Handbook for quality in cultural Web sites
Improving quality for citizens

Version 1.2 - Draft

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

6th November, 2003

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

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Preface and background

The Web has promoted an increasing proliferation of on-line cultural applications. Almost every cultural institution or initiative today wants to be on the Web, and to promote itself, to disseminate its content, its activities through the Internet.

Quality must be ensured for the delivering of cultural content.

Yet quality is a very broad, generic and a subjective concept.

Therefore the goal of the quality framework is to break down quality into a series of criteria which are specific to cultural Web sites.

A quality framework in this domain can only be developed at a multinational level, involving cultural institutions and actors from different national cultures and having various professional expertises.

A framework is an evolving structure, which needs to be extended and improved along the time as experience and case studies are carried on, as a results of co-operation of efforts at the European level.

The MINERVA project provides a perfect environment where such a framework can be developed.

Genesis of the European Quality Criteria

The European Quality Criteria have their origin in the *Lund Principles* adopted on 4th April 2001, when the European Commission was invited to collaborate with Member States, in particular to "Optimise the value and develop shared visions of European content, by developing criteria and a framework for an EU collaboration plan for digital cultural and scientific content, together with appropriate implementation means […] through *identifying added value conditions for European content*".

This reflexion continued, during the Belgian Presidency of the European Union, in a wide-ranging debate of experts on the theme of the Culture and the Knowledge Society to lead to the Resolution "Culture and Knowledge Society" adopted during the European Council of Culture Ministers on the 5th November 2001. The Resolution more specifically invites the Commission and the Member States to encourage "quality-initiatives" in cultural Web sites.

The first European document on quality criteria for cultural Web sites, the *Brussels Quality Framework*, originated in the Principles adopted at Lund, was presented during the first meeting of the National Representatives Group held in Brussels on the 11th December 2001. Its aim was to *make quality more objective, applicable and measurable*.

The Minerva Quality Working Group

Starting from the conclusions of this discussion document, in the frame of the activities carried out by the Minerva Quality Working Group, some steps have been gone through, with pitfalls that similar process usually meets.

The Working Group defined so *10 Principles*, which must participate in celebrating European cultural diversity by providing access for all to digital cultural content and will carry on in the future months to the drafting of the *Explanations of these principles*.

The Minerva Quality Working Group worked on the present *Handbook for quality of cultural Websites*, and within this Working Group, a genuine, motivated *European Editorial Committee* has been set up, for the benefit of the work's activities.

Handbook for quality in cultural Websites: improving quality for citizens

As you should have been able to read, the *Handbook for quality in cultural Web sites* should be considered as a working document, which need to be further developed.

This Handbook is not only a working document but also a "work in progress"; this work is carried out in the context of all Minerva Work Packages; the documents that they produce and the principles and guidelines they formulate.

It makes a framework that can guide the process of formulating quality issues on the cultural level.

In other words, the structure is now there and the difficult job of giving it cultural relevance can now start. This job should be a collaborative effort, lead by the European Editorial Committee, but very likely with the solicited input of other experts who are closely monitored by this one.

This *Handbook* needs also to accomodate a range of conditions that may differ substantially from member State to member State. Specific concerns of all European communities will be included during the course of the on-going substantive and editorial revision and are expected to be published during the course of the Irish Presidency of the European Union.

A big work is still necessary, but it is certain that a very important result has already been achieved: the debate on such a relevant theme has started, with the full awareness that the way to achieve an exhaustive *Handbook*, able to be adopted at a European level, is hard but necessary.

Introduction

Over the last few years, the growing awareness in every sector of the importance of communication via internet has led to the need for a Handbook for Quality in Cultural Sites. The field of Culture in particular, plays a fundamental part in achieving the goals of the Society of Information and Knowledge which are to spread culture to all citizens and thus to promote conscious growth and the affirmation of an added European Value.

It is in this context then, that the Handbook for quality in a cultural Web sites is a useful tool for achieving a common European platform to promote accessibility of the cultural and scientific heritage through the internet. This is a fundamental part of the policy of digitalisation of the European cultural heritage in the quest for unified access for all citizens to cultural contents.

In conformity with the regulations developed in the Action Plan eEurope 2002, on accessibility of content of public administrations, the handbook proposes the adoption and application of criteria for the quality, not only of content, but also of accessibility to information and communication technologies (ICT) and to the specific on-line information services of Cultural Web Applications. Particular attention is paid to the users with special needs , this being a pre-requisite for guaranteeing an Information Society open to all. The sharing of common quality criteria across all Cultural Web Applications will guarantee that quality information on cultural heritage is supplied according to minimum European standards. The criteria for quality will be flanked by a method of analysis and validation allowing measurement and assessment of the degree of quality achieved by a Cultural Web Application.

The handbook is organised into four main sections, as follows:

1. General Definitions, principles and recommendations.
2. Introduction to quality: general criteria for Web Applications.
3. Specific quality criteria for cultural Web Applications.
4. Appendices: Validation methods; Guide to regulations; Bibliography.

1. General definitions, fundamentals and recommendations

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

Indeed, the definitions chosen, allow the goals of the Cultural Web Application to be linked with the identity and the mission of the Cultural Entity. The Cultural Web Application (CWA) must reflect the mission of the Cultural Entity (CE) and guarantee its transparency. To this end, the main goals of the Cultural Web Application were identified. Besides a clear description of the identity and transparency of the mission and activities, it is hoped to create a sector network, possibly at the European level. This network of virtual communities with specific cultural interests would include: presentation of the main regulations and standards in the sector, diffusion of multi-medial cultural contents, services for scientific research, professionals and educationalists, services of cultural tourism, and the ordering and acquisition of goods.

Each of these goals is analysed for every Cultural Entity. The definition of a Cultural Entity was deliberately generic in order to include different national characteristics, both politico-administrative and techno-scientific. The Cultural Entities are, for the most part, institutions for conservation and exploitation of the cultural heritage, but not only. However, the inclusion of various juridical entities which operate as organisms and associations of public interest; foundations, societies, projects aimed at specific activities and functions, greatly amplified the sphere of the definition.

In order to produce useful quality criteria and guidelines while taking into account the vast and composite nature of the sector of culture, the task was limited to the categories of cultural heritage. Across the member states of the European Union, these categories have been formed in an essentially common historical process of cultural and of legal-administrative definition, with the aim of administering – in the widest sense of the term - the cultural heritage. More specifically, the handbook addresses the problems of Libraries, Archives, Conservation Institutes, Centres for research formation and production, Temporary Exhibitions and Events, Projects. The handbook is intended to supply useful guidelines and indications for managers of Web projects in cultural entities, taking into account the specific, different characteristics of the various entities.

Another fundamental theme considered in the Handbook is that of user needs. 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 CWA must therefore be considered that of diffusing culture to all citizens, thus favouring their growth. To this end, various strategies (such as pre-selected user-paths, correct choice of language etc.) require investigation.

User needs constitute a complex pattern including the desire for a content which is reliable, comprehensible, rich, and up-dated, and can be used to satisfy purposes as diverse as curiosity, 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.

Among the strategies considered necessary for the best possible development of a CWA, is the co-ordination of information flow from within the organism to the outside. This necessitates the creation of various channels of communication within the Cultural Entity,

and also of controls on the IPR and the privacy level of contents published on the Cultural Web Application. The creation of an archive of CWA's would hence be advisable.

2. Introduction to quality: general criteria for Web Applications

The characteristics and requisites of a quality Web site can be identified by analysing the general principles related to Accessibility of contents and Usability of the Web Application. Accessibility and Usability are the objectives which quality Web projects should aim to attain.

A Web site is accessible when its informational content is available to visitors regardless of disability, of the technology they use to access the site and of the operational context from whence they visit the site. The summary indicates the main initiatives in the field of Accessibility, such as the Web Content Accessibility Guidelines (WCAG) and the European resolutions.

Principles of Usability view the user as a focal point in planning the interface, the modes of interaction and organisation of contents. To guarantee the effectiveness of this "user-centred" methodology, a representative "panel" of users – including disabled users - will be constituted and will check the accessibility of contents.

The criterion of Usability groups together problems in the main categories and in particular those criteria which refer to CWA's, such as Institutional Image and Institutional Responsibility will be addressed.

A system based on the use of Patterns is proposed as a further methodological approach and a useful instrument for planning Quality Web Applications.

The language of Patterns developed from the field of studies on Architecture and has found wider application in the field of Human Computer Interaction (HCI). A Pattern defines a tried solution to a recurring problem in a specific context. A Pattern is made up of three parts: Context, Problem and Solution. Through classifying the problem in specific contexts and through solutions that resolve problems in repeated situations, a Catalogue of Patterns is built up. Here, the individual Patterns appear in sequence; within each are the Related Patterns that are useful for resolving certain aspects specific to Web projects. A first proposal of Catalogue of Patterns and their definitions can be found in the appendix.

3. Minerva Quality Framework for Cultural Web Applications

The specific missions of CWA's require not only that the general quality framework valid for all Web Applications be respected, but also necessitate the adoption of specific goals. These criteria may vary according to the single goals or objectives of the application, and these goals in turn are the direct result of an interaction between the aims of the Cultural Entity and the needs of the users. These comments are valid for all categories of CE with additional notes and clarification for the particularities of each category.

In conclusion, we hope this Handbook will be the first version of a dynamic document which will be enriched, changed and developed in each country and in each specific cultural area.

1 Definitions, principles and basic recommendations

1.1 Definitions

The topic of Web quality in the area of culture 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/or 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 may 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 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).

1.3.2 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.

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.

1.3.3 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.

1.3.4 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.

1.3.5 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.

It is worth to be mentioned that this paragraph is a very brief summary about the matter, which is certainly important but not exactly in the scope of the present Handbook.

1.3.6 Respect of Copyright (IPR) and privacy in contents[1]

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 (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.

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[1] See also Minerva Working Group on IPR.

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.

1.3.7 Long-term preservation of Web contents[2]

 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.

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.

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[2] See also Minerva (www.minervaeurope.org) and Erpanet (www.erpanet.org) projects.

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, after more than ten year of existence, 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 implementation of good Web sites now seeks the characteristic that is common to all successful ventures: quality.

Quality is a word with a very broad meaning and the quality of a Web site (or a cultural Web site) can be viewed in a very subjective way. Having this in mind, it is necessary to investigate in the state of art related to Web application quality.

A milestone in the exploration of quality issues is represented by the ISO 9126 standard for software quality measurement, (called "Software Quality Product Evaluation: Quality Characteristics and Guidelines for their use"), proposed in 1992. Here software quality is defined to be "The totality of features and characteristics of a software product that bear on its ability to satisfy stated or implied needs".

ISO 9126 quality is defined by the following factors:

- Functionality: the amount of "functions" contained in a delivered product.
- Reliability: the capability of a product to maintain its level of performance under stated conditions for a stated period of time".
- Usability: the extent to which a product is convenient, ease, and practical to use
- Efficiency: the amount of operations (and more generally, resources) to achieve a goal.
- Maintainability: the extent to which a product is easy to test, to modify, or to extend.
- Portability: the ability to move the product from one host environment to another; the level of compliance to standards.

ISO/IEC 9126-1 - Information Technology. Software product quality: quality model, defines the Quality 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."

The abovementioned 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 usable and 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:

  - o from the computer monitor (sight) to touch (Braille bar for visually-impaired users),

  - o from the computer monitor (sight) to sound (vocal synthesis for visually-impaired users),

- o 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:

  - o special mouse (for motor-disabled);

  - o special keyboard (for motor-disabled);

- ❑ compensate for disability of a sensory faculty, for example:

  - o 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)[3] version 1.0, 5 May 1999, is particularly important for accessibility of content.

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

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]

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."[4] (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 Cultural Web Applications (CWA)

For the definition of quality in CWA'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 perceivable

The user must be able to recognise that the site visited is a CWA 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 (For example, absence of spelling, grammar and syntactic mistakes).

2.4.2 Recognise that the site is a CWA

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 of 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 contents

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 should be 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 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 CWA 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. It is advisable that external links should be opened in a new window.

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:

- o **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.

- o **Problem***: is a recurring situation in the context that creates imbalances between the forces at play,

- o **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 (if any).

- **Related patterns***: relations between the current pattern and other patterns used in the referral system (if any).

- **Known uses***: detailed reference to practical applications of the current pattern (if any).

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 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 Cultural Entity (CE), 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

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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 Entity 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 Presentation 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.

Presentation 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 valorisation of the cultural heritage, in synergy with territorial values and the valorisation 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

Goal n. 1 (Presentation of the identity of the CE): Compared with other cultural sectors, presentation 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.

Goal n. 2 (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 **Goal n. 3 (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 **Goal n. 10, (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 **Goal n. 11 (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 **Goal n. 12 (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.FQ

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

The Public Library Service: IFLA/Unesco Guidelines for Development / [International Federation of Library Associations and Institutions] Prepared by a working group chaired by Philip Gill on behalf of the Section of Public Libraries. Munchen: Saur, 2001.
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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 (presentation 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 presentation 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.

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[5], 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.

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.

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[5] Euromuse: Network of European Art Museums, http://www.smb.spk-berlin.de:8000/euromuse/home/index.jsp.

Web aspects directly pertaining to territorial cultural heritage, to museums, archives and to libraries, are dealt within separate chapters (cf. 3.3.3, 3.3.4, 3.3.1, 3.3.2) 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 (Presentation of the identity of the CE)** 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
6
DELOS - Network of Excellence for Digital Libraries
http://www.delos-noe.org

3.3.7 Cultural projects

The implementation of a Web site is often one of the outcomes of a cultural project and related to the vocation of the Project, it aims to improve and strengthen strategies for creation and diffusion of cultural contents.

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 the 6th goal. 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 Appendix 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

1   Make Contents Clear

2   Present the Contents

3   Navigating the Site

Context: The site contains a large amount of varying information (news, documents, multimedia elements, etc.). It is not usually possible to present all this information on a single page, nor even to place all the links on the same page.

Conditions: The identity of the supplier of the information must be clear and the general content immediately obvious so that users can then proceed to a more detailed examination. Contents must be of good quality with no risk of disorientation.

Problem: Can the contents of a site be organised clearly in a way that allows users to explore freely without having to follow obligatory paths and without excessive constraints on choice?

Solution: *Contents that are conceptually homogeneous should be grouped together.* That is to say **Group Relevant Information** according to two main criteria:

- grouped information should be conceptually homogeneous,

- the description of contents should proceed from the general to the specific.

There will be areas, sections and sub-sections, within which the contents become progressively richer and the information more detailed. The criterion of homogeneity of grouping should reflect the users' point of view and not that of the planner. Hierarchical ordering of information constitutes a fundamental aid to the clarity and usability of a site. A hierarchical structure, with the **Home Page** at the top, will thus be constructed and will assume the role of introducing the identity of the site and its contents. Within this hierarchical structure the **Clear Reference Points** are inserted so that the **Navigation Systems** can help users travel the structure both vertically and horizontally. The Hyper-textual nature of the Web allows users to build personalised conceptual organisation of content, which may differ from that of the site planner. Lastly, the Site Structure allows for the construction of an effective and efficient **Page Structure.**

Notes: Organising the information of a site is the most complex and delicate job in the whole planning process. In public sites there is often a tendency to organise contents according to the organisational structure of the Administration, General Management, Departments, Offices etc., and to use language suited to the running of public a public entity. It is mistakenly assumed that users are aware of the above. Furthermore, the subject could be the field of diverse organisational bodies within an Administration: on the site however, users should be able to examine the subject in the most complete and exhaustive manner, according to the conceptual model they formed.

Context: The characteristics of the Web differ from those of other means of communication such as print, television and radio.

Conditions: The computer monitor displays much less text than that which can be viewed at one time on the page of a book or newspaper. Unlike television and radio, the hypertext nature of the Web allows users to access information non-sequentially.

Problem: How can content be adapted to the characteristics of the Web and the way in which users employ sites?

Solution: *Organise content clearly and so that main information is easily distinguishable from secondary or supporting information.*
This is fundamental in order to:

- decide the hierarchy of information necessary to set up the **<u>Site Structure</u>** and **<u>Page Structure</u>**,

- construct well organised information for the structure of the text which carries the information,

- create efficient and effective **<u>Form</u>s**.

Allocating different graphics to different areas can also differentiate contents.

MEANINGFUL NAME

Context: The page title, the text of a link, the title of a document, are very significant elements of a Web site. Indeed, these elements are used not only for their own end, but also to navigate the site, to make contents obvious, and to facilitate the reading of the pages.

Conditions: Users form a wide and unselected public; they may not understand specialist or specific terms, professional jargon or unusual words.

Problem: How can important elements be described in a way comprehensible to most users?

Solution: *Use plain language and short sentences to describe real things before concepts.*
In other words; use short texts (40 –60 characters), which should be considered "micro-contents" and which can give users a brief and immediate idea of what they are consulting. These texts should therefore be considered concentrates of content. In particular:

- Page title should be pertinent and significant. It should be specific and refer to the contents of the current page; showing first the specific page (specific) and then the name of the site (general). The page title helps users to navigate as it appears in the browser list of pages visited (Back Button);

- As far as possible, user metaphors from life to describe the function of the **Navigation Systems**. A link called " pay taxes" is probably more meaningful than "Tax and Excises Office;"

- Use **Supplementary Information** to clarify the destination of a link, even when within the text;

- Give meaningful titles to document text, as this constitutes first level reading. Titles must be a concise summary of the entire content.

Because it is read in a different way, the Web has developed its own form of writing, which differs from that of books and newspapers

Context: The page is the most common way to present the information contained in a site. It is often the only possible way. Besides containing information however, the page must also carry the tools with which users interact with the site: navigation bar, links to other information, useful tools, etc.

Conditions: Users must be able to access the various zones of the page with ease and the content of each zone must be related to that of another (i.e. users want clarity in the relation between the information content of the current page and the path which they used to reach it).

Problem: How can the page be organised in such a way that users can clearly perceive the difference between strictly informational content and service information – the latter being features such as site recognition, navigation tools, advertising etc…?

Solution: *Organise all the pages of the site in the same way, with well-defined zones that do not overlap either physically or logically.*
A common model of Page Structure provides for three distinct zones:

- The *Heading,* which contains all the distinctive elements of the site identity (Logo, denomination etc.) and is usually to be found at the top left of the page. Sometimes this includes elements of services, such as **Meta-navigation**. When images are used in the heading, these must be accompanied by adequate text description. Images should be used only when strictly necessary as they are ill suited to the **Variable Geometry** ideally used to realise a page.

    - The *body* of the page contains information in the strict sense. Inside the page there can be further service information such as **Breadcrumbs**, indexes (**Secondary Navigation**), and **Contextual Navigation**. In practice, the body should also be considered an area that can be further sub-divided.

    - Finally, the *navigation bar* (**Main Navigation**) contains fast links to the entry page (**Clear Reference Points**) of each of the sections into which the site is structured.

    When considering the graphics of a page, the following points should be taken into account:

    - The page should be realised using **Variable Geometry** in order to allow users to change the size of the browser window and font size at will.

    - The real sequence of the zones should be:
      Heading – Body – Navigation Bar
      regardless of how these appear on the screen. This can be of

advantage to users with text browser or voice synthesis. There are various techniques to realise this solution;

A navigation system should be incorporated in the page. This should allow users to pass from one zone to another even without a graphic browser;

- The zones must be graphically distinct. Careful use of colour backgrounds eases identification.

The only exceptions to this homogeneity of page presentation (coherence) could be the **Clear Reference Points** as these perform a particular function.

The **Home Page** of the site is in some ways autonomous of the rest of the site, acting as a window or presentation of the site. Thus it can have a different structure. A **Secondary Home Page** may contain essentially service information: description of informative contents in the area, index of sub-sections, **Frequently Asked Questions (FAQ's),** related to the subject, contacts for referents, etc.

HOME PAGE

Context: Every Web site has a Home Page. This is usually the main access point and is also the most visited page of the site.

Conditions: Position must be obvious; an idea of the contents and their organisation within the site must be immediately clear; tools for navigation must be available.

Problem: How to realise a Home Page which immediately communicates the identity of the site and its contents, and where users can easily and rapidly find the contents which interest them.

Solution: *Create a Home Page which introduces the site and which guides users quickly to the contents.*
   The Home Page is the most important page of the site. It must fulfil certain tasks:

- *Give certainty as to the identity of the site.* Users who were deliberately seeking the site must be sure they have reached the desired site; those who reach the site randomly must immediately be aware of the body responsible for the site and the nature of the content. Identity can be manifested in various ways: with a good Logo, with clear links to a page describing the Organisation responsible for contents (**Who we are**),

- *Make contents clear.* Users often do not find what they are seeking on the Home Page and thus guidance is necessary and **Main Navigation** should be clearly visible. **Meta-navigation** is another important element that should be in view, offering functions such as **Search**, **Site Map**, which can be of immediate use.

- *Establish interactive contact with the users.* Users ever more demand direct interaction with the Organisation which is responsible for the site. A clear space on the **Home** Page should be dedicated to the interactive functions available (**Login**, **Newsletter**, …)

- *Communicate News.* All site novelties should be announced on the **Home Page**: new documents, initiatives, etc. The **Home Page** should contain a space dedicated to **News**.

Home Pages are often filled with excess information in the mistaken belief that being on the Home Page means being visible. Experience shows that this is not the case: too much information leads to confusion and users do not see what they need. The Home Page is a special page and its structure can differ from that of other pages in the site. However, the general consistency must be the same; that is to say, elements such as **Meta-navigation** and **Main Navigation** must have the same format and the same position as the other pages.

Context: The hierarchical structure of a site can consist of a large number of levels. Each level can, in turn, contain numerous sections. It is not always possible to contain or limit this complexity.

Conditions: Users must not become disoriented; must not be forced to remember the branches of the structure, and must be able to rely on certain, well-defined paths.

Problem: How can the site offer a description of the structure that allows users to build a conceptual model of the site?

Solution: *Create pages that describe the contents of the sections.*
These are "section Home Pages" (including **News** of the section concerned) and which, like the site **Home Page,** make the contents of the section clear. The body **(Page Structure)** of a **Secondary Home Page** should contain a list of sub-sections together with the relative links. Each element in the list should be accompanied by a brief description of the content. This list could be an ordered list of documents in the section. Where the list is very long, the **Secondary Home Page** can supply a **Form** for searching for documents within the section. In this case it should be clear that the **Search** will be effected only on the documents in the section, and not throughout the whole site. This way of organising the **Secondary Home Page,** together with **Breadcrumbs,** offers users a good system for **Secondary Navigation** and for exploring the contents of a complex site.

LANGUAGE SELECTOR

Context: The pages of the site are available in various languages.

Conditions:

Problem: Users must be able to choose between the languages available.

Solution: *The terms denoting the language should be written in the relative language.*
For example, if an Italian site is available in the English version, the selector button should say "English" and not "inglese". The **Language Selector** should be placed very visibly in the heading of **Page Structure**. If the versions in languages other than the principle language of the site are available only for certain pages of the site, the **Language Selector** should be inserted only into these pages with a feature such as a link title leading to the relevant page.
N.B. Icons with national flags should not be used to indicate language: National flags symbolise nations not languages.

Context: The information contained in a site is structured hierarchically, with areas and sections inter-linked according to criteria chosen by the site planners. The names of sections and areas do not necessarily explain the content.

Conditions: In order to make a quick choice of path for reaching the desired information, users must know the structure of the site.

Problem: How can users be helped in navigating and orienting the site?

Solution: *Supply a Site Map.*
The **Site Map** should be easily reached and ideally, should be included in **Meta-navigation** and be directly accessible from every page.
The **Site Map** should be created using nested lists in order to give a sense of the hierarchy and depth of the structure. It should be context sensitive in that the current position within the structure is indicated.

Notes: In the case of sites with complex organisation of information, i.e. areas with many sections which in turn, are divided into sub-areas with many documents, the **Site Map** can itself become a complicated page to read. In this case there is often a tendency to represent the map using an image or picture where directories and sub-directories are nicely drawn. This however, constitutes a serious obstacle to accessibility in an element such as a **Site Map, which** serves to aid navigation.

NEWS

Context: A site is an entity in continuous evolution and therefore must have some way of informing users of new information; documents, press releases, announcements of events etc. Giving information of this type is in many cases indispensable: e.g. publication of new laws and regulations, explanatory circulars etc.

Conditions: Users must be informed of news and novelties on the site without having to navigate the site to find it.

Problem: How can users be informed of news?

Solution: C*reate a zone on the* **Home Page** *dedicated to news.*
 Time and date of last update must be indicated. The list of news should be chronologically ordered, with most recent additions at the top. Each element should give date of publication and a brief description of the published document. Elements should remain in the list for an amount of time dependent on the importance of the content of the document. This is generally not more than a month from publication. During this time, "older" news can be replaced with new elements but care should be taken that news of events remain listed at least until the event is over. The news zone should be clearly visible on the **Home Page.** A similar solution should be used in the **Secondary Home Page,** considering however that the news here is relevant only to the section itself.

Notes: The news area is often created using programming tools (applet and script) which present a window inside which elements of news scroll continuously. This method however, renders the news invisible to all those users whose browsers do not support applet and script, who use screen readers or magnifiers, and who do not use a mouse. The result therefore, is to render the news area inaccessible.

WHO WE ARE

Context: The identity of the producer of the information contained in the Web site should be clear. When the producer is also a Cultural Entity it becomes fundamental to state identity, mission and aim of the site.

Conditions: Users should immediately and rapidly be able to recognise the identity of the Cultural Entity that produced the information; mission and aim of the presence of the Public Entity on the Web should be obvious.

Problem: How can the site communicate the identity of the Cultural Entity to the user?

Solution: *Provide introductory pages that can be reached from the Main Navigation function.*
The introductory pages should clearly describe the identity of the Cultural Entity with information on:

- The history of the Cultural Entity;

- Its institutional aims;

- The cultural and scientific content it produces, conserves, safeguards and diffuses;

- Its organisational structure;

- Its seat and area of operation.

Context: The site contains material subject to copyright. Users may be asked to give sensitive personal details or information protected by privacy laws.

Conditions: Users must be aware of the conditions for using the documents on the site; must know the policies for privacy and security that are activated; must know the policy for accessibility of content.

Problem: How can users be informed of the conditions of use of the site?

Solution: *Every page can contain links to pages that describe the conditions of use. These links can be presented as horizontal bars such as*:

<u>Conditions of use</u> **|** <u>Copyright</u> **|** <u>Privacy</u> **|** <u>Accessibility</u>

The descriptive pages should employ clear and simple language; avoiding jargon or technical terms. These pages should give users some opportunity for direct feedback on content.

EASE OF READING

Context: A great deal of information, such as results of a search or presentation of records of a DataBase must be presented in table form (rows and columns).

Conditions: The table may be complex; with many columns or have rows full of text which makes it difficult to read.

Problem: The table must be easily legible in order to facilitate the search for particular pieces of information.

Solution: *Alternate the background colour of the rows.*
Use two slightly different shades of a soft colour. The resulting effect can be heightened with the introduction of a dark, horizontal line between the rows in the table.

Notes: Alternating colours and a horizontal line eliminate the need for drawing the borders on the table. Borders make tables difficult to read on the monitor.

Context: The information contained in a site is by nature hyper-textual: a document can lead to other documents to be found in the same site or in other sites. Unlike paper documents, which usually present quotes and bibliographic references together in a special final section (or in notes and footnotes), in a Web document, these elements are inserted directly into the text via hypertext links.

Condition: Users may desire to evaluate whether a hypertext link is useful for the ends of understanding the document currently under examination. It must be clear whether a link will open in another window.

Problem: How can the content of the destination of the link be communicated?

Solution: *Show a brief description of the aims of the link and its destination.* Supplementary information is extra and redundant because it is to be supposed that the context clarifies the aim of the proposed link. The supplementary information appears in the form of a small window that appears when the mouse is passed over the link title.
The "message" should not be so long as to disturb the reading of the document: a short phrase is usually sufficient.

Notes: It is fundamental that users be informed whether links will open in a new window and, above all, whether the document is situated in another site. Indeed, a different site would present a different environment, which could disorient users.

VARIABLE GEOMETRY

Context: The presentation of a Web page is very important: the page dimensions and relation between the proportions of various zones on the page, is the result of planning according to the function of the content.

Conditions: Users may require size of the browser window and of the text font to differ from that established and pre-set by the site planner.

Problem: How can users view the page and its content easily and independently of the size of the browser window and the text font?

Solution: *Create pages with variable geometry, and where font size and dimensions of the browser window can be easily changed.*
This technique, also known as "liquid layout", consists of using:

- proportional rather than absolute units of measure in defining the width of the elements of a page;

- Proportional rather than absolute measures in defining the font used in the text.

Notes: Notes such as "Optimised at 800x600 screen resolution" are still to be found on the Web. While application of the resolution advised might solve graphic requirements, users may prefer not to, or even be unable to apply the specific settings. Web graphics designers must take into account the fact that preferred user-modes for viewing the pages of the site cannot always be predicted and imposing conditions can restrict access. In certain situations users may prefer to choose reduced quality of graphics, rather than conform to constraints.

Context: A page can contain a great deal of information. It may be the end result of a search consisting of many elements or may be a very long document.

Conditions: There must be some indication of the quantity of information currently available and time this information must be usable.

Problem: How can large quantities of information be presented in order to maximise ease, pleasantness and effectiveness of use?

Solution: *The information should be divided into pages; both the total number of pages and the position of the current page should be indicated.* This information should appear at the top and bottom of every page and should have a format such as:

Page 4 of 5   < previous 1 2 3 **4** 5 next>

On the left is the position of the current page. On the right is a mini navigation-bar with **bold type** to indicate the current page, while the other pages are active links.

There is no single criterion for page layout, nor is it possible to give precise indications for its organisation. While the results of a **Basic Search** or an **Advanced Search** can show 10 elements found per page, it is not possible to give similarly precise indications for a long document. It is possible to define the maximum number of lines per page and thus the programme automatically composes the page layout. This can lead, however, to problems with logical division of the text. Only by analysing the text of each single document can the best solution be reached (automatic or manual page layout)

Context: While the Web is a tool conceived for on-line consultation of information, the length of the text or the need for more a more detailed examination, often mean that a page or document found on the site requires off-line consultation.

Conditions: Users desire to print a clean version of the text, without navigation bars and other non-relevant objects; the text must be printed correctly according to the format set-up on the printer;

Problem: How can correct print version of the content of the page or document be offered?

Solution: *Provide an ad hoc version of the document for printing purposes, to be reached via a link such as print version, inserted at the top and bottom of the page.* The print version is in fact a separate, single page with layout that usually includes only the heading, the text and notes such as "Printed: *date…* From: *site address…* page n. of n…." It has font and size that can easily be adapted to the fonts recognised by the printer. Constructing a page with **Variable Geometry** can attain these features. If the current page is a part of a document (**Page Layout**) then the print version will apply to the whole document. The text is printed in two steps: first access the link with print version, next activate the print command from the browser.

In other words, the print version of a document must not be reached through programme elements such as script of applet that interact directly with the local printer. In this way users maintain complete control of the process and can interrupt printing without interfering with navigation on the site.

Context: The site is organised into a hierarchical structure that may have a number of levels. Furthermore, the information content may cover many different topics that cannot always be easily inter-linked.

Conditions: A complex site can be disorienting for first-time visitors, especially if it is reached from a link on another site. In a complex site, the navigation tools may give very specialised information, or too much information or to render them immediately useful. On the other hand, users who are familiar with the site do not need to follow long hierarchical trees to move within it.

Problem: How can a site indicate a good starting point for navigation?

Solution: *Supply clear reference points, which can be reached immediately from any page.* The **Home Page** - the most obvious reference point - gives indications on the organisation of the site, its contents and the **Navigation Systems** available. Where they include a large amount of information, the areas and sections (**Site Structure**), should have their own home page (**Secondary Home Page**) which explains content and further sub-divisions. These **Clear Reference Points** constitute an ideal place for creating **Reliable Bookmarks** compiled by the habitual or interested user. Other **Clear Reference Points** could be **Search Page** and **Site Map.**

Context: Users are initially unaware of the organisation of site contents. Generally speaking, the larger the content, the more difficult is its presentation.

Conditions: Users must be able to explore the structure and navigate the site with relative ease; must have various means of doing so; must rely on what they know and see; must not become disoriented.

Problem: How can navigation be facilitated?

Solution: *Plan various navigation systems which work together to offer various alternative methods.*
The various navigation systems are:

- **Main Navigation:** leads to the principle areas that form the **Site Structure**. It is present on every page of the site and is always in the same position in the **Page Structure.** A link to **Secondary Home Page,** which describes the contents of the area, is usually included as one of its elements.

- **Secondary Navigation**: leads to exploration of the underlying structure of an area or section. It does not have a fixed position on each page of the site because its characteristics depend on the degree of complexity of the **Site Structure.**

- **Meta-navigation:** includes indispensable utilities for supplementing inevitable shortcomings in the other **Navigation Systems**.

- **Contextual Navigation** is used to construct a grouping of linked documents - a dossier. It is usually positioned to the right of the body of the **Page Structure**, so as to be visible and create a graphic lead-in to the central content.

The various systems of navigation can be planned in order to offer inter-complementary information. Links to the same object in different systems should be avoided.

Context: The site is hierarchically organised into areas, sections and sub-sections. The whole constitutes a large number of elements.

Conditions: Users must be able to orient easily throughout the structure of the site. Too much information could be disorienting.

Problem: How can the site supply a navigation mode without presenting lists of options that are too long for practicable consultation?

Solution: *Build a main navigation system (navigation bar) including no more than six or seven elements and which appears in the same position in the structure of every page.* The navigation bar is one of the most important components of a page in that it gives users a clear idea of content and allows navigation without disorientation. For this reason it is important that:

- *The content is easily memorable* and thus:

    a It must not contain more than six or seven elements. This is widely recognised as the limit of the human capacity for short term memory,

    b Each element must have a **Meaningful Name** that readily evokes the content of the destination. This generally links to the **Secondary Home Page**, which describes the content of the areas (**Site Structure**). **Supplementary Information** can be added to each element to give further clarity,

    c elements must be presented in real list, text format and not images;

- *The Main Navigation Bar should be in the same position on every page.* The Web offers interesting options that allow the **Main Navigation** to be linked to other **Navigation Systems** present on the site. The most common options are:

    a Place the navigation bar on one or two horizontal rows immediately below the page heading. This option:

      - has the advantage of leaving as much space as possible for the body of the page,

      - has the advantage of being always and totally foregrounded,

      - has the disadvantage of limited space. The size of the page (**Variable Geometry**) depends on choices made by the user. The real width depends on the width of the open browser window. The choice of character display on the screen can further decrease

the available length of the horizontal row. As it is impossible to predict the space available, it becomes impossible to establish the number of elements and the length of each so as to maintain reasonable page layout in varying conditions.

- Has the disadvantage of potential confusion with elements of **Meta-navigation,** which are usually placed in the heading immediately above.

b Place the navigation bar in a column to the left of the page. This option largely maintains the advantages of the former while not having the same disadvantages. It is easily adaptable to the real size of the window and is clearly distinct from all other **Navigation Systems** present. Indeed, it is the option most frequently adopted in successful sites.

- *The navigation bar must have the same graphical aspect on all the pages.* Background colour, text colour and list markers must be consistently the same.

Context: The site is organised with a hierarchical structure. There is a **Main Navigation** system. Single areas are organised into sections or contain a large number of documents.

Conditions: Users must be able to orient easily throughout the structure of the section. Too much information could be disorienting.

Problem: How can the site supply a way of navigating the chosen area without presenting a list of options that is too long for practicable consultation?

Solution: *Build a Secondary Navigation System (index) which is distinct from **Main Navigation** and consists simply of a list of sections into which the single area is divided.*
Creating a good system of **Secondary Navigation** poses more questions than **Main Navigation** due to the existing of multiple variables, not all of which are clearly definable at the planning stage of the site. How many sections should an area contain? How can an index of the documents in a section be organised effectively and efficiently, especially when the number of documents is large? In this case, it is considered reasonable to imagine an area and the entire structure below it as a separate site, and thus to apply to it the criteria which are valid for the whole site. Coherence is guaranteed by the heading and the **Main Navigation** bar, which are the same for every page. In conclusion:

- The **Secondary Home Page** acts as a Home Page and therefore introduces the content of the area: a list of the sub-sections or a list of the documents present. More specifically:

  o an annotated list of the sections where every element, besides having a **Meaningful Name**, has a description of contents,

  o The documents are listed in order according to criteria chosen by the user. When there is a large number of documents, the technique of **Page Layout** is used, **Search Hints** are given, there are answers to **Frequently Asked Questions (FAQ's)** relative to the topics and contact for referents are given.

- **Breadcrumbs** give an idea of the depth of the structure and aid navigation within it,

- **Contextual Navigation** can also allow users to explore a group of documents related to the document under current perusal.

Context: A document is a conceptual part of a greater whole of documents, or is a part of a more complex document – i.e. a chapter of a book.

Conditions: Users need a perception of the whole of the documents or the entire document. The single documents that make up the whole must be accessible.

Problem: How can a virtual dossier or a complex document be constructed in a way that makes it easily usable?

Solution: *Create a navigation system that:*

- *Contains links to all the documents in the dossier or the whole complex document. The documents can be:*

  - *text documents*

  - *multimedia documents*

  - *links to external sites*

- *is common to all the documents in the dossier (where they belong to the site)*

- *visually and graphically connect with the central text of the document*

The ideal position for **Contextual Navigation** is to the right of the body of the **Page Structure.**

Notes: **Contextual Navigation** should not be confused with **Page Layout** of a document. This latter resolves problems of legibility related to technical characteristics of tools used for navigating the Web, while Contextual Navigation resolves the problem of offering richness and completeness of content.

Context: However well planned, site navigation tools may prove to be insufficient for fast and reliable access to information. This may be the case for users who need to contact the site or the Organisation on the basis of information retrieved during navigation or because the information sought is not present.

Conditions: Certain types of function for use on the site are relevant to every page.

Problem: How can help tools be made readily available?

Solution: *Every page should have a zone containing elements for communication and general functioning.*
These elements are usually: **Home**, **Search Page, Site Map. Home** indicates a link to the **Home Page**. In order to give the sense of a single block, all the elements of **Meta-navigation** should be visibly grouped in the same place on every page. An ideal position is the heading of **Page Structure**, just after the Logo**.**

Notes: One feature of the elements of Meta-navigation is that of opening a new window. Indeed, each element needs further explanation, which can be briefly included directly in the page from whence it will be used.

Context: The site and the information it contains are structured into various levels. There are a large number of levels, or the site is notably complex. The site has a system of **Main Navigation** and **Secondary Navigation.**

Conditions: Users may not be familiar with the structure of the site, may wish to pass to previous points on the path without having to backtrack via repeated pressing of the "Back" button of the browser. Users need to understand the structure of the information and create a map by associating aspects and features of a type of document to the path followed, in order to trace the document.

Problem: How can the page show users their current position within the structure?

Solution: *Show the path from the Home Page to the current page.*

Every page except the Home Page, should contain something similar to the following:

Home > Area > Section > Current Page

where Home refers to the Home Page and Area, Section and Current Page are titles of the area, section and current page respectively. The path shows the position of the current page with respect to the structure of the site. The elements in the path are active links and offer immediate access. Current Page, on the other hand, should not be a link as it is generally considered a serious mistake to place links to current page, except where these leads to other parts of the same. Separation of various points on the path can be shown using the "more than" symbol >. Other characters such as slash /, or => "equals more than" give a sense of progression.

The names used to mark the path must be the meaningful names (with the exclusion of Home Page, which has by now entered common usage). Areas and sections usually adopt the name that appears in the **Main Navigation** (area) and in **Secondary Navigation** (section). The Current Page should be indicated using the page title.

The path should be inserted at the beginning (to the left of the first line) of the area contained in **Page Structure**. In this way it is immediately visible and does not steal space from the main content of the page.

Notes: The path must be realised using text and not images or symbols such as arrows and other graphical elements (e.g. Windows icons and symbols), which would compromise legibility and accessibility.

Context: The bookmark function is present in all browsers and is extremely useful. For various reasons however, the URL of pages in the site may be changed, thus rendering bookmarking useless.

Conditions: Users require bookmarks that will remain valid in time.

Problem: How can the site guarantee that users' bookmarks remain valid?

Solution: *In case the URL of a page is modified, supply an automatic re-addressing function for the new URL, with note to the user when updating has occurred. (**Communicate Results**).*
Inauspicious messages such as "Error 404: Object Not Found", with its many variants, informing users of the inaccessibility of documents and/or changes in links and address, are unpleasant and express negligence on the part of the site managers. The error is often due to mistaken description of the page URL.
When similar messages appear after bookmarking a page, displeasure on the part of the user is even greater. It takes little to avoid such errors; first of all, care should be taken in writing the URL of links, and a "de visu" check on validity should be effected. Secondly, when change of address is deliberate, a page should be created informing users of the new URL and automatically redirecting to the new destination. Where re-directing is not possible, it is often possible to personalise the Web server so that when a bookmarked page is not found, the user reaches a page that not only explains the error clearly, but also supplies help and functions for recovering the lost bookmark.

Context: Even in sites with a good **<u>Navigation System</u>** it can be difficult to find certain information. The presence of a Search tool is therefore a fundamental aid to the navigation system.

Conditions: Information can be sought in many ways; search is an auxiliary to navigation and must not substitute it; users may not be familiar with sophisticated search techniques and may not know the classification methods of the documents contained within a site.

Problem: How can users seek a document in the site?

Solution: *Provide a page dedicated to search.* Provide a page dedicated to search, which guarantees the users immediate availability of these functions from any page of the site (**<u>Clear Reference Points</u>**, ***Meta-navigation***). The page can be structured (**<u>Page Structure</u>**) to give users full access to search tools (**<u>Basic Search, Advanced Search, Frequently Asked Questions,</u>** suggestions, etc.)
There should be a single **<u>Search Page</u>** for the whole site. This page should clearly define exactly what users can search for. Users may not have the same concept of a document or page as the site planners. Time intervals of documents in the site should be defined (e.g. with simple examples), and the available search modes should be explained.

BASIC SEARCH

Context: The site has a good **Navigation System** and a **Search Page**. The latter offers various search modes.

Conditions: The user is not an expert in seeking documents, and therefore is not familiar with concepts such as Boolean loop, similarity, etc. The user employs familiar terms that may originate in everyday language rather than technical or specialist jargon;

Problem: How can the site supply a simple and immediate search tool?

Solution: *Offer a search mode where the only option is to indicate a word or phrase to search for.* This function should be presented in a **Form** with a single field carrying a label such as "text to look for" followed by a field into which the user types the text and a "Search" button for starting the Search. The results of the search should be presented on a new page in the form of a list ordered for **Ease of Reading**. The order in which the results are presented in specified on the Search Page. The number of elements in the list should not exceed 10: in the case of more than 10 elements, **Page Layout** should indicate both the total number of elements found, and the total number of pages into which they are divided. Every element should indicate:

- Page Title

- Path from Home Page to the element found.(**Breadcrumbs**)

- Two or three lines of text from the page found

- URL, size and date

Notes: The text to look for can consist of one or more words. The **Search Page** should specify how the search engine functions in the case of a text with more than one word. In this search mode it is not usual for users to use the logical operators AND, OR and NOT: How many users really understand the meaning and how many use them correctly? It would be advisable to provide rely on provision of a good **Advanced Search**.

ADVANCED SEARCH

Context: The site has good **Navigation Systems** and a **Basic Search** tool.

Conditions: The user wishes to personalise search parameters and criteria; the user wishes to control the search mode but does not know how; the user wishes to employ successive filters on the searches and to control the presentation of the results of the search.

Problem: How can search functions on the site be strengthened?

Solution: *Offer an advanced search mode that allows users to control at least:*

- *search chain*

- *area of the site to be searched*

- *time reference of the documents sought*

- *presentation of the results*

In order to allow the user to manage the search chain in the simplest way is to offer three classical choices:

- Look for ALL the words

- Look for AT LEAST ONE word

- Look for THE EXACT PHRASE

The user can be allowed to define limits to the area of search within the site by offering the choice of limiting the search to one or more chosen areas (where the site is organised in such a way through an appropriate **Site Structure**), or by offering a choice between various types of documents (where documents have been thus classified). This case however, is more difficult to realise because the problems of classifying documents in the field of archives and libraries are here exacerbated by the hazy definition of the concept of document when applied to a Web site.

When considering the time reference of documents present on the site, particular attention should be paid to the definition of time period. Indeed, depending on the type of document, this definition could seem to refer to either the date of insertion of the document in the site (system date), or to the juridical and administrative validity of documents such as laws, regulations, circulars, communications, etc.

Finally, results of the search can be organised by giving the option of modifying one or more aspects of the presentation of results for the **Basic Search**: the number of elements per page, the typical features of each element presented, etc.

FREQUENTLY ASKED QUESTIONS (FAQ'S)

Context: When a Public Administrative Body is present on Internet with a Web site, a window is opened to the citizen. Even when interactivity – taken to be the possibility for direct communication between citizen and Administration – is limited or absent, the citizen expects to find answers to questions and doubts about topics relevant and pertinent to the said administrative body.

Conditions: The user wishes to know "how to act" with respect to a norm or regulation, not the "reasoning" behind said norm or regulation; the user brings a "personal case" to which an answer is required;

Problem: How can users' questions be predicted?

Solution: *Provide a system with answers to Frequently Asked Questions (FAQ's) that is appropriate to the structure of the information present in the site.*
The system of FAQ's is a well-proven method for supplying information on the information present in a site. Site visitors are often advised to read the FAQ's before sending e-mails with questions. Via the FAQ's, users are guided to an optimum use of the site information.

The system of FAQ's should be directly connected to the mode for communicating with the user and should be "context sensitive". On opening the page for communication the FAQ's should be found.

Well-organised FAQ's should be contained in a thematic index where the themes are the topics of the areas and sections of the site (**<u>Site Structure</u>**).

And thus:

- General FAQ's, activated from the Home Page;

- Thematic FAQ's, activated from every single section (or from every single area);

- Section FAQ's, activated from documents/pages of particular relevance.

Context: Forms are one of the most common methods for communication between users and the Web site. The user must supply information, filling in fields/lozenges or giving guided answers to questions. The information thus requested is usually in "codified" and not discursive form.

Conditions: The user wishes to understand clearly the type of information requested; it should be clear which fields are compulsory and which are optional;

Problem: How can the type of information required be indicated clearly and simply?

Solution: *Plan forms with:*

- *A **Meaningful Name***

- *The length of the field or lozenge should be appropriate to the information requested*

- *Labels for the fields should be clear, well placed and expressed in plain and familiar language*

- *the "focus" in the field to fill in should be highlighted*

- *fields should be presented in logical and reasonably comprehensible succession*

- *Compulsory fields should be grouped together and distinguished from optional fields, perhaps with explicit statements at the beginning of each group*

A Meaningful Name and a brief description of the reasons for filling in the form;

Appropriate length: A field is usually made up of a box in which the user can write freely. The length of the box should reflect the average probable length of the text.

- *Labels for the fields should be clear, well placed with relation to the field*: Clear labels in the request for information: if a label indicate *address,* it must indicate whether road, number, CAP and city should be inserted, or only one or part of this information. Well positioned is to be taken to mean near to the field to which it refers and vertically aligned, as should be the boxes to be filled in. Tidy presentation facilitates use.

"Focus" in the field to fill in should be highlighted: for example by changing colour of the label and the relevant box and adding **Supplementary Information**.

Logical succession in the fields: If, for example, the form requests both personal and professional information, all fields relative to the first group should be followed by all fields relative to the second.

Group compulsory fields: On the Web there is a tendency to present forms with the intent of acquiring information for "statistical purposes". This disturbs the user; filling in forms takes time and time, on the Web, is money. Compulsory fields should therefore be distinct form optional fields to allow the user to fill in the first and then send the form. The beginning and end of compulsory fields should be clearly indicated, perhaps graphically.

Context: Users interact continuously with the site: navigate via links; fill in forms for searches or to send information; download various types of documents from the site to their computer.

Conditions: In order to maintain control of the situation, users need feedback on the results of operations and actions undertaken.

Problem: How can appropriate feedback be given on users' actions?

Solution: *Inform users, both implicitly and explicitly, of the results of their actions.*

Navigation: When users follow a link, they should receive information on correct execution of the action and appearance of the requested page (implicit communication) or a page explaining why the requested page is not available and what steps to follow to obtain it.

Fill in forms: The user has correctly filled in the input fields in a form. The following are some of the most common results:

1. The user has made semantic errors or errors of format in filling in the fields in the **Form;**

2. The user has not filled in the compulsory fields;

3. The user has filled in all fields correctly.

In cases 1 and 2, a message should be received informing the user:

a) That there is an error, stating the reason (semantic, format, omission). this information message should be clearly visible on the page;

b) where there is an error, the field concerned should be highlighted;

c) How to correct the error, for example by supplying an example indication the format and the correct syntax for the information to be supplied.

In case 3, the method chosen to Communicate the Result depends on the reasons for filling in the form: for **Search,** for **Registration** or for **Login.**

Download Files: When the site offers the feature of downloading files, the type and size of the file should always be indicated. This is in order to inform users of the implications of the operation before it is undertaken.

Context: On the site there are some functions, such as the Newsletter, taking part in discussion groups and access to reserved sections, where the user is required to give identification. A great deal of information could be requested and this data can consist of personal details such as name, age, address and e-mail address.

Conditions: The users must be able to communicate all the data at once; must have control over managing their personal data.

Problem: How can users identify themselves easily?

Solution: *Activate a function of recognition based on very few parameters that are easy to remember.*

The parameters for recognition should be reduced to two: user name and password. The complete data, on the other hand, should be requested only once during **Registration.** Some important features of **Login** are:

Delayed Login: this means activating the identification procedure only at the moment it is required and not before;

Allow use of an e-mail address as user name: This facilitates safe recovery of password in case it is forgotten.

Allow memorisation of the parameters on the user's computer, for example through installation of "cookies". In this way the fields will be automatically filled in with the correct information on successive visits.

Security: Some functions (for example on-line purchase) require that users be aware that the link is effected through safe connections. That is to say, connections with appropriate security protocol.

Always **Communicate the Results** of the action.

Context: There are some functions that require users to identify themselves via a Login. For these personalised services users are requested to supply various items of personal information which may be of a reserved nature.

Conditions: Users do not wish to be obliged to supply the same information every time they use a personalised service, but wish to be guaranteed correct management of their data.

Problem: How can the site avoid asking users to provide large quantities of personal information every time they access personalised services?

Solution: *Offer users the possibility of supplying personal data once only*. The **Registration** procedure must be realised with great care:

a) Only information which is really relevant should be requested;

b) If a lot of information is requested, the procedure should consist of various steps, each of which asks for few and similar pieces of information;

c) After each step, the users should receive feedback (**Communicate the results**);

d) There must be a procedure or function which allows users to modify data and cancel **Registration**;

e) **The Modes of Use** must always be clear and declared.

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 field of topics dealt with, would like to be regularly informed of news but is not able to visit the site every day.

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. The **Newsletter** would ideally use the same headings (**Page Structure)** 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/item.

- *Articles*: 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***:** this 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 appropriate, **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 and 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 **Site Map.**

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

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
		Collections
	Information system	Records
		Finding Aids
		Creators
	Conditions of access	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. 2** – Quality in Web Applications: general principles and operative proposals	Preparation for planning: motivations and contents
see Chap. 3 – Definition of the cultural category **Archives**	• **Site Structure** • **Main Navigation**	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 secudary 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		• *History*
Goal n. 1 – Represent the Identity of the Library Goal n. 7 – Support cultural tourism		• *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		• *About us*

the Activity of the Library		

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
		Historical

	Archives	Photographical
		Multimedia
	Booking	Individual Visits
		Collective Visits
	Bookshop	
	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).*

Examining 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), 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

1. Foreword
2. European rules
3. Member states rules
4. International documents

1. 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 States – 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 aim in view, the present directory is intended to be available on the Minerva Website throughout the six months of the Italian Presidency, with periodical updates and, where possible, with links to the full texts.

Structure and criteria

It is an un-annotated list, organised by nation and – when possible – according to the different sources of the laws. To a few documents only, concise remarks have been added.

Indeed, this research should not be considered as being strictly limited to legislation (which at first appears, 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 Applications, 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. In some cases, different kinds of documents, related to the reported rules, have also been included, as well as some international standards.

On purpose, the study excludes, instead, any document widely concerning Web Applications but more closely connected to other issues dealing with the so-called Information Society: internet protocols, domains, infrastructures; broadband; metadata; supply of electronic services; information security and privacy; distance learning; intellectual property; creation, reproduction and storage of electronic documents on offline devices; electronic signature; e-commerce; telecommunications in general, etc.

Links have been chosen also within non-official Web sources, in order to improve the availabilility of the regulations.

Anyway, the directory is supposed to be a work in progress, open to the evolution in the regulations, as well as to implementations by compilers and users.

Methodology and sources

The research has been mostly carried out at the Italian Senate Library, taking advantage of its collection of sources and search tools. In particular, the official sources for the laws of the EU Countries have been selected from the bibliography *Le pubblicazioni ufficiali dei Paesi dell'Unione Europea attraverso le raccolte della Biblioteca del Senato*, appendix of *La bibliografia italiana dei Parlamenti nazionali dell'Unione Europea*, to be shortly edited by the Library.

The main keywords *Web* and *Internet* – variously combined with *Digitalization, Accessibility, Usability, Quality, (Web)Site, Public* (in the different languages) – have been used as lexical filters in searching the databases and the Web.
From the point of view of chronological coverage, documents from 1995 to the present day have been included.

The last visit to each Internet resource goes back to the period between August and October 2003.

Critical remarks

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

Above all, the research has been 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.

Secondly, the so-called grey literature (such as circulars, deliberations, and other less "visible" documents) is also considered relevant.

Difficulties increase because of the number of Countries involved, each with its own legal tradition and different lists and registers as sources; indeed, the recent enlargement of the EU and the prospective of further expansion means that the range of the study should become wider in the long term. At the moment, the Senate Library receives the official publications from the present 15 EU Members, but not yet from the next 10 States.

In a similar panorama, alongside the role of official European and national gazettes (updated, but with poor semantic indexing of texts), and of law databases available on CD-ROM (with semantic indexing and a search-oriented data organisation, but less updated), it would seem that the role of Internet resources is central, even considering the caution that such a statement requires.

Indeed, national governments, inter-governmental and non-governmental organisations are more and more using the Web to spread information, sometimes in addition to, or in substitution of, press releases. The result is greater access to documentation from public sources, even if with many differences among the States with regard to chronological cover, availability of full texts, semantic indexing, search tools.

2. European Regulations

Council Resolution of 18 February 2003 on the implementation of the eEurope 2005 Action Plan.

http://europa.eu.int/celex/

Council Resolution of 25 March 2002 on the eEurope Action Plan 2002: accessibility of public Websites and their content.

http://europa.eu.int/celex/

http://europa.eu.int/eur-lex/pri/en/oj/dat/2002/c_086/c_08620020410en00020003.pdf

http://www.innovazione.gov.it/ita/intervento/normativa/allegati/ris_250302.shtml

RELATED DOCUMENTS:

Communication from the Commission to the Council, the European Parliament, the Economic and social Committee, and the Committee of Regions - eEurope 2002: Accessibility of Public Web Sites and their Content.
http://europa.eu.int/eur-lex/en/com/cnc/2001/com2001_0529en01.pdf

Communication from the Commission to the Council, the European Parliament, the Economic and Social Committee and the Committee of the Regions - eEurope 2002 Final Report.
http://europa.eu.int/celex/

Council Decision of 3 December 2001 on the European Year of People with Disabilities 2003.

http://europa.eu.int/celex/

Council Resolution of 8 October 2001 on "e-Inclusion" - Exploiting the opportunities of the information society for social inclusion.

http://europa.eu.int/celex/

http://www.innovazione.gov.it/ita/intervento/normativa/allegati/ris_081001.shtml

European Parliament legislative resolution on the Commission communication on eEurope - An Information Society For All: a Commission Initiative for the Special

European Council of Lisbon, 23 and 24 March 2000 (COM(1999) 687 - C5-0063/2000 - 2000/2034(COS))

> http://europa.eu.int/celex/

Other documents

Ministerial declaration on e-government in Europe.

> http://europa.eu.int/information_society/eeurope/egovconf/doc/ministerial_declaration.d
oc

Council Resolution on 6 February 2003 "eAccessibility"- Improving the access of people with disabilities to the knowledge based society.

> http://europa.eu.int/celex/

> http://www.innovazione.gov.it/ita/intervento/normativa/allegati/concl_060203.shtml

European Parliament resolution on the Communication from the Commission to the Council, the European Parliament, the Economic and Social Committee and the Committee of the Regions - Towards a barrier-free Europe for people with disabilities.

> http://www.innovazione.gov.it/ita/intervento/normativa/allegati/com_120500.pdf

3. Member states rules

Austria

Vergabekriterien für das Österreichische e-Government Gütesiegel.

   http://www.guetesiegel.gv.at/guetesiegel_v1.6.pdf

e-Government strategien – Teil I.

   http://www.cio.gv.at/egovernment/strategy/Teil_I.pdf

e-Government strategien – Teil II.

   http://www.cio.gv.at/egovernment/strategy/Teil_II.pdf

e-Government Gesetz (2003).

   http://labs.cio.gv.at/egovg/text/Entwurf-eGovG-2003-07-15.pdf

Aktionsplan *e*Europe 2002, Maßnahmenkatalog, Umsetzung in Österreich, Stand: 1.3.2002.

   http://www.bka.gv.at/bka/service/publikationen/infogesellschaft/apmaerz02.pdf

Bericht über die Umsetzung der WAI1-Leitlinien in Österreich.

   http://www.cio.gv.at/egovernment/wai/Umsetzungsbericht.pdf

SOURCES
- *Bundesegesetzblatt für die Republik Österreich, 1945-   .*

FORMER TITLE:

Gesetzblatt für Das Land Österreich.

Web sources:

- Parliament: <http://www.parlinkom.gv.at/>

- Government: <http://www.austria.gv.at/e/>

- Chief Information Office: < http://www.cio.gv.at/>

- *Guetesiegel*: <http://www.guetesiegel.gv.at/>

Belgium

For the Flemish Community

- eFl@nders
- E-government in Flanders – vision and electronic services towards citizens
- Guidelines for the corporate identity and technical standards of the Ministry of the Flemish Community on intranet and internet sites
- Accessibility for disabled to Websites of the Ministry of the Flemish Community
- Digitisation of culture in Flanders

The initiatives mentioned below intend to present guidelines and standards to improve (the quality of) Websites in Flanders and within the Ministry of the Flemish Community.

eFl@nders
www.eflanders.be
With its eFl@nders - Digital Action Plan Flanders, the Flemish Government wishes to join the objectives of the eEurope 2002 Action Plan which was endorsed by the European Council in Feira on the 19th and 20th of June 2000, but wants to go further and more in to detail. The Flemish Government Agreement as well as several policy documents of Flemish ministers pay attention to the development of the Digital Action Plan.

E-government in Flanders – vision and electronic services towards citizens

www.vlaanderen.be/egov
With its e-governmentprogramme the Flemish government wants to create an integrated government portal through which all citizens, companies, organisations, institutions and associations can communicate in confidence with an interactive government. All governmental bodies collaborate to offer everyone in Flanders efficient governmental services, independent of place, time and communication channel.
This basic mission is based on the following principles:
- to offer an open, accessible Flemish government
- to offer better, more efficient and more customer-centred services
- this objective should be reached through an improved internal organisational management of the Flemish government.

Guidelines for the corporate identity and technical standards of the Ministry of the Flemish Community on intranet and internet sites

The purpose of the corporate identity of the Ministry of the Flemish Community is to create Websites whose structure is uniform and thematic, instead of being an exact copy of the organisational structure. This thematic structure should help the surfers to navigate more easily and more effectively through the Websites of the Flemish Community, without having to know the organisational structure.

In the first place, specifications of the corporate identity are presented in a descriptive way. On the basis of these descriptions some guidelines are formulated which help to apply the corporate identity. The objective of these guidelines is to create more user friendly Websites. When new technologies are to be introduced in the Ministry of the Flemish Community, the guidelines for the corporate identity will be adapted.

Similar guidelines have been formulated specifically for the intranet and internetsites of the department of Welfare, Health and Culture to which the Culture Administration belongs.

Conventions are also made within the Ministry of the Flemish Community concerning technical standards to assure uniformity in the development of internetsites of the Ministry.

Accessibility for disabled to Websites of the Ministry of the Flemish Community

Because the Ministry of the Flemish Community stimulates the employment of several specific groups such as disabled, it also wants to stimulate the accessibility of its Websites for visually handicapped. Within the Ministry of the Flemish Community a checklist with basic recommendations is distributed to stimulate Webmasters to improve the accessibility of their Websites for visually handicapped.

The Flemish minister for E-Government has recently declared the intention to adapt all Websites within her authority as soon as possible to make them accessible to disabled. The minister wants to have all Websites of the Flemish Government adapted for disabled within two or three years in order to fulfil the accessibility standards of the World Wide Web Consortium(W3C).

Digitisation of culture in Flanders

www.vlaanderen.be/cultuurdigitaal
As a result of the conventions in the framework of eEurope and the Lundprinciples of the 4th of April 2001, the Culture Administration of the Ministry of the Flemish Community has set up an informational Website on the work that is being done concerning the digitisation of culture. The Website fits within the aim of the Lundprinciples to exchange information on digitisation programmes and policies between the member states.

This Website also refers to the initiatives taken on a quality matters for cultural Websites on a Flemish and European level within the Brussels Quality Framework and MINERVA. In the first place, the Website addresses to organisations and institutions in the cultural field of Flanders to create an awareness of the importance of digitisation and aspects of quality.

http://www2.vlaanderen.be/ned/sites/egovinfo/

For the French Community

The Brussels Quality Framework

The Brussels Quality Framework, defined in 2001, under the Belgian Presidency of the European Union, constitutes the preliminary step towards the definition of principles of quality for cultural Internet Web sites in Europe. This step continues currently within the Quality Group of the Minerva project coordinated by the Ministry of the French Community of Belgium. The tools, principles, guide produced, made it possible to reach a level of quality adapted for cultural Internet Web sites. The Portal of the Museums in Wallonia was built on the basis of the Brussels Quality Framework (www.lesmuseesenwallonie.be)

www.cfwb.be the site of the French Community of Belgium promotes the grid of the Brussels Quality Framework and try to use as much as possible the basic dashboard.

http://www.cfwb.be/qualite-bruxelles/

Wall-on-line e-gov project of Wallonia Region

It's a guide Web for quality and accessibility of the sites in Wallonia. (with a important part for Web accessibility for disabled)

http://egov.wallonie.be/guideweb/
http://egov.wallonie.be/accessibilite/
N.B. Some graphic rules (color, logo,...) are also applied in the various institutions of the French Community and Wallonia Region, but are not included in a specific document.

Denmark

Hjemmesider tilgængelighed. Statens retningslinger for offentlige hjemmesiders og netsteders tilgængelighed.
Statens Information, 2000.
      [Guidelines for accessibility in Websites]

      http://www.netsteder.dk/publ/tilgaeng/clean.html

Hjemmesiders tilgængelighed. Statens retningslinier for hjememsider og net-steder til brugere med funktionsnedsættelser. Version 1.0.
Statens Information, 1999.
      [Guidelines for accessibility in Websites]

      http://www.danmark.dk/publ.asp?page=publ&objno=1858257

Offentlige hjemmesiders tilgængelighed. En undersøgelse af 144 offentlige hjemmesiders tilgængelighed for handicappede.

      http://www.danmark.dk/publ.asp?page=publ&objno=1858684

"Det Digitale Danmark".
      [Report presented in 1999 by the Danish Government on Denmark's readjustment to a network society. The new report did not act as an introduction to any special initiatives in the areas of disability and IT but, on the other hand, the principle of sector responsibility and the joint responsibility for the development of an accessible Web design was underlined. One of the report's principal recommendations therefore contains a proposal that IT solutions should be accessible for disabled people.]

"Realigning to the network society".
      [Report from the Minister for IT and Research to the Danish Parliament, December 1999. Includes specific initiatives to raise the quality standard of public authorities' homepages through continuous quality control, including control that homepages are accessible to disabled people. This initiative is in the process of being realised under the heading "Bedst på Nettet" (Best on the Net).]

SOURCES
- *Lovtidende for Kongeriget Danmark*, 1871-   .

- *Ministerialtidende for Kongeriget Danmark*, 1798-   . København: J.H. Schultz,1798-   .
  - *Lovtidenden,* [c.n.v.]. [leggi]

Web Sources:
- Official Denmark Website:
  <http://www.denmark.dk/servlet/page?_pageid=85&_dad=portal30&_schema=PORTAL30&_fsiteid=175&_fid=12424>
- Parliament: <http://www.ft.dk/?/samling/20021/MENU/00000005.htm> [english version]
- National IT and Telecom Agency: <http://www.itst.dk/mainpage.asp>
- The Equal Opportunities Centre for Disabled Persons: <http://www.clh.dk/>
- The Danish Disability Council: <http://www.dch.dk/english/index.htm>

Finland

High quality Web services. Quality and assessment criteria concernine public Web services, by the Advisory Committee on Information Management in Public Administration, JUHTA (Ministry of the Interior).

> http://www.vm.fi/tiedostot/pdf/fi/33273.pdf

Guidelines for designing Websites.

> http://www.intermin.fi/intermin/hankkeet/juhta/home.nsf/pages/AB3905A05FD6EA90C2
> 256BE600225323?Opendocument

SOURCES
- *Virallinen lehti,* 1917-   . Helsinki, 1917-   .

[the Official Journal has been published since 1857, with other titles].

Web Sources:
- Parliament (*Eduskunta*): <http://www.eduskunta.fi/>
- Presidency: <http://www.tpk.fi/english/>
- Parliament Library database: <http://www.eduskunta.fi/kirjasto/Welcome-eng.html#datab>
- <http://www.intermin.fi>

France

Cadre commun d'interopérabilité des systèmes d'information publics. Version 2.1 (septembre 2003).

http://www.adae.pm.gouv.fr/spip/article.php3?id_article=219

Agence pour le Développement de l'Administration électronique (ADAE) - Circulaire du 12 septembre 2003 relative au développement de l'administration électronique.

http://www.legifrance.gouv.fr/WAspad/UnTexteDeJorf?numjo=PRMX0306850C

Décret n° 2002-1064 du 7 août 2002 relatif au service public de la diffusion du droit par l'internet.

http://www.legifrance.gouv.fr/WAspad/UnTexteDeJorf?numjo=PRMX0205836D

Ministère de la fonction publique et de la réforme de l'Etat. Remise du livre blanc "Protection des données personnelles et administration électronique". Mardi 26 février 2002.

http://www.fonction-publique.gouv.fr/communications/dossiers-presse/mission_truche.pdf

"La diffusion numérique du patrimoine, dimension de la politique culturelle".
Rapport de M. Bruno Ory-Lavollée à M.me la ministre de la culture et de la communication, janvier 2002.

http://www.culture.gouv.fr/culture/actualites/rapports/ory-lavollee/ory-lavollee.pdf

Décret n° 2000-1167 du 1er décembre 2000 portant création d'une mission interministérielle pour l'accès public à la micro-informatique, à l'internet et au multimédia.

http://www.admi.net/jo/20001203/PRMX0004525D.html

http://www.sante.gouv.fr/adm/dagpb/bo/2000/00-48/a0483285.htm

RELATED DOCUMENTS:

Décret n° 2001-570 du 2 juillet 2001 relatif à l'attribution d'une indemnité au président de la mission interministérielle pour l'accès public à la micro-informatique, à l'internet et au multimédia.

http://www.adminet.com/jo/20010705/PRMX0104925A.html

Comité de rédaction Internet du ministère de la Culture.
Date de création: lundi 7 février 2000

http://www.culture.gouv.fr/cri/

Circulaire du 7 octobre 1999 relative aux sites internet des services et des établissements publics de l'Etat.

http://www.legifrance.gouv.fr/WAspad/UnTexteDeJorf?numjo=PRMX9903708C

Décret n° 99-68 du 2 février 1999 relatif à la mise en ligne des formulaires administratifs.

http://www.justice.gouv.fr/actua/actua2.htm

Agence pour les Technologies de l'Information et de la Communication dans l'Administration (ATICA) - L'accessibilité vue par Visual Friendly.

http://www.atica.pm.gouv.fr/interop/accessibilite/index.shtml

SOURCES

- *Journal officiel de la République Française. Édition des lois et décrets*, 1976-   . Paris: Journaux officiel, 1976-   .
- *Journal officiel de la République Française. Table alphabétique du journal officiel, Table chronologique des textes d'interêt general*…, 1946-   .
- *Recueil des principales lois d'interêt général deliberées par la Chambre des Députés….[poi Assemblée Nationale] devenues definitives depuis le 1er janvier 1898-…..* Paris: Impr. de la Chambre des Députés, Motteroz, 1898-   .

Web Sources:

- *Assemblée Nationale*: <http://www.assemblee-nationale.fr/>.

- *Sénat*: <http://www.senat.fr/>

- *Le service public de la diffusion du droit*: <http://www.legifrance.gouv.fr/>

- *La documentation française*: <http://www.ladocumentationfrancaise.fr/>

- *Vie Publique, le site d'information de la Documentation française*: <http://www.vie-publique.fr/>

- *Ministère de Culture et Communication*: <http://www.culture.fr>

In partic.: <http://www.portail.culture.fr/>

- *Ministère de la Justice*: < http://www.justice.gouv.fr >

- *Ministère de la fonction publique et de la réforme de l'Etat*: < http://www.fonction-publique.gouv.fr>

- <http://www.admi.net>

Autorités administratives indépendantes:

- *Commission Nationale Informatique Libertés (CNIL):* <http://www.cnil.fr/index.htm>

- *Commission d'accès aux documents administratifs (CADA)*: <http://www.cada.fr/>

- *Autorité de régulation des télécommunications (ART)* : <http://www.art-telecom.fr/>

- *Agence pour les Technologies de l'Information et de la Communication dans l'Administration (ATICA)*:
<http://www.atica.pm.gouv.fr/interop/accessibilite/index.shtml>

- *Agence pour le Développement de l'Administration électronique (ADAE)*:
<http://www.adae.pm.gouv.fr/>

Germany

E-Government Manual, 2002-2003 (in progress).

> http://www.bsi.bund.de/fachthem/egov/6_en.htm

Gesetz zur Gleichstellung behinderter Menschen und zur Änderung anderer Gesetze.

> http://www.behindertenbeauftragter.de/files/1027946170.39/gleichstellungsgesetz.pdf

> http://www.behindertenbeauftragter.de/gesetzgebung/behindertengleichstellungsgesetz/gesetzestext

Begründung zum Gleichstellungsgesetz.

> http://www.behindertenbeauftragter.de/files/1027946170.39/Begruendung.pdf

Internet für alle (2000).

> http://www.bundesregierung.de/Themen-A-Z/Informationsgesellschaft-,3798/Initiative-Internet-fuer-alle.htm

> > RELATED DOCUMENTS:

> > "Internet for All" - Ten Steps on the Path to the Information Society (18/09/2000).
> > http://www.staat-modern.de/eng/download/info/tensteps.pdf

SOURCES
- Bundesgezetzblatt, 1949-   .

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- Office of the e-Envoy, Cabinet Office: <http://www.e-envoy.gov.uk/Home/Homepage/fs/en>
- Disability Rights Commission: <http://www.drc.org.uk/>
- Department for Work and Pensions (DWP), Disability:< http://www.disability.gov.uk/>
- Information Commissioner: <http://www.dataprotection.gov.uk/index.htm>
- Office of the Deputy Prime Minister:
  <http://www.odpm.gov.uk/stellent/groups/odpm_control/documents/homepage/odpm_home_index.htm>
- Scottish Government: <http://www.scotland.gov.uk/topics/?pageid=1/>

4. International documents

WAI Web Accessibility Initiative

http://www.w3.org/WAI/

User Agent Accessibility Guidelines 1.0
W3C Recommendation 17 December 2002

http://www.w3.org/TR/UAAG10/

Techniques for Web Content Accessibility Guidelines 1.0
W3C Note 6 November 2000

http://www.w3.org/TR/WAI-WEBCONTENT-TECHS/

Web Content Accessibility Guidelines 1.0
W3C Recommendation 5-May-1999

http://www.w3.org/TR/WAI-WEBCONTENT/

CIDOC Multimedia Working Group. Multimedia Evaluation Criteria. Revised Draft.
Nuremberg, Germany, September 8-10,1997.

http://www.archimuse.com/papers/cidoc/cidoc.mmwg.eval.crit.html

DESIRE Information Gateways Handbook. Guide to creating high quality portals on the Internet.

http://www.desire.org/handbook/

Checklist of Checkpoints for Web Content Accessibility Guidelines 1.0

This version:
> http://www.w3.org/TR/1999/WAI-WEBCONTENT-19990505/full-checklist
> (plain text, postscript, pdf)

This document is an appendix to:
> http://www.w3.org/TR/1999/WAI-WEBCONTENT-19990505

Latest version of Web Content Accessibility Guidelines 1.0:
> http://www.w3.org/TR/WAI-WEBCONTENT

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> Gregg Vanderheiden, Trace R & D Center, University of Wisconsin -- Madison
> Ian Jacobs, W3C

Abstract

This document is an appendix to the W3C "Web Content Accessibility Guidelines 1.0". It provides a list of all checkpoints from the Web Content Accessibility Guidelines 1.0, organized by concept, as a checklist for Web content developers. Please refer to the Guidelines document for introductory information, information about related documents, a glossary of terms, and more.

This list may be used to review a page or site for accessibility. For each checkpoint, indicate whether the checkpoint has been satisfied, has not been satisfied, or is not applicable.

A list version of the checkpoints is also available.

This document has been produced as part of the Web Accessibility Initiative. The goal of the WAI Web Content Guidelines Working Group is discussed in the Working Group charter.

Status of this document

This document is an appendix to a document that has been reviewed by W3C Members and other interested parties and has been endorsed by the Director as a W3C Recommendation. This is a stable document and may be used as reference material or cited as a normative reference from another document. W3C's role in making the Recommendation is to draw attention to the specification and to promote its widespread deployment. This enhances the functionality and universality of the Web.

A list of current W3C Recommendations and other technical documents can be found at http://www.w3.org/TR.

This document has been produced as part of the Web Accessibility Initiative. The goal of the Web Content Guidelines Working Group is discussed in the Working Group charter.

Please send comments about this document to wai-wcag-editor@w3.org.

Priorities

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]
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.

Priority 1 checkpoints

In General (Priority 1)	Yes	No	N/A
1.1 Provide a text equivalent for every non-text element (e.g., via "alt", "longdesc", or in element content). *This includes*: images, graphical representations of text (including symbols), image map regions, animations (e.g., animated GIFs), applets and programmatic objects, ascii art, frames, scripts, images used as list bullets, spacers, graphical buttons, sounds (played with or without user interaction), stand-alone audio files, audio tracks of video, and video.			
2.1 Ensure that all information conveyed with color is also available without color, for example from context or markup.			
4.1 Clearly identify changes in the natural language of a document's text and any text equivalents (e.g., captions).			
6.1 Organize documents so they may be read without style sheets. For example, when an HTML document is rendered without associated style sheets, it must still be possible to read the document.			
6.2 Ensure that equivalents for dynamic content are updated when the dynamic content changes.			
7.1 Until user agents allow users to control flickering, avoid causing the screen to flicker.			
14.1 Use the clearest and simplest language appropriate for a site's content.			
And if you use images and image maps (Priority 1)	Yes	No	N/A

	Yes	No	N/A
	s		
1.2 Provide redundant text links for each active region of a server-side image map.			
9.1 Provide client-side image maps instead of server-side image maps except where the regions cannot be defined with an available geometric shape.			
And if you use tables (Priority 1)	Yes	No	N/A
5.1 For data tables, identify row and column headers.			
5.2 For data tables that have two or more logical levels of row or column headers, use markup to associate data cells and header cells.			
And if you use frames (Priority 1)	Yes	No	N/A
12.1 Title each frame to facilitate frame identification and navigation.			
And if you use applets and scripts (Priority 1)	Yes	No	N/A
6.3 Ensure that pages are usable when scripts, applets, or other programmatic objects are turned off or not supported. If this is not possible, provide equivalent information on an alternative accessible page.			
And if you use multimedia (Priority 1)	Yes	No	N/A
1.3 Until user agents can automatically read aloud the text equivalent of a visual track, provide an auditory description of the important information of the visual track of a multimedia presentation.			
1.4 For any time-based multimedia presentation (e.g., a movie or animation), synchronize equivalent alternatives (e.g., captions or auditory descriptions of the visual track) with the presentation.			
And if all else fails (Priority 1)	Yes	No	N/A
11.4 If, after best efforts, you cannot create an accessible page, provide a link to an alternative page that uses W3C technologies, is accessible, has equivalent information (or functionality), and is updated as often as the inaccessible (original) page.			

Priority 2 checkpoints

In General (Priority 2)	Yes	No	N/A
2.2 Ensure that foreground and background color combinations provide sufficient contrast when viewed by someone having color deficits or when viewed on a black and white screen. [Priority 2 for images, Priority 3 for text].			
3.1 When an appropriate markup language exists, use markup rather than images to convey information.			
3.2 Create documents that validate to published formal grammars.			

	Yes	No	N/A
3.3 Use style sheets to control layout and presentation.			
3.4 Use relative rather than absolute units in markup language attribute values and style sheet property values.			
3.5 Use header elements to convey document structure and use them according to specification.			
3.6 Mark up lists and list items properly.			
3.7 Mark up quotations. Do not use quotation markup for formatting effects such as indentation.			
6.5 Ensure that dynamic content is accessible or provide an alternative presentation or page.			
7.2 Until user agents allow users to control blinking, avoid causing content to blink (i.e., change presentation at a regular rate, such as turning on and off).			
7.4 Until user agents provide the ability to stop the refresh, do not create periodically auto-refreshing pages.			
7.5 Until user agents provide the ability to stop auto-redirect, do not use markup to redirect pages automatically. Instead, configure the server to perform redirects.			
10.1 Until user agents allow users to turn off spawned windows, do not cause pop-ups or other windows to appear and do not change the current window without informing the user.			
11.1 Use W3C technologies when they are available and appropriate for a task and use the latest versions when supported.			
11.2 Avoid deprecated features of W3C technologies.			
12.3 Divide large blocks of information into more manageable groups where natural and appropriate.			
13.1 Clearly identify the target of each link.			
13.2 Provide metadata to add semantic information to pages and sites.			
13.3 Provide information about the general layout of a site (e.g., a site map or table of contents).			
13.4 Use navigation mechanisms in a consistent manner.			
And if you use tables (Priority 2)	Yes	No	N/A
5.3 Do not use tables for layout unless the table makes sense when linearized. Otherwise, if the table does not make sense, provide an alternative equivalent (which may be a linearized version).			
5.4 If a table is used for layout, do not use any structural markup for the purpose of visual formatting.			
And if you use frames (Priority 2)	Yes	No	N/A
12.2 Describe the purpose of frames and how frames relate to each other if it is not obvious by frame titles alone.			
And if you use forms (Priority 2)	Yes	No	N/A

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	Yes	No	N/A
10.2 Until user agents support explicit associations between labels and form controls, for all form controls with implicitly associated labels, ensure that the label is properly positioned.			
12.4 Associate labels explicitly with their controls.			
And if you use applets and scripts (Priority 2)	Yes	No	N/A
6.4 For scripts and applets, ensure that event handlers are input device-independent.			
7.3 Until user agents allow users to freeze moving content, avoid movement in pages.			
8.1 Make programmatic elements such as scripts and applets directly accessible or compatible with assistive technologies [Priority 1 if functionality is important and not presented elsewhere, otherwise Priority 2.]			
9.2 Ensure that any element that has its own interface can be operated in a device-independent manner.			
9.3 For scripts, specify logical event handlers rather than device-dependent event handlers.			

Priority 3 checkpoints

In General (Priority 3)	Yes	No	N/A
4.2 Specify the expansion of each abbreviation or acronym in a document where it first occurs.			
4.3 Identify the primary natural language of a document.			
9.4 Create a logical tab order through links, form controls, and objects.			
9.5 Provide keyboard shortcuts to important links (including those in client-side image maps), form controls, and groups of form controls.			
10.5 Until user agents (including assistive technologies) render adjacent links distinctly, include non-link, printable characters (surrounded by spaces) between adjacent links.			
11.3 Provide information so that users may receive documents according to their preferences (e.g., language, content type, etc.)			
13.5 Provide navigation bars to highlight and give access to the navigation mechanism.			
13.6 Group related links, identify the group (for user agents), and, until user agents do so, provide a way to bypass the group.			
13.7 If search functions are provided, enable different types of searches for different skill levels and preferences.			
13.8 Place distinguishing information at the beginning of headings, paragraphs, lists, etc.			
13.9 Provide information about document collections (i.e., documents comprising multiple pages.).			

	Yes	No	N/A
13.10 Provide a means to skip over multi-line ASCII art.			
14.2 Supplement text with graphic or auditory presentations where they will facilitate comprehension of the page.			
14.3 Create a style of presentation that is consistent across pages.			
And if you use images and image maps (Priority 3)	Yes	No	N/A
1.5 Until user agents render text equivalents for client-side image map links, provide redundant text links for each active region of a client-side image map.			
And if you use tables (Priority 3)	Yes	No	N/A
5.5 Provide summaries for tables.			
5.6 Provide abbreviations for header labels.			
10.3 Until user agents (including assistive technologies) render side-by-side text correctly, provide a linear text alternative (on the current page or some other) for *all* tables that lay out text in parallel, word-wrapped columns.			
And if you use forms (Priority 3)	Yes	No	N/A
10.4 Until user agents handle empty controls correctly, include default, place-holding characters in edit boxes and text areas.			

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

The most relevant references on accessibility and usability.

The last visit to each Internet resource goes back to the period between August and October 2003.

ACCESSIBILITY

1. Guidelines and standards on accessibility

WAI – Web Accessibility Initiative. *Authoring Tool Accessibility Guidelines 1.0.* W3C Recommendation 3 February 2000
http://www.w3.org/TR/2000/REC-ATAG10-20000203
For software developers, explains how to make a variety of authoring tools support the production of accessible Web content, and also how to make the software itself accessible.

WAI – Web Accessibility Initiative. *Device Independence Principles*. W3C Working Draft 18 September 2001.
http://www.w3.org/TR/2001/WD-di-princ-20010918/
On accessibility of wireless devices

WAI. – Web Accessibility Initiative. *Policies Relating to Web Accessibility*. 18 June 2003
A listing of Web accessibility policies across the world.
http://www.w3.org/WAI/Policy/

WAI – Web Accessibility Initiative. *Web content accessibility guidelines. 1.0*. W3C Recommendation 5-May-1999
http://www.w3.org/TR/1999/WAI-WEBCONTENT-19990505/
Explains in detail how to make a Web site accessible for people with a variety of disabilities.

WAI – Web Accessibility Initiative. *User Agent Accessibility Guidelines 1.0.* W3C Recommendation 17 December 2002
http://www.w3.org/TR/2002/REC-UAAG10-20021217/
For software developers, explains how to make accessible browsers, multimedia players, and assistive technologies that interface with these.

WAI – Web Accessibility Initiative. *XML Accessibility Guidelines.* W3C Working Draft 3 October 2002
http://www.w3.org/TR/2002/WD-xag-20021003
For developers of XML-based applications, explains how to ensure that XML-based applications support accessibility.

Other sources

Apple Computer, Inc. *Mac OS 8 Human Interface Guidelines.* 29 July 1996
http://developer.apple.com/documentation/mac/HIGuidelines/HIGuidelines-2.html

Architectural and Transportation Barriers Compliance Board. *Electronic and Information Technology Accessibility Standards* [Published in the Federal Register on December 21, 2000, 36 CFR Part 1194 - Docket No. 2000-01 - RIN 3014-AA25]
http://www.access-board.gov/sec508/508standards.htm

Commonwealth of Massachusetts, Information Technology Division. *Web Accessibility Standards.* Version 1.0. 1 May 2000.
http://www.state.ma.us/itd/spg/publications/standards/web-access-std.htm

EducAr. *Propuesta de Educ.ar para el desarrollo de páginas Web accesibles.* In Spanish
http://www.educ.ar/educar/home/acces.jsp

IBM. *Special Needs Systems Guidelines*
http://www-3.ibm.com/able/guidelines.html

IBM. *Web accessibility guidelines.* 2002
http://www-3.ibm.com/able/guidelines/web/accessweb.html

TechDis. *Web Accessibility & Usability Resource.* 26 October 2002.
http://www.techdis.ac.uk/seven/

The international center for disability resources on the internet. *City of San Jose World Wide Web Page Disability Access Design Standards.* 14 March 1997
http://www.icdri.org/CynthiaW/city_of_san_jose_world_wide_web_.htm

Microsoft. *Microsoft Windows Guidelines for Accessible Software Design*
http://www.microsoft.com/enable/dev/guidelines/software.htm

Trace Research & Development Center. *Application Software Design Guidelines.*
http://www.trace.wisc.edu/docs/software_quidelines/toc.htm

The University of Arizona. *Web accessibility*, 2003
http://uaweb.arizona.edu/resources/accessibility.shtml

University of Toronto's. *10 HTML Commandments.*
http://www.utoronto.ca/atrc/rd/html/commandments.html

U.S. Department of Justice, Civil Rights Division, Disability Rights Section. *Accessibility of State and local Government Websites to people with disabilities*, June 2003
http://www.ada.gov/websites2.htm

WGBH/NCAM. *Making Educational Software Accessible.* 2000

http://ncam.wgbh.org/cdrom/guideline

2. Web sites on accessibility

AccEase
Making on-line information accessible
http://www.accease.com/who-we-are.html

Aware
Central resource for Web authors for learning about Web accessibility
http://aware.hwg.org/

Accessibility.com.au - The disability information resource
Australian gateway on accessibility
http://www.accessibility.com.au/

Fundación Sidar - Acceso Universal - Seminario SIDAR
http://www.sidar.org/index.php

HCI BIB
Links to Internet Resources on Accessibility
http://www.hcibib.org/accessibility/

NCAM (National Center for Accessibile Media)
It is a research and development facility that works to make media accessible to underserved populations such as disables persons, minority language users, and people with low literacy skills
http://ncam.wgbh.org/

WAI - Web Accessibility Iniziative
Guidelines and resources by the international organization that sets Web standards
http://www.w3.org/WAI/

INAIL gateway for accessibility (only in Italian)
http://www.superabile.it/cgi-bin/Superabile.dll/home.jsp

Section 508
American Law for regulations of US Websites. Links, resources and useful documents.

WebABLE
The authoritative Web site for disability-related internet resources
http://www.webable.com/

Webaccessibile.org
The Italian resource on accessibility according to WAI rules
http://www.webaccessibile.org/default.asp

WebAIM - Web Accessibility in Mind
Expanding the Webs potential for people with disabilities
http://www.webaim.org/

World Enable
An Internet accessibility initiative in support of the international goals of equalizing opportunities for, by, and with persons with disabilities
http://www.worldenable.net

3. National and international accessibility campaigns

Viewable with any browser
Campaign for a WWW independent from a specific browser
http://www.anybrowser.org/campaign/index.shtml#translations

RNIB's Campaign for Good Web Design. 2003
http://www.rnib.org.uk/xpedio/groups/public/documents/publicwebsite/public_goodwebdesign.hcsp

Campagna per l'accessibilità delle biblioteche in rete: progetto CABI
Italian campaign for accessibility of libraries online: CABI Project
http://marciana.venezia.sbn.it/CABI/index.html

4. Mailing Lists and forums

Alertbox, by Jacob Nielsen
Usability
http://www.useit.com/alertbox/20000820.html

BLIST The Comprehensive Index of Blindness-Related Emailing Lists
Instructions on how to join over two hundred blindness-related emailing lists and blindness-related newsgroups, along with hypertext links which allow you to subscribe to any of the lists. It also contains an extensive listing of accessibility and pan-disability lists, as well as a list of emailing lists that are not blindness-related, but which are frequented by blind members, and a selective list of emailing list-related resources
http://www.hicom.net/~oedipus/blist.html

WAI Interest Group mailing list
http://www.w3.org/WAI/IG/Overview.html#Uselist

WebAIB. Web Accessibility Forum Mailing List
http://www.webaim.org/discussion/

5. Newsgroups

alt.comp.accessibility
alt.education.disabled
alt.support.learning-disab
alt.internet.search-engines
alt.support.disabled.artists
comp.human-factors
fj.misc.handicap
it.comp.accessibilita
it.sociale.handicap
misc.handicap
ucb.students.disabled
uk.people.disability

6. E-serials

Dr Dobb's journal
http://www.ddj.com/ddj/

E-access Bulletin
Newsletter on accessibility of informatics applications
http://www.e-accessibility.com/

JILT - Journal of information, law and technology
An established but innovative electronic law journal covering a range of topics relating to IT law and applications. It contains a diversity of materials including peer reviewed and non-refereed articles, commentaries, work in progress articles, book and IT reviews, and conference reports and papers, as well as information papers, news and UK and global conferences
http://elj.warwick.ac.uk/jilt/

7. Web browsers

Browsers specifically designed for people with disabilities

Braillesurf
Speech, Braille, large text.
http://www.snv.jussieu.fr/inova/bs4/uk/index.htm

BrookesTalk
This browser under development by Oxford Brookes University focuses on facilitating intelligent web-searching. Speech output, screen-magnification.
http://www.brookes.ac.uk/speech/

EIAD
A browser from Sarsfield Solutions which provides enhancements specifically for people with special needs and learning difficulties.
Touch-screen, simplified language interface.
http://gippsnet.com.au/eiad/browser.htm

EMACSPEAK
The speech-enabled environment for EMACS, runs under UNIX or LINUX, includes full Web browsing capabilities through W3.
Speech output, simple keyboard interface.
http://emacspeak.sourceforge.net/

HomePage Reader
The speech-based browser from IBM, using Internet Explorer as its engine designed for blind and visually impaired. Speech output and standard graphical user interface.
http://www.austin.ibm.com/sns/hpr.html

Marco Polo
A plug-in for Netscape Navigator from Sonicon with speech and auditory icons. Speech output, audio icons, simple keyboard interface.
http://www.webpresence.com/sonicon/marcopolo/

MultiWeb
Disability-specific browser developed at Deakin University.
Speech output, screen magnification, scanning for switch devices.
http://mis.deakin.edu.au/mis/multiweb/

PwWebSpeak
Speech output, synchronised speech and screen magnification, simple keyboard interface.
http://www.issound.com/pwWebspeak.htm

Sensus Internet Browser
A low-vision Internet browser from Sensus in Denmark. Speech output, Braille support, special screen fonts.
http://www.sensus.dk/sib10uk.htm

Simply Web 2000
A talking interface using the Internet Explorer engine. Speech output, simple keyboard interface.
http://www.econointl.com/sw/

8. Screen-readers

ASAW from Microtalk
Speech.
http://www.microtalk.com/

HAL from Dolphin
Speech and Braille
http://www.dolphinuk.co.uk/

JAWS For Windows from Freedom Scientific
Speech and Braille
http://www.hj.com/main.html

Lookout from Choice Technology
http://www.screenreader.co.uk/

OutSpoken from Alva:
Speech and Braille
http://www.aagi.com/

Screenreader/2 from IBM
Speech and Braille
http://www-3.ibm.com/able/snssrd2.html

Simply Talker from Econonet:
Speech
http://www.econointl.com/simply/

Slimware Window Bridge from Synthavoice
Speech and Braille
http://www.synthavoice.on.ca/

Virgo from Baum
http://www.baum.de/virgoservice.htm

Window-Eyes from GWMicro:
Speech and Braille
http://www.gwmicro.com/

Winkline from Speech Systems for the Blind
http://www.aasp.net/~speechfb/info.htm

WinVision from Artic:
Speech.
http://www.artictech.com/

9. Browsers with adaptive technology

AMAYA
The W3C's test-bed browser, implementing emerging Web technologies.
http://www.w3.org/Amaya/

ARACHNE
Graphical browser for MS-DOS.
http://arachne.browser.org/

LYNX, and Mac OS version of LYNX
Popular text-based browser for UNIX, Windows 95/NT, MS-DOS, and Mac OS allowing flexible and powerful text-based access from older platforms.
http://lynx.browser.org/
http://www.lirmm.fr/~gutkneco/maclynx/download.html

Internet Explorer, accessibility features
Microsoft has included many features in Internet Explorer to enhance accessibility.
http://www.microsoft.com/enable/products/ie.htm

Net-Tamer
This package runs under MS-DOS and includes both text-based and graphical browsing capabilities.

http://www.nettamer.net/

Netscape Navigator
Navigator enables enlargement of fonts.
http://home.netscape.com/

Opera
This compact browser for Windows 95/98/ME offers enhanced keyboard navigation and screen magnification.
http://www.operasoftware.com/index.html

10. Voice browsers

ConversaWeb
Voice-activated browser allowing spoken selection of links using "saycons".
http://www.speechtechnology.com/otherspeech/conversaweb_n.html

webHearit
A telephone-based tool using the telephone keypad as an interface to navigate suitably configured pages.
http://www.issound.com/technology/products-webhearit.htm

SpeecHTML
A subscription service from Vocalis, allowing a participating site to provide telephone access using voice commands.
http://www.speechtml.com/

TelWeb
An experimental telephone-based browser allowing access to any site using voice and dialled commands.
http://www.telweb.com/

11. Evaluation, repair, and transformation tools for Web content accessibility

Evaluation Tools

1.General

AccessEnable™
An online Website evaluation and correction product line, able to make site-wide automatic fixes as well as interactive fixes to satisfy Federal and other Web accessibility standards. By RetroAccess.
http://www.retroaccess.com/

AccVerify™
It implements programmatic verification and reports all errors/non-compliance with the standards, plus checklist for criteria that can't be verified programmatically.
http://www.hisoftware.com/access/

AnyBrowser.com
Tools relevant for accessibility include viewing in various screen sizes, view with images are replaced by ALT text. Also HTML and link validation, search engine tools, and other browser compatibility tests.
http://www.anybrowser.com/

Bobby

Developed by CAST, it helps authors to determine if their sites are accessible, through automatic and manual checks, also analyzing Web pages for compatibility with various browsers.
http://www.cast.org/bobby

Cynthia Says
Designed to identify errors related to Section 508 standards and the W3C Web Content Accessibility Guidelines (WCAG).
http://www.cynthiasays.com/

Dr Watson
Hosted as a free service by Addy & Associates (2000). This tool may also check link validity, download speed, search engine compatibility, link popularity, word count, and spelling.
http://watson.addy.com/

Dreamweaver 508 Accessibility Suite
See Lift for Dreamweaver
http://www.w3.org/WAI/ER/#Lift
http://www.macromedia.com/exchange/dreamweaver

I-Checker
An entry level Web accessibility automated checking tool *in Japanese* from IBM.
http://www.ibm.co.jp/accessibility/i-checker/index.html

InSight
SSB Technologies. Interactive evaluation tool designed to help developers create accessible web pages.
http://www.ssbtechnologies.com/

Lift
Lift Online and Lift Site are both Developed by UsableNet, Inc. LIFT Onsite allows Web designers and Web owners to test and repair accessibility and usability issues, including site navigability, download speed, graphic quality, accessibility, searchability, etc.
http://www.usablenet.com/lift_onsite/lift_onsite.html

Lift for Dreamweaver, Lift for FrontPage, Lift NNg
Lift for Dreamweaver / FrontPage are extensions for those Authoring tools. Lift allows customisation of accessibility tests and provides continuously updated test results during editing as well as a wizard-based repair tool that can be run in a context-sensitive mode while editing.
http://www.usablenet.com/lift_dw/lift_dw.html,
http://www.usablenet.com/frontend/demoform.jsp?prod=lfp,
http://www.usablenet.com/products_services/lfd_nng/lfd_nng.html

PageScreamer
By Crunchy Technologies, it verifies and corrects non-compliant Web content; provides a text equivalent for every non-text element; provides the ability to identify rows and columns in HTML tables; ensures identification of frames for navigation; identifies and alerts the user to server side image maps.
http://www.crunchy.com/tools/PageScreamer.html

Page Valet
Page Valet combines formal validation with accessibility testing based on the W3C Web Content Accessibility Guidelines. Page Valet generates XML, with a choice of report formats including HTML versions for Web browsers.
http://valet.webthing.com/page/

RAMP™
From Deque Systems. Supports 508 and WCAG. Written in Java for platform independence and claims to be accessible to people with disabilities. Provides evaluation and repair.
http://www.section508ok.com/products/products.htm

RAMP™Lite
The RAMP™ analysis engine. It generates reports and documents. Aimed at Project Managers and senior level executives who want to monitor the accessibility of their projects.
http://www.section508ok.com/products/products.htm

Site Valet
Site Valet is a comprehensive Quality Assurance product for Web and Intranet sites. Of particular interest to accessibility are the Page Valet tool for markup analysis and a user feedback programme for raising and dealing responsively with problem reports.
http://valet.webthing.com/

TAW
Developed by Fondo Formación Asturias in collaboration with SIDAR, TAW tests accessibility of a page, marking automatically detected errors with the priority level of the WCAG checkpoint. It also marks manual tests that are required in the page.
http://www.tawdis.net/

Torquemada
Torquemada is an Italian-language tool designed to assess the accessibility of Websites. The initial version is an online service, but the tool is under development and a downloadable version is promised soon.
http://www.webxtutti.it/testa.htm

The Web Page Accessibility Self-Evaluation Test
Created by the Public Service Commission of Canada. It is a 27 question, multiple choice survey available in English or French that produces 5 accessibility ratings: 1) highly inaccessible; 2) much improvement required; 3) partially accessible; 4) fairly accessible; 5) accessible. Feedback by e-mail address..
http://www.psc-cfp.gc.ca/eepmp-pmpee/access/testver1_e.htm

2. Focused

Clear Language and Effectiveness Tool (CLAD)
Developed by the Toronto East End Literacy Project, it asks a series of questions, then using client-side scripting calculates a reading level.
http://www.eastendliteracy.on.ca/clearlanguageanddesign/readingeffectivenesstool/

Colorfield Insight
Allows designers to model and predict image legibility for color deficient viewers. By Colorfield Digital Media.
http://www.colorfield.com/insight.html

Doctor HTML
By Thomas Tongue and Imagiware, Inc. (1997). It performs minimal accessibility checking and also verifies links, spell checks and performs some syntax checking.
http://www2.imagiware.com/RxHTML/

NetMechanic
http://www.netmechanic.com/

NIST WebMetrics Tool Suite
A set of four tools used to test the usability and accessibility of a site: WebSAT - The Web Static Analyzer Tool uses a subset of usability guidelines to analyze a page for accessibility, form use, performance, maintainability, navigation, and readability; WebCAT - The Web Category Analysis Tool is a variation upon traditional card sorting techniques. It allows a Web designer/usability engineer to test a proposed or existing categorization scheme of a Web site to determine how well the categories and items are understood by users; WebVIP - The Web Visual Instrumenter Program is a tool that can be used to conduct traditional user testing on a given set of tasks but in a rapid, remote and automated fashion; WebVISVIP - The WebVIP Visualization Tool is used to visualize the path data generated by VIP in 3D graphics.
http://www.nist.gov/webmet/

Pehtoori
HTML validation service
http://t2r.uwasa.fi/pehtoori/index-en.html

Reading level calculator
Developed by Linda Wasmer Andrews and based on the SMOG readability formula. This form relies on client-side scripting to calculate the reading level.
http://www.linda-andrews.com/readability_tool.htm

The Schematron
An XML Structure Validation Language using Patterns in Trees - WAI Content Guidelines. Compares the pattern of a file to the patterns defined by WCAG schema.
http://www.ascc.net/xml/resource/schematron/WAI-example.html

Style and Diction
Diction identifies wordy and commonly misused phrases. Style analyses surface characteristics of a document, including sentence length and other readability measures.

Vischeck
Available as a downloadable application, a Photoshop plug-in, or online, this tool simulates colorblind vision.
http://www.vischeck.com/

The Wave
A tool that helps people perform those tasks that require human judgment. The Wave displays the ALT text of images and AREAS on the page for comparison with the images, provides numbered arrows to show the linearized reading order, and shows the HTML equivalent (if any) provided for applets. The Wave performs automatic checks.
http://www.temple.edu/inst_disabilities/piat/wave

Webbot - the libwww Robot

From the W3C. It is a programmable robot that can report missing "alt" attributes or other specific anomalies. Its primary design goal was to test HTTP/1.1 pipelining features. It runs locally on Unix or Windows.
http://www.w3.org/Robot

WDG HTML Validator
From the Web Design Group (WDG). It uses the same engine as the W3C HTML Validator but produces easier to understand error messages. It also supports a wider variety of character encodings than the W3C validator. It is available online or can run locally.
http://www.htmlhelp.com/tools/validator/

Weblint
By Neil Bowers (1997). It is a syntax and minimal style checker for HTMLIt is available for download on Unix, Windows NT, Mac or OS/2. http://www.cre.canon.co.uk/~neilb/weblint

W3C CSS validator.
Validates the CSS used in documents. It may be run through the interface on the W3C server or download it and run it at a Java command line.
http://jigsaw.w3.org/css-validator/README.html

W3C HTML validation service
HTML validation service based on an SGML parser. It checks HTML documents for compliance with W3C HTML Recommendations and other HTML standards. Service is available through the W3C Web site.
http://validator.w3.org/

3. Services

AccMonitor™ and AccessibilityWATCH™
AccMonitor™ by HiSoftware is designed for Web site Accessibility Management. It monitors the accessibility status of an entire Web site or a subdirectory of the site around the clock for WCAG priorities 1 to 3 as well as section 508 requirements.
http://www.hisoftware.com/access/monitor.html
http://www.accessibilitywatch.com/

12. Repair Tools

A-Prompt
By the University of Toronto, freely available tool that may be used to identify problems and help corrections.
http://aprompt.snow.utoronto.ca/

AccRepair™
AccRepair ™ by HiSoftware provides for the verification and correction of Accessibility policy and standards required for Web sites.

http://www.hisoftware.com/access/repair.html

ALT repair kit
By Sonicon, allows ALT text to be added to page inline.
http://www.sonicon.com/wai/altsform.html

CSSize (HTML => HTML+CSS) and HTTPtool (HTTP ftp-alike using GET/PUT) software
By Daniel Glazman
http://www.edf.fr/der/html/produits/publications/w3c/web.en.htm

Demoronizer
By Tom Christiansen. It removes vendor specific HTML conventions and extensions.
http://language.perl.com/misc/div-www.html

Hi-Caption™
By HiSoftware, (http://www.hisoftware.com/), it allows authors to edit SMIL or SAMI presentations to add caption tracks providing a visual interface for users who don't want to directly edit code as well as full source editing functions. Also available in Spanish (Castellano)
http://www.hisoftware.com/hmcc/acc4mcc.html

InFocus
SSB Technologies. Interactive repair tool designed to help developers create accessible Web pages.
http://www.ssbtechnologies.com/

Lift for Dreamweaver, Lift for FrontPage, Lift NNg
Lift for Dreamweaver / FrontPage are extensions for those Authoring tools. Lift allows choosing which accessibility tests to apply and provides continuously updated test results during editing as well as a wizard-based repair tool that can be run in a context-sensitive mode while editing.
http://www.usablenet.com/lift_dw/lift_dw.html,
http://www.usablenet.com/frontend/demoform.jsp?prod=lfp,
http://www.usablenet.com/products_services/lfd_nng/lfd_nng.html

MAGpie
By NCAM, it allows users to add captions to QuickTime, Windows Media or SMIL, and to add audio descriptions to SMIL. Available for Windows.
http://ncam.wgbh.org/webaccess/magpie/

PageScreamer
By Crunchy Technologies, it verifies and corrects non-compliant Web content; provides a text equivalent for every non-text element; provides the ability to identify rows and columns in HTML tables; ensures identification of frames for navigation; identifies and alerts the user to server side image maps.
http://www.crunchy.com/tools/PageScreamer.html

Powerpoint Accessibility Wizard
By Division of Rehabilitation - Education Services, University of Illinois. It simplify the task of converting PowerPoint presentations to text pure accessibile HTML.
http://www.rehab.uiuc.edu/ppt/index.html

RAMP™
By Deque Systems. Provides evaluation and repair.
http://www.section508ok.com/products/products.htm

RAMP™ARC
RAMP™ARC can generate tagged PDF and accessible HTML from your original source.
http://www.section508ok.com/products/products.htm

TOM
Text-Only Maker, by NCSA.
http://lunch.ncsa.uiuc.edu/tom

Tidy
By Dave Raggett. Repairs errors, improves style in HTML/XML. Converts HTML to XHTML. Removes proprietary XML tags from HTML output.
http://www.w3.org/People/Raggett/tidy

TOC Maker
An add-on for Mozilla composer by Daniel Glazman. It allows generation of a table of contents for a page, and then add it to a page or site index.
http://cascades.mozdev.org/installation.html

13. Filter and transformation tools

Accessibility Bookmarklets
Some javascript bookmarklets designed to perform various functions to repair accessibility problems, by Jim Ley.
http://jibbering.com/accessibility/bookmarklets.html

Accessible Web Browser Project
At Univ. Illinois, Urbana-Champaign. The project aims at creating a Web browser using Internet Explorer as a COM object, to improve accessibility for people with visual impairments.
http://slappy.cs.uiuc.edu/fall99/team5/

AYE
By Henrik Quintel, it is a Web page transformer
http://www.fh-worms.de/~quintel/Q/first.htm

BBC Education Text to Speech Internet Enhancer: BETSIE
http://www.bbc.co.uk/education/betsie/)

"deGrade" browser simulator
http://www.cgu.edu/degrade/
by Kynn Bartlett

LaTeX2HTML
http://cbl.leeds.ac.uk/nikos/tex2html/doc/latex2html/latex2html.html

Lynx-me service.
By Gerald Oskoboiny. It shows a textual version of how a site looks in Lynx.
http://ugweb.cs.ualberta.ca/~gerald/lynx-me.cgi

Delorie Lynx viewer
Shows how a page will look in Lynx.
http://www.delorie.com/web/lynxview.html

Internet Explorer Web Accessories
http://www.microsoft.com/Windows/IE/WebAccess/default.asp

Muffin filtering proxy server
http://muffin.doit.org/

Navigation Power Toys for IE.
http://trace.wisc.edu/world/doc_access/index.htm#nav-tools
Developed at the Trace Center by Mark Novak

Microsoft Power Point WWW Publishing Accessibility Wizard
It simplifies the task of converting PowerPoint presentations to text pure HTML. http://cmos-eng.rehab.uiuc.edu/ppt/

Office 2000 HTML Filter
A tool, by Microsoft, that can be used to remove Office-specific markup tags embedded in Office 2000 documents (e.g. Word) saved as HTML.
http://office.microsoft.com/downloads/2000/Msohtmf2.aspx

PDF to HTML Converter
Developed by Adobe.
ETH Zurich - Proxy helper project.
http://access.adobe.com/simple_form.html

The Proxomitron
A filter that gets rid of a variety of elements from a page or replaces elements (such as blink with bold).
http://proxomitron.org/

RTFtoHTML
Converts RTF to HTML
http://www.sunpack.com/RTF/

rfc2html.pl
Special purpose filter that converts Internet Society Request for Comments into HTML.
Model of a converter for a special text format for people who like to program in Perl.
http://www.w3.org/Protocols/rfc2616/rfc2616.html
http://www.w3.org/Protocols/rfc2616/rfc2html.pl

Spyglass Prism
Server-based content conversion.
http://www.spyglass.com/solutions/technologies/prism/

Silas S. Brown's Web access gateway
For disabled users.
http://members.bigfoot.com/~silasbrown/access.html

{textualise;}
A proxy service that can adjust content delivered from the source to provide a version more suited to people with visual impairments.
http://codix.net/textualise

Web Intermediaries (WBI) ("Webbie")
By IBM, it is an architecture and framework for creating intermediary applications on the Web.
http://www.almaden.ibm.com/cs/wbi/

Web page Purifier
Removes tags and/or attributes not explicitly allowed by the DTD.
http://www.delorie.com/web/purify.html/

WebCleaner
An Open-Source (GPL) filtering HTTP proxy.
http://freshmeat.net/projects/webcleaner/

USABILITY

1. Guidelines and standards on usability

WAI – Web Accessibility Initiative. *WAI contents guidelines for public Web sites in the EU, Final Progress Report*. December 2002
http://europa.eu.int/information_society/topics/citizens/accessibility/web/wai_2002/eaccess20
02_report_final/a_documents/ap2002-wai-rep3.pdf

IBM. *Web design guidelines*
http://www-3.ibm.com/ibm/easy/eou_ext.nsf/Publish/572

ISO 9241-11. *Guidance on usability*. 1998
http://www.usabilitynet.org/tools/r_international.htm#9241-11

National Cancer Institute. *Research based and usability guidelines*
http://www.usability.gov/guidelines/index.html

2. Web sites on usability

Chickenskinners
Links and papers on usability.
http://www.chickenskinners.com/index.php/usa

Section 508
American Law for regulations of US Websites. Links, resources and useful documents.

Usability Professionals' Association
http://www.upassoc.org/

Usableweb
More than 1000 links on usability.
http://usableweb.com/

Usability.gov
USA government site on usability, with many references on the subject.
http://www.usability.gov/accessibility/index.html

Usability.net
http://www.usabilitynet.org/tools/r_international.htm

Usabilityfirst
Provides information and resources for key issues related to usability in Website and software design.
http://www.usabilityfirst.com/

useit.com, Jakob Nielsen's Website
http://www.useit.com/

3. Quality of contents and usability evaluation methods

Brussels quality framework / Cadre qualité Bruxelles
Workgroup aiming at the setting up of baselines for a shared vision of criteria of quality for cultural Websites
http://www.cfwb.be/qualite-Bruxelles/pg001.asp

CIDOC Multimedia Working Group. *Multimedia Evaluation Criteria*. Revised Draft.
Nuremberg, Germany, September 8-10,1997.
http://www.archimuse.com/papers/cidoc/cidoc.mmwg.eval.crit.html

DESIRE Information Gateways Handbook. *Guide to creating high quality portals on the Internet.*
http://www.desire.org/handbook/

Hom James. *The Usability Methods Toolbox.* 1998.
http://jthom.best.vwh.net/usability/

ICRA - Internet Content Rating Association
http://www.icra.org

Internet detective
http://www.sosig.ac.uk/desire/internet.detective.html

Judging quality on the Web
http://library.ucla.edu/url/referenc/judging.htm

Quality Framework for UK government Website design Juliy 2002
http://www.e-envoy.gov.uk/assetRoot/04/00/09/20/04000920.pdf

Quick: the Quality information checklist
http://www.quick.org.uk/menu.htm

QUIS. *Questionnaire for user interaction satisfaction*
http://www.lap.umd.edu/QUIS/index.html

SUMI
Standard evaluation questionnaire for assessing quality of use of software by end users.
http://www.ucc.ie/hfrg/questionnaires/sumi/index.html

Tillman Hope N., *Evaluating quality on the Net*, March 2003
www.hopetillman.com/findqual.html

4. Universal design

The Center for Universal Design - Universal Design Manifesto
Principles of Universal Design
http://www.design.ncsu.edu:8120/cud/
univ_design/princ_overview.htm

Dan's Web Tips
Extensive collection of helpful tips, links and resources for creating effective and usable Web pages.
http://webtips.dan.info/

Designing More Usable Web Sites

Helpful index lists links to resources for creating accessible Web sites, including software and Web-based services.
http://www.trace.wisc.edu/world/web/index.html

Navigation and Usability Guide
Access this extensive collection of articles, columns and resources from Web Review Magazine on accessibility and usability guidelines.
http://www.ddj.com/

General Concepts, Universal Design Principles and Guidelines
Here are many reasons, both practical and economic, for creating a world we can all use. Here are a few papers which highlight key reasons.
http://trace.wisc.edu/world/gen_ud.html

Web Usability OverSite
Index of articles and links from the University of Michigan highlights how Web designers can test their Web sites for overall usability.
http://www-personal.umich.edu/~bing/oversite/webuse.html

Yet Another Style Guide
This style guide reflects lessons learnt about how to design a good Website.
http://www.vorburger.ch/kissfp/styleguide/index.html

Designing Access to WWW Pages by the Alliance for Technology Access
http://www.ataccess.org/ATResourceLibrary/WWW%20Access/default.html

Norman, Donald. *The Design of Everyday Things*. New York: Basic Books, 1988.

5. Patterns

Alexandex C. *et al. A Pattern Language – Towns, Buildings, Construction*. New York: Oxford University Press, 1977.

Alexander C.. *The Timeless Way of Building*. New York: Oxford University Press, 1979.

Cunningham, Ward – Beck, Kent. *Using Pattern Languages for Object-Oriented Programs*, presentet to the Conference on Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA), 1987.

Gamma Erich –Helm, Richard – Johnson, Ralph –Vlissides, John – Wesley, Addison, *Design Patterns – Elements of Reusable Object-Oriented Software*, 1995.

Tidwell, Jenifer, *COMMON GROUND: A Pattern Language for Human-Computer Interface Design*, 1999.
http://www.mit.edu/~jtidwell/common_ground.html
Tidwell, Jenifer. *UI Patterns and Techniques*, 2002
http://time-tripper.com/uipatterns/

van Welie, Martin, *Interaction Design Patterns*, 2001
http://www.welie.com/patterns/index.html

Moreover a bibliography of collections of patterns for the Web ca be found at
http://iawiki.net/WebsitePatterns