its widest sense in that, alongside museums of public ownership and administration, there are foundations, private or combined institutes which also fulfil the public function of diffusion of culture.

This diversity is particularly present in Europe but can also be found in the rest of the world.

The nature itself of museums is not uniform and while this is not the place for a detailed examination, it is nevertheless important to make certain distinctions because of the implications under the profile of Web Application and various types of users.

Indeed, alongside the museums of (inter)national importance, above all those formed of historical collections, which are often the seat of important exhibitions and ever more the goal of mass tourism (the Louvre, the British Museum, the Uffizi Galleries) there are also recent additions such as the Guggenheim Museum of Bilbao, which are museums created "ex novo" and almost replicas of their overseas counterparts, with essentially economic ends.

Besides these relevant examples however, there is a rich network of territorial museums which hold the function of memory in social dialogue; reference points to understand the history of a city or a region, the facts and personalities which have contributed to the cultural formation of that social reality.

These are "local" museums, "where "local" is taken to mean rooted in the territory, which are often very large and representative, with particularities of a historical, archaeological, artistic, scientific, natural historic, anthropological, industrial archaeological nature and thousands more, such as museums of the motor car, wine, umbrellas, trains, dolls, chocolate etc.

This brief and essential overview of the various types of museums, while not at all exhaustive, aims to highlight the many characteristics of museums which yet have fundamental moments of unification in their mission as place of conservation of memory and of education.

Museums and the goals of the CWA

Given the above, it is necessary to clarify what role can be played by a Web Application in order to support (and develop) the activity of a museum.

In most cases, at least during the long experimental phases, the Web tool has been used mainly as a means of information – a shop window – thus denying its vocation in favour of commercial models.

Growing awareness of the potentials of the Web, together with greater knowledge of the professional advantages (in directors, conservers, researchers etc.) means that quality of cultural contents is a fundamental pre-requisite for developing a Web Application today.

In a word, we must move from a "shop-window" Web site, to a thesaurus which, fully reflecting the identity of the museum, is present as a place of information but also as a tool – both internal and external – for the spread, consultation, research, education on the contents of the museum.

Theories of learning and in particular of the cognitive matrix, find new place in discussion about the Web, not only as a means of communication for museums, but also as a real tool for "meaning making".

In the sector of museums then, the image of a multimedia application as an added, final communicative element which aims exclusively at the transmission of information is inadequate, despite the fact the service of offering information is by no means a secondary one.

In its on-line version, the multimedia application tends therefore, to become an ever more important integration, not just for traditional services (reservations, ticket sales, catalogues etc.) but also for fulfilling the essential educational functions of the museum. These functions are ever more stressed in the museological debate and museums are coming to be considered permanent educational centres.

It is its capacity for interaction and the possibility of constructing and adapting to different styles which renders the multimedia tool so suited to new museographic directions.

In this context, as said above, there is a growing tendency to see the Web as a medium diversified form the institution: a privileged cognitive tool which, while maintaining close links with the identity of the institution, finds its own integrated position in the wide community of Web networks.

A direct analysis of the specific goals for Cultural Web Application sees **goal n. 1 (Presentation of the identity of the CE)** as very relevant.

Visiting the Web site of a museum prior to visiting the "real" museum often reveals a profound lack of harmony between the virtual and the real.

An element of quality therefore, is the ability to present the total nature of the museum, its very essence, its "feel" and "smell".

The chapter on the goals attempts to pinpoint the meaning of the identity of a CE. In the case of museums, alongside the history of its formation, a description of its content and its container, its changes (acquisitions, equipment etc.) it is important to recount not only the relationship of the museum with its physical location, but also the way it is and has, over time, been perceived by the public.

The **2nd Goal (Transparency on the activity of the CE)** can be achieved by dedication a part of the CWA to precise and updated information on the activity of the museum, not only that aimed at the outside (shows, guided tours, didactic programmes, publications, conferences, events of various types etc.) but also those activities aimed at the care of collections (studies of the collections and material, participation in specific national and international research programmes, cataloguing, participation in scientific conferences, etc.)

Brief mention must be made of extremely positive experiences of the use of the Web tool, such as on-line representation of restoration activities on particular objects. This resulted in the creation of specialist and lay Web communities. A quality requisite to attain this goal, is certainly the activation of on-line contacts (e-mail, newsletters, and forums) which give an interactive character to the Web Application.

The **3rd Goal (Transparency on the mission of the CWA)** can be realised by clear definition (of architecture and paths) of the areas of interest of the application. A quality Web Application must also publish references to the administrative and editorial staff with references to different sectors.

The **4th Goal (Efficiency in the sector network)** is extremely important in the case of museums. To create of participate in thematic networks on various levels (for example to establish connections between museums present in the same geographical area, or between

museums with similar contents but geographically distant) is a clear element of quality in a Web Application.

Furthermore, the WA of a museum can play an efficient role in different networks. Take, for example, the aspects of support for cultural tourism, for school circuits, for research and for universities, where the museum with its particular characteristics (its experience, its contents, its laboratories) can bring and active contribution quality, thus allowing full affirmation not only of its cultural role, but also of a social role.

The **5th Goal (Presentation of the standards and regulations in the sector)** probably plays a secondary role in the sector. It is however, not redundant for the CWA to provide precise and updated information on the regulations in force within the institution, activating links with the appropriate judicial bodies. The Museum can decide to activate, via the Web Application, diffusion (and discussion) of experimental texts on new standards for administration or on the prime application of standards in the sector.

The **6th Goal (Spread cultural content)** is obviously central for the Web Application of a museum. Various levels can be identified:

A) *Supply information for a basic knowledge of the Museum*

This is necessarily an approach of a general nature but which extends to every significant part of the institution. A sort of "register" which includes at least the indispensable data for representing the identity: location, history of its formation, description of the contents organised by sector, collections etc., indication of permanent and temporary activities (c.f. goal 2), of active services to the public (c.f. goal 11).

This part is the base of the general construction of the CWA. its completeness, in the sense of extension, is an element of quality of the application.

B) *Supply advanced information and documentation on training and didactic activities and on support for cultural tourism*

The relevant fields for this level are vast and diversified, requiring thematic and critical analysis and also advanced virtual elaboration.

In the case of museums this means making selected data bases available (see respect of IPR p.), and also the realisation of specialised applications for training and museal education.

If attempts to copy the museum through virtual path is not seen as suitable, perhaps because of high costs, the Web tool – in its virtual role – can be profitably used for specific projects of divulgation, especially for particular applications which guarantee access to the museum to the widest possible range of the disable public.

In any case, virtual reconstruction of objects or complexes that are incomplete (for example archaeological heritage and also on-going sections of scientific museums) it is a fundamental for the quality of the application that the various levels of reconstruction be explicit:

- Ascertained level on the basis of available documentation;
- Supposed level presented on the basis of clues or comparisons with other ascertained cases;

- Un-ascertained level based on documentary and critical evidence, ie. free interpretation.

C) Provide access to complex and data banks for training and scientific research

The museum is not only a place for conservation of memory, education and knowledge but also (and perhaps above all) a centre for research; an active pole in the scientific university community.

In this area the Web Application can play a central role, that of a thesaurus of the contents of the museum, of the infinite possible links which each conserved item can virtually institute with other cultural areas.

Creators of cultural Web Application must organise and render operative existing data banks, using organic programmes of digitization of cultural contents.

Furthermore, the availability on line (in respect of copyright and IPR) at least of inventories of historical archives, photographs, drawings etc. is a useful external service and also important for internal work.

To realise the **7th Goal (Support cultural tourism)** the activation of a synergy of forces where the museum participates fully in initiatives of other bodies, cultural territorial entities and economic bodies, is of central importance. To this end see goal n. 1 and 6 point A.

The **8th Goal (Offer of educational services)** is a quality requisite for the Web Application of a museum.

Co-ordination between teachers and experts in the subject is vital, in order to create didactic paths which are suitable for the various scholastic phases and which respect both didactic programmes and use appropriate language.

A quality approach to museums, in the didactic field, must consider creating thematic paths with deeper analysis appropriate to the study programmes of different age groups but must also be open to a wider audience; so called weak or disabled users, thus exploiting every potential offered by the Web tool.

Another requisite for quality is inter-activity in didactic services, where users themselves can build paths following pre-determined models.

The **9th Goal (Offer of services for scientific research)** was treated in part under goal 6 (Spread Cultural content) in point C. Availability of existing data banks, the activity of rationalisation of the documentation available and the realisation of new interoperative products are the basic actions for fulfilling this goal.

To achieve quality however, it is necessary to take great care in planning the search/query system and the links with other complex data systems.

In this sense, the ability of the Museum to co-ordinate with other entities active in scientific research –such as universities and specialist research centres in various sectors promoting productive synergy for competitive quality of the product, and the economic profile, is particularly relevant. Particularly in the area of images, but also of catalogues copyright and IPR must be respected. This can be done by providing a system of controlled access and

availability of material in various resolutions (low resolution for material that is not available for direct download).

The **10th Goal (Offer of services to specialists in the sector)** has implications for the sector of museums, especially if we consider the institution under the profile of administration. The museum must be managed, equipped, maintained, restored both in terms on content and container.

A complete CWA must therefore put aside space for these functions, providing information on planned activities, on public bids for work, on outsourcing of various work and services, on planned stages of realisation etc. but must also offer on-line material which is useful for participating in bids for work.

In addition, there must be monitoring of al the technical activities, offering the possibility of on-line informative exchange on techniques and useful products etc. so contributing to a growth of know-how in the various sectors in the world of museums.

The **11th Goal (Offer of services of reservation and acquisition)** is necessary for the CWA of a museum. See also the aspects of goals 1 and 7 above.

The **12th Goal (Promote Web communities in the sector)** is among the most innovative, especially considering recent developments, for example blogs, together with the growth of thematic forums. The sector of museums is particularly suited to specific experiences.

For example the possibility of virtual comparison of objects (all the works of a painter) through high digital resolution, which are situated in different locations, has been experimented with the works of Caravaggio.

Active participation in thematic portals on the part of a Cultural Entity, such as a museum, for example the experience of a portal Euromuse[9], is necessary to control the quality of information which would otherwise be left completely in the hands of private entities.

Museums and their Web users

Having accepted the definition of Web user in this manual (cf. p.) during the discussion of the goals, certain interesting categories of users emerged. Among these are:

- *sector professionals:* (conservers, experts, restorers, cultural and tourist guides) who operate both within CE creators of Web Applications or are external (universities, researchers, experts, specialists, restorers, tourist guides)
- *educational professionals:* (teachers at various levels, didactic experts, animators, and communicators) This group of users must be oriented in the material that is complex and technical. The language of the diverse parts of the Web Application must be clearly co-ordinated and codified.

[9] euromuse: network of european art museums
http://www.smb.spk-berlin.de:8000/euromuse/home/index.jsp

3.3.5 Institutes for administration and safeguarding

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.

Web aspects directly pertaining to territorial cultural heritage, to museums, archives and to libraries, are dealt with in separate chapters (cf. 3.5.1, 3.5.2, 3.5.4) This chapter will concentrate on the question of using a Web Application as a useful tool for realising the institutional mission of bodies for administration and safeguarding.

Because of the vast area with which we are concerned – the States of the European Union – and to which this manual is addressed, there needs be generalisation in dealing with the subject since the sector of pubic organisation and administration shows many national specificities. Nevertheless, at the European level, a shared cultural heritage in terms of contents, history of conceptual development and common paths towards current juridical-administrative definitions, together with familiarity achieved through dialogue between European Cultural Entities, are factors which allow tracing of a common scheme of communication via the Web tool.

Indeed, the very definition of a shared communicative platform for sector Public Administration, both at various national levels (State, Region, Local Community, City) and at the European level of Member States and Associated States, is an essential presupposition for a network of contacts that is open to new functionality and to sharing experiences to the end of affirming the added European value.

It should be stressed that a Cultural Web Application must be taken to be an instrument, not only for communication – information and diffusion – but also a work tool in the prospect of technological innovation in pubic administrations. We are concerned therefore with introducing and developing, through careful vocational training, new systems for internal and external relationships in the work process.

Briefly, these are phenomena which the introduction of the Web tool has produced and will yet produce in the world of work and in particular in that of public administrations:

- Firstly, a new transparency which generates rotation of competencies, opening up to external relations and the creation of technical, administrative and juridical communities.
- Next there is the emergence of “life training” which, because of wide accessibility to information, documentation, juridical and administrative sources, means that staff are able to undertake auto training in competencies and produces a much higher quality result. The Web also introduces new procedures in activities and actions: take for example the introduction of information protocol, administration of data banks, archives etc.
- Finally, wider participation in a common platform on the part of Pubic Cultural Entities is definitely an important option in the scene of development of a European cultural community which further valorises the richness of the heritage, highlighting specifies and diversity

Institutes for administration and safeguarding of cultural heritage and the goals of the CWA

Official Web sites of Public Administrations are, by now, essential reference points for the pubic and they tend ever more to be presented as sites for information and services. Sites of central administration (Ministries of Culture) rightly take on the role of portal for all the related and subordinate offices.

Effective harmonisation between all Web Applications is therefore a general element of quality and must be linked appropriately with the need for composite architecture and coherence in system format while guaranteeing independent planning of the various sites

Inter-operability of Web Applications of the various CE's is another factor of quality, both from the technological point of view, and in architecture/structure, so that the various Web activities (particularly Intranet) can be efficiently administered. Consider the vast flux of actions of programming, administration and monitoring of spending in the various sectors of the activity.

The **1st Goal** plays a central role; in as much as its fulfilment guarantees a correct identification of the Entity. A quality application must therefore, express the institutional mission clearly and completely (referring to competencies in material and territory), give its hierarchical position within the administrative system of appurtenance, its institutional history, its location and any other information which may be useful for contact.

The **2nd Goal (Transparency on the activity of the CE)** is also highly relevant.

The Web Application must, in synthesis, completely represent every sector of activity, related offices and services rendered. Particular attention must be given to presentation of processes for realising activities, be they administrative (e.g. allocation of funding, procedures for public bids, etc.) or technical-scientific (the realisation of restoration work, catalogues etc.), or cultural diffusion (publications, events etc.).

A quality Web site must be able to give a "live" representation of activities, paying particular attention to aspects of inter-activity with other branches of the sector (other institutions, scientific communities, professional, specialists) convinced of the usefulness of adopting innovative modalities in the work process from the planning stage right through to the conclusion and diffusion of results.

The **3rd Goal (Transparency on the mission of the CWA)** should be considered, in the case of this type of CE, above all for the need to distinguish between an informative and service Web Application, which must be complete and updated in every aspect of the activity (c.f. n. 2 above) and a thematic and possibly temporary Application, referring for example to an exhibition, a specific project or an on-line training activity. In these latter cases the finality and duration of the application should be obvious and links must be established to collocate the application in the total context of activities of the CE.

The **4th Goal (Efficiency in the sector network)** is important insofar as its fulfilment depends on the visibility of the Web Application. The mission of the CWA must therefore be carefully evaluated in order to place it most advantageously in the right thematic networks and so actively foster its promotion and development.

The **5th Goal (Presentation of standards and regulations in the sector)** is extremely important for the Web Application of a CE that is dedicated to administration and safeguarding. Elements of quality are clarity of layout - which can be achieved with efficient organisation of information and a rational choice of links – and continuous updating of information. Introduction of thematic research and a new sector could be particularly useful.

The **6th Goal (Spread cultural content)** can, in a certain sense, be considered a necessary presupposition for the very existence of the Web Application in this category. Indeed, the Web Application of an Institute for Administration and Safeguarding has the very goal of spreading cultural contents and not of producing them. Its collocation within the communication system is as a collector, organiser and diffuser of cultural products produced by other CE's, either dependent on it or otherwise. It is a sort of observatory of production, of relevant and significant activity, a sorting house for cultural activities, besides being a portal for information. These should be its quality characteristics.

Considering the above, the **7th Goal (Support cultural tourism)** is naturally connected and is strategic under the political and economic profile but also in order to affirm a new sustainable model of "consuming" the cultural heritage.

Indeed, diffusion via Internet has enormously facilitated the auto-preparation of users who ever more frequently plan trips, itineraries and tours using information on cultural heritage, its accessibility and its essential meaning that is published on the Web. Institutes for administration and safeguarding must take on the responsibility for guaranteeing the quality of such on-line information.

The **8th (Offer of educational services), 9th (Offer of services for scientific research), 10th (Offer of services to specialists in the sector)** and **11th (Offer of services for reservation and acquisition) goals** are only indirectly relevant to the CE's "Institutes for administration and safeguarding". In this sense the categories "Territorial cultural heritage", "Museums" and "Archives" can be referred to as each sector presents its own specificities.

The **12th Goal (Promote Web communities in the sector)** can, on the other hand, be considered particularly significant for a CWA in this category.

Institutes of administration and safeguarding (e.g. the Ministry of Culture, General Administration, or a Department for Monuments) have great interest in activating sector Web communities that can realise on-line training, increase competence and offer continuous in-service training in the diverse sectors of the activities and the institutional mission.

3.3.6 Centres for research and education

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. Berneres 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.

Centres for research, training (didactic courses run both for education and for professional re-qualification) and production can be integrated or otherwise into a single autonomous entity (either pubic or private). A single entity can have one or more CWA's.

In the cultural sector there are numerous examples where teaching, research activities (e.g. on the process of deterioration of material), elaboration of methods of conservation, and generally all activities of scientific and technical consultancy, are run by a single entity.

Many European nations are central in the field of research and training in the conservation of cultural heritage. In Italy the Central Institute of Restoration is of note.

Centres for research and education and the goals of a CWA

The **1st Goal (Presentation of the identity of the CE)**: The CWA must clearly present all participants, institutions, companies, cultural entities.

The **2nd Goal (Transparency on the activity of the CE)** is no different from the goals expressed under other criteria.

The **3rd Goal (Transparency on the mission of the CWA)** is no different from the goals expressed under other criteria.

The **4th Goal (Efficiency in the sector network)**:

Sharing and promotion of any results attained, adherence to and collaboration with other similar on-line centres for research and education – either in progress or concluded – sharing reference Web tools (data banks, thesauri, linkopedie) occurs through participation and creation of networks and thematic portals.

The **5th Goal (Presentation of standards and regulations in the sector)** is realisable only if it is a specified goal of the centre for research and education, unless the Research Centre is involved in establishing standards. In this case goals 4,6,9 and 10 would be necessary and priority.

The **6th Goal (Spread cultural contents)** is linked with the 4th goal. User groups that use the contents of a Web Application of a centre for research and education in various ways can be identified. In this case a study should be carried out in order to adapt language and type of information and services to the selected user profile, respecting norms on privacy and copyright of contents.

The **7th Goal (Support cultural tourism)** is only realisable if it is a specified goal of the centre for research and education.

In the case of training centres, the **8th Goal (Offer of educational services)** is fundamental.

Choosing modes of using internet and the computer, in general, and to affirming training programmes developed using methods such as e-learning forces a critical reconsideration of traditional didactic methods and puts possession of adequate instruments at the centre of the argument.

Depending on the priority mission and the position of research in the Centre, services of training and professional re-qualification can be directed both internally and externally to the institution, taking into consideration the problems related to validation of users, establishing access levels to services etc.

The **9th Goal (Offer of services of scientific research):**

The Web site of a centre for research and education can provide services for scientific research above all by rendering internal data banks accessible.

For reasons of data security there may be reserved access to this data.

Possible services are:

- data analysis (search and visualise data according to pre-established parameters such as chronology, key-words etc.),
- registration of criteria for selected research;
- downloads or e-mail forwarding of research results;
- enrolment to a service which, after a certain time spell, automatically sends updates of the data base;
- availability of high definition images.

The **10th Goal (Offer of services to specialists in the sector)** coincides with the 9th goal.

The **11th Goal (Offer of services for reservation and acquisition)** is realisable only is it is a goal specified by the centre for research and education.

The **12th Goal (Promote Web communities in the sector)** suggests the offer of informative and interactive services aimed at communication and participation of users (including also the staff of the centre for research and education) with results obtained.

Among these: the realisation of forums, newsletters and Web bulletins on the cultural and scientific characteristics of the centre for research and education, directed to particular user profile groups.

In order to sensitise and involve the community it would be opportune to adopt strategies for diffusion (press releases, enrolment to mailing lists and reference forums) that are managed by individuals culturally competent in all the interactive activities of communication and exchange, including mail channels.

(the definition of the goals refers widely to the contents expressed in the criteria for Cultural Communities).

Centres for research and education and Web users

Centres for research training and production are characterised by heavy request for information on the part of users.

The definition of identity usually represents a “a priori” and, apart from the need to represent its activity, there will be extensive request for detailed and highly specialised content.

Users differ notably according to the specific function of the site and also according to the community of reference.

The CWA should provide services destined mainly to the research community using consultation of scientific documentation (in standard pre-determined formats) and tools to establish a periodic or occasional communicative flux which is however complete in essential informational content.

Access to library catalogues and archives (if through Web tools) is one of the services that is most useful and in greatest demand. Forums for discussion of specific themes could be created.

The aim of increasing the range of communicative tools usually grows as a result of communication through a “community” language that may often be comprehensible only within the specific scientific reference community.

Policies of digitization in Centres for research and education and the Web

A Web site dedicated to a centre for research and education generally involves making a vast quantity of material available (pull or push mode). This material may be roughly drafted but is always presented in standard file format. Particular attention must be paid to indexing and thus to public traceability of the material via use of Lexis, thesauri etc. which are integrated into the data bases which are made available.

The very characteristics of the scientific community push towards a technical refinement of synchronous (chat) and asynchronous (forums, newsletters) communication and the evolution of possibly open-source platforms in this area.

In academic and similar institutions there is a solid tradition in favour of adopting free software and technical solutions.

Web references: (European projects)

DIGICULT - Digital Culture
www.digicult.info

ERPANET - Electronic Resource Preservation and Access Network
www.erpanet.org

LABSTECH Laboratories on Science and Technology for the conservation of European Cultural heritage
www.chm.unipg.it/chimgen/LabS-TECH.html
CURRIC Curriculum development
www.iccrom.org/eng/programmes/interd/curriculum.htm
DELOS - Network of Excellence for Digital Libraries
http://www.delos-noe.org

3.3.7 Cultural projects

The realisation of a Web site is often one of the finalities 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.

The Web tool means that networked users can be informed of the characteristics and goals of the project (external communication) and certain aspects of the Project can be administered via reserved Web space (internal communication).

Sharing information developed in the context of a given cultural Project leads to development and cultural growth in the Society of Information and Knowledge.

Publishing a selection of resources and documents is useful both for running the Project itself and also for contacting and involving similar enterprises. It augments the visibility of the Project and gives it its own prospective within the "Society of Information and Knowledge".

Appropriate planning of external communication strategies helps promote a clear understanding of the Project through cohesion, subsidiarity, co-operation and pluralism. Web sites of Cultural Projects should have an explicit link with current cultural developments and tendencies in the society; should belong to portals and networks; should be tools for innovation and spread of culture; should be accessible both to specialist communities and to a wide range of users.

Reserved access points can be a useful professional tool and encourage internal communication of all the activities involved in the Project. These can be realised with the option of viewing and downloading updated material, presenting an annotated agenda with deadlines of the activities of the Project that is accessible on line to all participants of the Project.

A cultural 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 of the realisation of the Project itself.

In order to optimise external communication, it is suggested that particular attention be given to press releases sent to on-line media centres giving information on the activities and results of the Project.

Cultural projects and the goals of a CWA

An analysis of the specific goals of the CWA, in the case of a cultural Project, involves both the CE and any existing private partners participating in the Project.

The **1st Goal, (Presentation of the identity of the CE)** can be achieved by supplying indications on the finality (described in terms of cultural requirements which society has imposed), the goals (documenting the aims of the Project), and the organisation of the Project. The CWA must also clearly present all the participants, be they institutions, Companies, public or private Bodies.

The **2nd Goal (Transparency on the activity of the CE)** requires indication of the Project calendar, publication of the agenda and information on economic and funding aspects. The finality of the Project must be connected with the activity of the CE or bodies involved in the project, indicating the referents of the CE's, the time and modes of integration between the results of the Project and the activity of the CE's and/or bodies concerned.

Th **3rd Goal (Transparency on the mission of the CWA)** requires presentation of the technological characteristics of the Application, its purpose with respect to the Project and also the tools it offers for realisation of the goals of the Project.
Frequency of updating should also be stated.

The **4th Goal (efficiency in the sector network)** is fundamental for pursuit of the goals and finalities of cultural Project. Sharing and promotion of results, cohesion and collaboration with other similar cultural on-line Projects (current or concluded), sharing of reference Web tools (data banks, thesauri, linkopedie) occurs through participation in or creation of networks and thematic portals. This goal is one of the main horizons for the Society of Information and Knowledge.

The **5th Goal (presentation of the standards and regulations of the sector)** is realisable only if it is a specific aim of the cultural Project.

The **6th Goal (Spread cultural contents)** is connected with the 4th Goal, sharing the cultural character of the society of Information and Knowledge.

User groups that use the contents of a Web Application of a cultural Project in various ways can be identified. A study should be carried out in order to adapt language and type of information and services to the selected user profile, respecting norms on privacy and copyright of contents.

The **7th Goal (Support cultural tourism)** is only realisable if it is a specified goal of the cultural Project.

The **8th Goal (Offer of educational services)** is only realisable if it is a specified goal of the cultural Project.

The **9th Goal (Offer of services for scientific research)** is linked with the 6th Goal. A Web site dedicated to a cultural project can offer services for scientific research, rendering internal data banks accessible.

For reasons of data security there may be reserved access to this data.

Possible services are:

- data analysis (search and visualise data according to pre-established parameters such as chronology, key-words etc.),
- registration of criteria for selected research;
- downloads or e-mail forwarding of research results;
- enrolment to a service which, after a certain time spell, automatically sends updates of the data base;
- availability of high definition images.

The **10th Goal (Offer of services to specialists in the sector)** coincides with the 9th goal.

The **11th Goal (Offer of services for reservation and acquisition)** is relevant when the services listed under the 9th goal (in common with the 10th) involve economic transactions. In this case however, we are concerned with downloads and enrolments under payment.

The **12th Goal (Promote Web communities in the sector)** suggests the offer of informative and interactive services aimed at communication and participation of users with results obtained. Among these are the realisation of forums, newsletters and Web bulletins, directed to particular user profile groups connected with the cultural and scientific characteristics of the Project

In order to sensitise and involve the community it would be opportune to adopt strategies for diffusion (press releases, enrolment to mailing lists and reference forums) managed by individuals who are culturally competent in all the interactive activities of communication and exchange, including mail channels.

Cultural projects and Web user

Interaction between entity and user occurs both through offering interactive tools as channels for “contacts” or “communities” in answer to mail requests, creating forums, mailing lists and Web bulletins which aim to spread and share the results reached in the Project.

Considering that a cultural Project may involve both public and private partners, the Web site can be an open place that encourages exchange, co-operation, involvement and participation of other public and/or private entities.

Policies of digitization in cultural projects and the Web

The relationship between the Web Application and digitization projects is direct and priorital compared with other channels of communication. Considering that the Society of Information and Knowledge is based on digitization of programmes of cultural content, it is clear that Internet constitutes an important opening for cultural Projects.

In the planning phases of a digital Project, critical choice of which material to treat and publish is important.

Criteria for selection of material depends on the goals of the Project, on technological and financial limits, on copyright and IPR and also on the existence of other digital projects in the same sector. Access to material is a further factor to consider.

- The state of conservation of the originals, their traceability and availability in digital form;
- implement a policy of preservation of originals when they are in a critical state of conservation and availability to the public is not appropriate, by rendering digital versions accessible;
- appropriacy of the source of the material with respect to on-line use;
- costs of digitization

are among the fundamental criteria for selection of material for digitization.

To protect copyright, images could have invisible watermarks.

A CE with specific aims in a given cultural Project must consider aspects of inter-operability and data re-use.

Indeed, heritage and activities connected with digitization are dependent on rapidly evolving technologies and account should be taken therefore of organisation of data, use of advanced technological standards and practices aimed at the conservation of culture and the digital heritage. Metadata should be used appropriately so that searches for material/objects belonging to various digital collections is possible. The description of a given place or artist for example, should use controlled lexis. These are the elements that allow a digital Project to be logically connected with similar Projects, thus activating cross sectional consultation and navigation. They further guarantee migration of digital data from one technological standard to another.

In the transferral of digital items (master files) to on-line use, file compression and use of thumbnail images should be considered. Users should have the option of saving files in various versions, resolutions, formats and sizes.

Data banks and information processed within a Project may be exploited by different groups of users: general users and registered or authorised users.

The first group has access to all public services and data banks which are offered by within the Project, while the second group can access information and data banks – reserved and otherwise – through a procedure of recognition and authentication. These users then have the option of visualising data and then using it directly on-line. This means that in planning the on-line service, different user profiles must be identified and grouped according to the level of authorisation conceded.

3.3.8 Temporary exhibitions

That of exhibitions is probably one of the sectors where Web Applications have so far found the most space. This is largely due to the “shop window” function which a Web site - which has been deliberately designed for publicity – can easily perform considering it technological characteristics.

Web sites are often instruments of marketing which, co-ordinated with others, aim to bring the largest possible number of visitors to the exhibition. Realisation of these “instant Web sites” are often entrusted directly to professional creators outside the CE and activated directed by mixed “consortiums” (CE’s, sponsors etc.) which are promoting the exhibition.

Another type of Web Application connected to temporary exhibitions is the possibility of creating a path of technological tools for support and extended study that is interactive with the public and can also be followed from home. The decision to use such apparatus will depend of the type of exhibition, its aims and its resources.
The most recent work in the sector of preservation of cultural Web sites shows that “instant Web sites” themselves can become the permanent content of a Web archive. Examples of this are active in many parts of the world: in the specific sector of cultural exhibitions the city of Siena, in Italy is currently effecting archiving of Web sites of exhibitions of recent years.

Temporary exhibitions and the goals of the Web

Having fixed general parameters prior to examining the specific goals of CWA's in this sector, it is important to emphasise that a quality CWA of a temporary exhibition must be realised in more than one language. This is in order to ensure maximum possible diffusion.

The **1st goal (Presentation of the identity of the CE)** plays a central role in the case of cultural exhibitions, since the CWA must place the temporary event in the context of the permanent reality which produce it. An exhibition often results from scientific research carried out by one or more CE's involved in a common project. The following aspects however, must be clear:

- the identity of the authors;
- the cultural project from which it stems;
- the finality or aims;
- the cultural entities that are have collaborated.

The **2nd goal (Transparency on the activity of the CE)** mainly concerns clarity of information regarding the organisational, administrative and economic aspects that have allowed the realisation of the temporary exhibition.

The **3rd goal (Transparency of the mission of the CWA)** is achieved through planning a Web Application where areas of information and further thematic study are clearly distinguishable from advertising zones (sponsors) or business connected with cultural exhibitions with a large economic investment.

The **4th goal (Efficiency in the sector network)** is clearly of great relevance for the mission of information is the very nature of the Web Application of an exhibition. In this case the sector networks are those which divulge information, press agencies, search engines and circuits for tourist promotion etc.

The **5th goal (Presentation of standards and regulations in the sector)** is not relevant for this category.

The **6th goal (Spread cultural contents)** is central for the CWA of an exhibition. As was said above in the introduction, depending on available resources and on which characteristics of the exhibition the Web Application will represent, various level of complexity can be accepted.

A) *Supply basic information and orientation*
This level is obligatory for all Web Applications and must include a register of the exhibition with: full details of the contents of the exhibition (subject, curators, promoters etc.), the place of the exhibition (including geographical co-ordinates and means for reaching the location), the opening period (including eventual extensions), opening times, length of the visit, cost of tickets and concessions, services available (booking, on-line booking, guided tours, multimedia, catalogues, disabled access, bookshop, café, cloakroom, car park), associated events (conferences, slide shows, external event connected with the exhibition).

B) *Supply information and documentation in advance*
This gives the visitor the chance to prepare culturally before the visit and to seek further information afterwards. To this end the Web Application should provide Web path which illustrate the main sections of the exhibition and supply basic information on the material and most important topics, paying particular attention to use of language. Links with relevant Web thesauri could also be created.

C) *Supply didactic instruments*
On the basis of its identity and the specific project which conceived it, an exhibition can be a place for education. Through the Web Application (which may even be presented within the exhibition) the exhibition can provide a specific didactic reading of its contents. This should be realised in collaboration with the curators of the exhibition and didactic experts, paying particular attention to various age groups and also to so called weak and disabled users.

D) *Supply virtual reconstructions*
Considering them as a means of communication, a temporary exhibition can promote virtual constructions that are often elements of attraction and are symbolic of the path of a visit.

In the case of virtual reconstructions of objects of complexes, it is vital that the levels of reconstruction be explicit:

- Ascertained level on the basis of available documentation;
- Supposed level presented on the basis of clues or comparisons with other ascertained cases;
- Un-ascertained level based on documentary and critical evidence, i.e. free interpretation.

For the **7th Goal (Support cultural tourism)**, it is important to institute a synergy of forces where the promoters of the exhibition, public territorial entities and economic bodies in the sector of tourism, work together to create suitable activities. Besides what was described under goals 1 and 6 point A, special “tourist packages” connected to the exhibition can be promoted via the Web Application.

The **8th Goal (Offer of educational services)** is definitely a quality requisite for a Web Application in this sector.

Sector experts and teachers of different school levels must collaborate to create didactic paths appropriate to different needs, which respect the education programmes and use suitable language.

See point C of goal n. 6. Another requisite for quality is the inter-activity of didactic services, where users themselves can build an application following predetermined paths.

The **9th Goal (Offer of services for scientific research)**. In the case of the Web Application of a temporary exhibition it is of central importance to provide links to relevant cultural sites. The search and query systems and links with existing data banks must be carefully planned.

The **10th Goal (Offer of services to specialists in the sector)** is not relevant to this category.

The **11th Goal (Offer of services for reservation and acquisition)** should be considered in the case of a CWA of an exhibition. See goals 1 and 7 above.

The **12th Goal (Promote Web communities in the sector)**: cultural entities that promote an exhibition must take active participation in thematic portals. This is necessary for quality control of information that is otherwise left entirely in the hands of private entities. A recent example is Euromuse.

Temporary exhibitions and Web users

The definition given in this manual is fully applicable to the case of Web Applications of temporary exhibitions. Besides staff and specialists in the sector, users are a vast heterogeneous group to which it is difficult to give a sharply defined profile.

For this reason the sector of temporary exhibitions is one where project and planning is difficult and modes of expression, architecture, form and language must be chosen with care. Every part of the Web Application must be attentively monitored and calibrated for the culturally and technologically weaker users.

Appendix 1

Cross References with others Minerva Working Groups

This paragraph aims to summarise the results of the work group on the quality of cultural Web Sites and place it in context with the other working groups within the MINERVA project. In this way synergies between the groups are clearly visible.
It emerges clearly that the topics covered in the manual are discussed in detail in the work and results of the other groups and more profound analysis can be attained by consultation of these works.

BENCHMARKING	**Aims of the group**: Benchmarking was chosen as a suitable instrument for making information on the activities of the various member states, compatible. In this way it is possible to exchange experiences and good practices and to develop performance indicators. **Results**: The first phase of the work has been concluded, the results and data collected and a database has been defined. This database will be included in the general MINERVA database and will be accessible on-line. **Material produced**: To date, the work undertaken and the results obtained by the working group, have been reported in two documents .(Nov. 2002 and Aug.2003) http://www.minervaeurope.org/structure/workinggroups/benchmarking.htm
INVENTORIES, DISCOVERY OF DIGITISED CONTENT, MULTILINGUALISM ISSUES	**Aims of the group:** To realise inventories of digital resources and render existing digital inventories visible. **Results:** A table was created for effecting a census of digital resources. This table was implemented in a database. **Material produced:** A report was produced in March 2003. http://www.minervaeurope.org/structure/workinggroups/inventor.htm
INTEROPERABILITY AND SERVICE PROVISION	**Aims of the group:** to build a common European platform for creating integrated access to digital resources. **Results:** A draft for the definition of technical standards has been produced. **Material produced:** A report was produced in April 2003. http://www.minervaeurope.org/structure/workinggroups/servprov.htm
IDENTIFICATION OF GOOD PRACTISES AND COMPETENCE CENTRES	**Aims of the group:** To promote competence and professional standards and render them more visible in the sector of European digitalisation. **Results:** During the workshop in Alicante (May '03), 42 good practices were compiled by the national representatives. Centres of competence were subsequently identified and guide lines established. **Material produced:** The group produced a report on the current state of the work (Nov. '02) and the manual of good practices (June '03). The latter presents a collection of existing guide-lines organised according to the sections of the manual. The sections, in turn, reflect the phases in the process of digitalisation, http://www.minervaeurope.org/structure/workinggroups/goodpract.htm
IPR, COPYRIGHT AND DATA PROTECTION	**Aims of the group:** Analysis of the problems in the field and proposals for recommendations at the European level. **Results:** Analysis of the current situation and a draft of the document of proposals for the Italian model. http://www.minervaeurope.org/structure/workinggroups/ipr.htm

Appendix 2

Catalogue of Patterns

UNDER TRASLATION

Appendix 3 - How to use the Handbook

In this Appendix we propose three examples in order to help the reader to use this handbook as better as possible. Each example is dedicated to one among the 8 categories of Culture entities, an **Archive** (example 1), a **Library** (example 2) and a **Museum** (example 3). Each one examinates the contents organization and the site structure, simulating the planning of a web site for those institutions. For each example we consider the explosion of just one among the possible temathic areas.
The path common to the three examples may run like this:

First of all we need to preparate the planning, reading **Chapter 1** in order to verify if we are following the **main recommendations and fundamentals**, focus the elements that represent **the identity of our cultural subject** and **delineate the goals** we want to reach through the website. In the meantime, it is necessary to read **Chapter 2**, dedicated to web quality: here we can find both the general priciples on accessibility and usability, and operative proposals on guidelines, criteria and especially on the use of the **language of patterns.**
As regards our subject, after the study of **Chapters 1 and 2**, we have to shift to the reading of **Chapter 3,** following its suggestions particulary on the section dedicated to the **cultural categories**, as regards the typical web services and informations, the web users and the digitalisations policy in relation with website.
Then, with the help of Patterns, we can define the **Structure of the site** and the **Primary Navigation** areas.
For the **Secundary navigation**, our attention to the goals must be more accurate, to avoid repetitions and redundance.

Example # 1 - **Planning the website of an ARCHIVE (**Thematic area: ***Our Records*****)**

For Archives we can define 5 main navigation areas: **The Archive**, **Our records**, **Web Resources**, **Services** and **News and Events,** with their specific secundary areas.

Main navigation	**Secundary navigation**	
1. The Archive	**History**	Founding
		Collections
		Building
	Activity	Research
		Acquisitions
		Reforms
		Publications
		Didactic
	Opening Hours	
	About us	Structure
		Offices
2. Our Records	**History of Records**	Sections
	Information system	Collections Records
		Finding Aids
	Conditions of access	Creators IPR and privacy rules
3. Web Resources	**Other Archives**	
	Archival Portals	
	Thematic Resources	
	Search Motors	
4. Services	**Library**	Catalogue
		New Accessions
	Didactic Services	Thematic Paths
		Guided Tours
		Lessons for Schools, Groups Downloadable Material
	Special Schools	Information
		Periodicals
		Teachers
	Reproduction Services	Conditions
		Download digital copies
5. Events / News	**Events in the Archive**	
	News of theWeb Site	

In the example we try to delineate a Secondary Navigation just for the area # 2, Our Records, that involves different goals: Goal n. 1 – "Represent the identity of the Archive" and Goal n. 6 – "Spread cultural content" (a three-levels goal: 1. Information for basic knowledge, 2. Information and advanced documentation for education, training and to support cultural tourism, 3. Access to data-banks for training and scientific research).

The secundary areas of Our Records could be: *1. History of records, 2. Information System, 3. Conditions of access.* The support for scientific research is typical among archival services, which are destined above all to specialists in historical research who are able to navigate the complexity of documentary systems. The creation and offer of archives and data-banks usually implies scientific respect of its complexity, i.e. the dynamic interconnection between series of documents, their creators and their finding aids. This area could be accompanied also by services for consultation and distance research. The three sub-areas defined above may reach some other goals: Goal n. 2 – Transparency on the activity of the Archive, Goal n. 9 – Offer services for scientific research, Goal n. 10 – Offer services to specialists in the sector, Goal n. 11 – Offer services for reservation and acquisition of goods.

PRINCIPLES , RECOMMENDATIONS, OBJECTIVES	**PATTERNS**	**WEB SITE**
see Chapter 1 – Definitions, fundamentals and basic recommendations **see Chap. 3** – Definition of the cultural category **Archives**	**see Chap. 2** – Quality in Web Applications: general principles and operative proposals • **Site Structure** • **Main Navigation**	Preparation for planning: motivations and contents Definition of Thematic Areas *1. The Archive* ***2. Our Records*** *3. Web Resources* *4. Services* *5. News and Events*

Chapter 3 - Goals	• **Page Structure**	2. Our Records
Goal n. 1 – Represent the identity of the Archive Goal n. 6 – Spread cultural content: A. **Information for basic knowledge** B. **Information and advanced documentation for education, training and to support cultural tourism** C. **Access to data-banks for training and scientific research**	• **Secondary Navigation**	***2.1 History of records***
Goal n. 9 –Offer services for scientific research Goal n. 10 –Offer services to specialists in the sector Goal n. 11–Offer services for reservation and acquisition of goods		**2.2 Information system**
Goal n. 2 – Transparency on the activity of the Archive Goal n. 10 Goal n. 11		**2.3 Conditions for access**

Example #2 - Planning the website of a LIBRARY (Thematic area: ***The Library*****)**

For Libraries we can define 5 main navigation areas: **The Library**, **Our Collections**, **On Line Catalogues**, **Web Resources**, **Services,** and **News and Events,** with their specific secundary areas.

Main navigation	**Secundary navigation**	
1. The Library	**History**	
	The Building	History
		Description
		Local Informations
	Activity	Publications
		Projects
		Public Bans

	Opening Hours	
	About us	Structure
		Organisation/Offices
2. Our Collections	**Library collections**	Collections
	Artistic Heritage	Collections
3. On Line Catalogues	**OPAC**	
	Other Catalogues	Individual catalogues
4. Web Resources	**National Catalogues**	
	Foreign Catalogues	
	Networked Libraries	
	Thematic Resources	
	Search Engines	
5. Services	**Access to the Library**	
	Reading Rooms	Individual Reading Rooms
	Description of Catalogues	Individual Catalogues
	Reference	
	Loans	
	Photocopies	
	Reproductions	
	Didactic Services	
6. Events / News	**Events in the Library**	
	News of theWeb Site	

In the example we try to delineate a **Secondary Navigation** just for the **area # 1, The Library**, that involves different goals: first of all Goal n. 1 – **Represent the Identity of the Library**, with the related **Goal n. 2 – Transparency on the Activity of the Library** and **Goal n. 7 – Support cultural tourism**.

The secundary areas of **The Library** could be: **History**, ***The Building*** *(History, Description, Local Information)*, ***Activity*** *(Publications, Projects, Public Bans)*, ***Opening Hours, About us*** *(Structure, Organisation/Offices)*.

PRINCIPLES , RECOMMENDATIONS, OBJECTIVES	PATTERNS	WEB SITE
see Chapter 1 – Definitions, fundamentals and basic recommendations	**see Chapter 2 –** Quality in Web Applications: general principles and operative proposals	***Preparation for planning: motivation and contents***
see Chapter 3 – Definition of the cultural category **"Libraries"**	• **Site Structure** • **Primary Navigation**	**Definition of Thematic Areas**: • ***Library***

		• *Heritage* • *On Line Catalogue* • *Networked Services* • *What we offer* • *Innovations/Happenings*
Chapter 3 - Goals	• **Page Structure** • **Secondary Navigation**	The Library
Goal n. 1 – Represent the Identity of the Library Goal n. 1 – Represent the Identity of the Library Goal n. 7 – Support cultural tourism		• *History* • *The Building*
Goal n. 2 – Transparency on the Activity of the Library Goal n. 7 – Support cultural tourism		• *Activity*
Goal n. 7 – Support cultural tourism		• *Opening Hours*
Goal n. 2 – Transparency on the Activity of the Library		• *About us*

Example # 3 - **Planning the website of a MUSEUM (**Thematic area**: *Paths*)**

For our Museum we can define 6 main navigation areas: **The Museum**, **Our heritage**, **Paths**, **Web Resources**, **Services** and **News and Events,** with their specific secundary areas.

Main navigation	**Secundary navigation**	
1. The Museum	***History***	Foundation
		Character
		Displays
		The Directors
		Research
		Archives
	Seat and Location	The Museum on the territory
		The Museum in the city
		The building
	Activity	Research
		Acquisitions
		Catalogue and documentation
		Restoration

		Publications
		Exhibitions
		Didactic
	Opening Hours	
	About us	Structure
		Organisation/Offices
2. Our Heritage	**Formation**	Sections
		Collections
	Catalogues	Indexes
		Thematic Catalogues
3. Paths	**Thematic Paths**	Essential
		By object
		Chronological Virtual
	Paths for Children	Scholastic level
		For fun
		With Imagination
4. Web Resources	**Other Museums**	
	Portals	
5. Services	**Libraries**	Catalogue New accessions
	Archives	Historical
		Photographical
		Multimedia
	Booking **Bookshop**	Individual Visits
		Collective Visits
	Cafeteria	
	Conference Hall	
	Exhibition Room	
6. Events / News	**Events in the Museum**	
	News of theWeb Site	

In the example we try to delineate a **Secondary Navigation** just for the **area # 3, Paths**, that involves different goals: first of all **Goal n. 6 – Spread cultural content** (with its three possible sub-levels: A.*Information for basic knowledge*, B. *Information and advanced documentation for education, training and to support cultural tourism*, C. *Access to data-banks for training and scientific research*), then **Goal n. 7 – Support cultural tourism** and **Goal n. 9 – Offer services for scientific research**.

The secundary areas of **Paths** could be two: **Thematic paths** (with possible sub-levls like: *Essential, By subject, Chronological, Virtual*) and **Paths for children (***Scholastic levels, For fun, With imagination)*.

Examinating better the relationship between goals and site planning, we must remember that the **6th goal (Spread cultural content)** is central for the Web application of a museum. And on its sub-levels we can say that:

A) **Supply information for a basic knowledge of the Museum**, it is necessarily an approach of a general nature but which extends to every significant part of the institution. A sort of "register" which includes at least the indispensable data for representing the identity: location, history of its formation, description of the contents organised by sector, collections etc., indication of permanent and temporary activities (c.f. goal 2), of active services to the public (c.f. goal 11).

B) **Supply advanced information and documentation on training and didactic activities and on support for cultural tourism,** the relevant fields for this level are vast and diversified, requiring thematic and critical analysis and also advanced virtual elaboration. In the case of museums this means making selected data bases available (see respect of IPR p.), and also the realisation of specialised applications for training and museal education. If attempts to copy the museum through virtual path is not seen as suitable, perhaps because of high costs, the Web tool - in its virtual role - can be profitably used for specific projects of divulgation, especially for particular applications which guarantee access to the museum to the widest possible range of the disable public.

C) **Provide access to complex and data banks for training and scientific research,** the museum is not only a place for conservation of memory, education and knowledge but also (and perhaps above all) a centre for research; an active pole in the scientific university community. In this area the Web application can play a central role, that of a thesaurus of the contents of the museum, of the infinite possible links which each conserved item can virtually institute with other cultural areas. Creators of cultural Web application must organise and render operative existing data banks, using organic programmes of digitalisation of cultural contents. Furthermore, the availability on line (in respect of copyright and IPR) at least of inventories of

historical archives, photographs, drawings etc. is a useful external service and also important for internal work.

PRINCIPLES , RECOMMENDATIONS, GOALS	PATTERNS	WEB SITE
see Chapter 1 – Definitions, fundamentals and basic recommendations	**see Chapter 2 –** Quality in Web Applications: general principles and operative proposals	***Preparation for planning: motivation and contents***
see Chapter 3 – Definition of the category **"Museums"**	▪ **Site Structure** ▪ **Primary Navigation**	Definition of Thematic Areas: • *The Museum* • *Our Heritage* • ***Paths*** • *Web Resources* • *Services* • *News / Events*
Chapter 3 - Goals	▪ **Page Structure** ▪ **Secondary Navigation**	Paths

Goal n. 6 – Spread cultural content:
A. Information for basic knowledge
B. Information and advanced documentation for education, training and to support cultural tourism
C. Access to data-banks for training and scientific research
Goal n. 7 – Support cultural tourism
		• ***Thematic paths:***
		  • *Essential*
		  • *By subject*
		  • *Chronological*
		  • *Virtual*

Goal n. 6 – Spread cultural content:
B. Information and advanced documentation for education, training and support of cultural tourism
Goal n. 8 **–** Offer educational services
Goal n. 9 **–** Offer services for scientific research
		• ***Paths for children:***
		  • *Scholastic levels*
		  • *For fun*
		  • *With imagination*

APPENDIX 4 - Directory of national rules on Web Applications

Foreword

Definition and goals

The following list offers the most comprehensive and updated survey on standards and regulations – both at the level of the European Union and of the single member Countries – concerning Web Applications, in the convinction that information about policies currently in act in the different nations is an indispensable step towards the adoption of uniform, shared qualitative criteria.

With this object in view, this directory will be available on the Minerva site throughout the six months of the Italian Presidency, with periodical updating and, where possible, with links to the full texts.

Structure and criteria

It will be an un-annotated list, organised by nation and within which data will be eventually organised according to the different sources of the laws.

Indeed, this research should not be considered as being limited to legislation in the strict sense (which appears on first view, in this specific area, to be still very limited in terms of quantity.); rather, the study aims to include any normative document from public sources which is relevant to Web Application, with particular reference – on the side of the "addressee" of the regulations – to the CWA, and – on the side of the contents – to the subject of usability and accessibility.

To the tables relative to the single nations, references to documents from sources in the community and of inter-governmental sources, will be added. Some international standards will also be included.

From the point of view of chronological cover, the duration and validity of the norms will be taken into account and in any case, all documents from 1993 to the present day will be included. As far as on-line sources are concerned, in view of periodic monitoring, the last visit to each resource will be indicated.

Methodology and sources

In attempting an exhaustive cover in this area, certain factors must be considered.

In the first place, the research is carried out in the context of documentation from public sources, which can be considered critical from the point of view of accessibility and qualitative organisation of the documents.

Secondly, documents of limited circulation or which are less "visible" are also considered relevant (circulars, deliberations, etc.)

Difficulties increase because many countries are involved, with different legal traditions and a multitude of lists and registers as sources; indeed, the recent extension of the European Union to

25 Member States and the prospective of further expansion mean that the range of the study will become wider in the long term.

In a similar panorama, alongside the role of official European and national gazettes/papers (whose updating goes to the disadvantage of semantic indexing of texts), and of data banks on regulations which are available on CD-ROM (the internal organisation of data to the end of research goes to the disadvantage of updating), it would seem that the role of sources on Internet resources is central, even considering all the measures for caution which the means demands.

It is, indeed, ever more the case that national governments, inter-governmental and non-governmental organisations are using the Web to spread information, sometimes in addition to or even in substitution of press releases. The result is greater access to documentation from public sources; it is for this reason that filters that are appropriate, relevant and pertinent to expectations should be placed on availability of information.

In this initial phase filters should be limited to lexical filters obtained from main Key words such a Web and Internet, variously combined with Digitalisation, Accessibility, Quality, Usability and Public (in the various languages of the list/collection)

…

UNDER TRASLATION

List of abbreviations

- **CD-ROM**: **C**ompact **D**isc **R**ead-**O**nly **M**emory
- **CE**: **C**ultural **E**ntity
- **CERN**: **C**onseil **E**uropéen pour la **R**echerche **N**ucléaire
- **CWA**: **C**ultural **W**eb **A**pplication
- **DELOS:** Network of Excellence for Digital Libraries
- **DIGICULT**: **Digi**tal Heritage and **Cult**ural Content
- **EAD**: **E**ncoded **A**rchival **D**escription
- **EBLIDA**: **E**uropean **B**ureau of **L**ibrary, **I**nformation and **D**ocumentation **A**ssociations
- **EEC**: **E**uropean **E**conomic **C**ommunity
- **ERPANET**: **E**lectronic **R**esource **P**reservation and **A**ccess **Net**work
- **EU**: **E**uropean **U**nion
- **FAQ**: **F**requently **A**sked **Q**uestions
- **GIF**: **G**raphics **I**nterchange **F**ormat (proprietary format, registered by Unisys)
- **HCI H**uman **C**omputer **I**nteraction
- **HTML H**yper**T**ext **M**arkup **L**anguage
- **ICA**: **I**nternational **C**ouncil of **A**rchives
- **ICANN**: The **I**nternet **C**orporation for **A**ssigned **N**ames and **N**umbers

- **ICF[ICDH-2]: I**nternational **C**lassification of **F**unctioning, **D**isability and **H**ealth
- **ICDH-1: I**nternational **C**lassification of **I**mpairments, **D**isabilities and **H**andicaps
- **ICOM**: **I**nternational **Co**uncil of **M**useums
- **ICT**: **I**nformation and **C**ommunication **T**echnology
- **IFLA**: **I**nternational **F**ederation of **L**ibraries **A**ssociations and Institutions
- **IPR**: **I**ntellectual **P**roperty **R**ights
- **ISAAR**: **I**nternational **S**tandard **A**rchival **A**uthority **R**ecord
- **ISAD**: **I**nternational **S**tandard **A**rchival **D**escription
- **ISBD**: **I**nternational **S**tandard **B**ibliographic **D**escription
- **ISO: I**nternational **S**tandard **O**rganisation
- **JPEG**: **J**oint **P**hotographic **E**xperts **G**roup (open public format)
- **LABsTECH**: **Lab**oratories on Science and **Tec**hnology for the conservation of European Cultural heritage
- **MiLE**: **Mi**lano - **L**ugano **E**valuation Method
- **MINERVA**: **Mi**nisterial **N**etwo**R**k for **V**alorising **A**ctivities in digitation
- **OPAC**: **O**n-line **P**ublic **A**ccess **C**atalogue
- **PNG**: **P**ortable **N**etwork **G**raphics
- **RDF: R**esource **D**escription **F**ramework
- **ROC**: **R**equest **F**or **C**omments
- **TLD**: **T**op **L**evel **D**omain
- **UNESCO**: **U**nited **N**ations **E**ducational, **S**cientific and **C**ultural **O**rganization

- **URL: U**niform **R**esource **L**ocator
- **VRD**: **V**irtual **R**eference **D**esk
- **W3C**: **W**orld **W**ide **W**eb **C**onsortium
- **WAI**: **W**eb **A**ccessibility **I**niziative
- **WCAG**: **W**eb **C**ontent **A**ccessibility **G**uidelines
- **WA**: **W**eb **A**pplication
- **WHO: W**orld **H**ealth **O**rganisation
- **WWW**: **W**orld **W**ide **W**eb
- **XHTML**: The E**x**tensible **H**yper**T**ext **M**arkup **L**anguage
- **XML:** e**X**tensible **M**arkup **L**anguage

Bibliography and references

UNDER FINALISATION