An addendum to the Charter and Guidelines on the Preservation of the Digital Heritage

1. **Introduction**

1.1 Charter
In 2003, UNESCO adopted the *Charter on the Preservation of the Digital Heritage*, a non-binding international instrument that draws attention to the preservation of an at that time new type of documentary heritage: digital heritage. This is defined in the Charter as 'cultural, educational, scientific and administrative resources, as well as technical, legal, medical and other kinds of information created digitally, or converted into digital form from existing analogue resources […] that have lasting value and significance. Digital heritage includes texts, databases, still and moving images, audio, graphics, software and web pages.' (Article 1). The Charter explains that this type of heritage is particularly vulnerable due to hardware and software obsolescence, and to organizational uncertainties. (Article 3) It asks for immediate action, the development of strategies and international cooperation. It stresses that responsible selection is a necessary element of every long-term preservation strategy.

As UNESCO is an organization of Member States, the main target audience of the Charter are governments. It is a short text concentrating on very general principles. Although the research on digital preservation has evolved a lot in the past eight years, and many technical solutions for preserving digital information have surfaced, the text has not become dated. This can be concluded from the responses the UNESCO Secretariat received from a survey it conducted in 2009, when it asked Member States to propose new themes for standard setting in this area. Only some reactions were handed in, some suggesting that a new or updated Charter should be made, some stating that the Charter is still up to date, and that focus should be put on further awareness raising. In 2012, UNESCO plans an international conference to explore the main issues affecting the preservation of digital heritage.

The text of the Charter is printed at the end of this article.

1.2 Guidelines
UNESCO asked Mr Colin Webb of the National Library of Australia to write *Guidelines for the Preservation of the Digital Heritage[1]*. These were also published in 2003. The Guidelines elaborate the issues raised by the Charter in great detail, both from a management perspective and from a technical and practical perspective. However, the Guidelines don't give straightforward recipes for digital preservation. It points to problems to be envisaged by prospective preservationists, and gives advice of a general nature. At that time, the experiences with digital preservation were almost exclusively drawn from small pilot projects, and these were too fresh to serve as a basis for real sound advice.

The Guidelines for the Preservation of Digital Heritage offer 'guidance to individuals and organizations who are contemplating a responsibility for preserving digital heritage'. They adopt a 'principles approach' to provide the reader with an 'extensive checklist of issues and possibilities that programmes need to take into account' (introduction, p. 10).

The Guidelines target at least four audiences: policy makers, high level managers, line managers and technical practitioners. (pp. 17, 18).

The document consists of four sections:

> **Section 1**: introductory materials, a note on terminology, a summary of principles;

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[1] http://unesdoc.unesco.org/images/0013/001300/130071e.pdf

Section 2: the management section explains what digital heritage is and why it is threatened, introduces 'digital preservation' and the nature and management of 'digital preservation programmes' and opportunities for co-operation;

Section 3: a more detailed and process-focused view on digital preservation, with discussion on selection, rights issues, authenticity and access. It suggests 'starting points for programmes' and proposes a set of 'minimum expectations' for programmes;

Section 4: glossary and reading list.

The Guidelines agree with the Charter in listing digitized materials as one of the types of digital heritage (p. 30), but the Guidelines do not include information on digitization.

The summary of principles (pp. 21-24) stresses the need to take responsibility for preservation, and this involves continued and direct action ('benign neglect' is no option). Yet actions can go wrong, so some caution is required ('it is important to do no harm'), and it is good to look for backup strategies that allow counter-productive preservation actions to be reserved. Programmes should incorporate the assessment and management of risk. Estimations of costs are difficult to make, but preservation programmes should aim to operate comprehensively and reliably on the basis of sustainable business models. However, we will be too late if we wait until standards for comprehensiveness and reliability, and reliable sustainable business models, appear. Decisions, and actions taken, to preserve can be subject to later review, but decisions not to take action to preserve are usually final.

The Guidelines give special recommendations for preservation programmes with few resources and 'case studies'. These latter are not case studies in the usual meaning of the term, but short 'lessons learned' from unidentified, but real preservation projects.

A lot has been achieved in the field of digital preservation since 2003. There has been the PLANETS project (2006-2010) in Europe, which has produced a number of very useful tools; open software to manage and preserve digital content has been made available via Fedora Commons or Archivematica. Progress has been made in the development of global digital format registries and the auditing of preservation programmes for trusted digital repository status. After eight years, some parts of the Guidelines stand in need of revision. The fear for non-stop format-change seems to have abated a bit and developments like cloud storage of open data may have made the insistence on the need to control *everything* in order to safeguard digital materials less acute.

2. Presentations

During the IV International Conference of the Memory of the World Programme *Culture-Memory-Identities* (Warsaw, 18-21 May 2011) a workshop was held to take a closer look at how the Charter and the Guidelines for the Preservation of the Digital Heritage have been put to use since the adoption of the former in 2003. The workshop was organized by the Netherlands National Commission for UNESCO, as one of the activities in its project 'Sustainable Access to Knowledge'. In this project, the Commission launched the idea to draft an addendum to the *Guidelines for the Preservation of the Digital Heritage,* presenting the most recent developments and good practices relating to the long-term preservation of digital and digitized material. The Workshop in Warsaw can be seen as a preliminary step for this undertaking. Without some understanding of how the Charter and Guidelines have functioned in practice between 2003 and now, it will be impossible to establish a target audience for the Addendum, or to select the relevant items that such an Addendum should cover.

The format of the Workshop forced the organization to narrow limits. The conclusions that were reached should be received with due care. No exhaustive global enquiry on the reception of the Charter and Guidelines could be carried out prior to the workshop. Instead three cases were elected

from three continents. This was done to take onboard the global perspective with which the Charter is concerned. The three cases reflect also the diversity of the types of strategies and institutions that make use of UNESCO standard setting in the field of digital preservation: the Brazilian example is concerned with cross-sectoral digital preservation on the level of infrastructure; the South-African case presents a national strategy from a Ministry, with a focus on cultural heritage. And the Polish National Digital Archive is a case of an institution purposely created for digital preservation.

The South African case study was presented by Mr Mbhazima Makhubele, who, as a director in the National Ministry of Arts and Culture, is responsible for heritage policies. Mr Carlos Augusto Silva Ditadi is a specialist in records preservation at the Brazilian National Archives' Electronic Records Committee. Mr. Nikodem Bończa Tomaszewski presented the Polish case. He is director of the National Digital Archives since its establishment in 2008. The meeting was chaired by Mr Marco de Niet, director of Digital Heritage Netherlands (DEN Foundation).

2.1. South Africa: National Department for Arts & Culture
The National department for Arts and Culture has recently published a *National Policy on the Digitisation of Heritage Resoures*[2]. The policy is a response to various issues, like the growing interest by foreign agencies in the digitisation of South African heritage, the concerns around ownership, access and copyright. Heritage practitioners were also concerned about the lack of a comprehensive response to rapid technological advances, obsolescence and the absence of standardised formats. As digitisation is an expensive exercise, most of South African public institutions seemed unwilling to enter into agreement with agencies that are interested in digitising South African heritage without a national policy framework. The Ministry is conscious of the fact that due to rapid technological developments, the policy will address some problems and miss others. As such, the policy is seen as work in progress.

A key issue for the South-African government is free access, wherever possible, to digital records held by custodians and repositories. Just as the government supports the provision of free water and electricity, it also aims at developing an inclusive information society with easy access to ICT infrastructures and the repositories that can be accessed through that infrastructure. Mr Makhubele pointed out that the Charter neglected the fact, that not all people have equal access to the ICT-infrastructures, esp. in developing countries. The Charter should help diminish this digital divide, otherwise the goal of digital heritage accessible and available to all cannot be achieved.

Standardisation is also a key issue for the South-African government. The speed of technological developments cannot be stopped. However, it is a joint responsibility to take care of interoperability and the access to formats, e.g. by working backwards and reproducing formats. Not all strategies can be solved at the national level, there are many different types of institutions involved. It is their own responsibilty to develop specific strategies in their area. But they should always take the broader principles into account, as articulated in the national strategy.

Among the national responsibilities are the creation of large scale centralized repositories. If heritage collections are digitised with public funding, the masters produced in such projects should be stored in national digital repositories. The South-African government is looking into the options to amend the legal deposit act so that deposit of digital heritage is clarified. In that respect, digitised cultural heritage deserves the same treatment as born-digital heritage.

Finally, Mr Makhubele made a strong plea for international coordination of the protection of and access to digital cultural heritage. This is not a matter to leave entirely to the Member States. UNESCO is an influential agency, and it can make the case to promote the importance of access to ICT

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[2] http://www.dac.gov.za/policies/NATIONAL%20POLICY%20ON%20DIGITISATION%20V8.pdf

infrastructures and the principles laid down in the Charter. Unesco should be able to mobilize a group of influential countries to take leadership together and realise more improvements than have been achieved in the past seven years.

2.2. Brasil: Arquivo Nacional

The National Archives of Brazil is a federal government agency, whose goal is to keep and maintain records of permanent interest created within the scope of the government's activities.

The National Archives' structure includes Brazil's National Council on Archives, whose main task is to establish the country's archival policy, both for the public and private sectors. The Council founded the Electronic Records Committee in 1994, in order to set rules concerning digital records management and preservation, and released in 2004 the Charter for the Preservation of Digital Archivistic Heritage, which was based on UNESCO's Charter. This adoption of the UNESCO Charter to the Brazilian archival situation was well received in the country. It received the Rodrigo Melo Franco de Anrade Prize in 2006 for its significant contribution to the protection of cultural assets. The UNESCO Guidelines for the Preservation of Digital heritage have not been translated into Portuguese, but the Spanish translation of Mr Colin Webb's work has been widely used.

While the UNESCO Charter describes the preservation and access of digital heritage in a generic way, the Brazilian Charter is more tailormade for the archival context. It works on three levels: it calls for the elaboration of strategies and policies, such as archivistic management of documents, instrumentalization of archives, electronic government and cooperative actions. Furthermore, it asks for the establishment of regulations: standards and protocols, functional requisites, metadata and digital information security; and it also addresses the promotion of knowledge: a research agenda, training and knowledge distribution.

With the Brazilian Charter in hand, the Electronic Records Committee sought to establish rules for fundamental aspects concerning electronic records, and among other actions, released the Model Requirements for Electronic Systems of Document Management, also known as e-ARQ Brasil. These requirements followed the European Commission's Model Requirements for the Management of Electronic Records – MoReq[3]. Other actions motivated by the framework of ideas brought by the Charter included a document with technical guidelines for the digitization of graphic records (texts and still images) admitted as of permanent value, and the National Archives' participation in the establishment of Brazil's electronic government policy by applying metadata patterns and archival concepts to the e-Government's Interoperability Standards Program.

In 2010, the National Archives of Brazil launched a medium-term programme aimed to implement a repository where digital records of the country's federal administration will be preserved and made accessible. The focus will be on born-digital materials. For this repository Brasil adopted the system RODA (Repositório de Objectos Digitais Autênticos) developed by Portugal's National Archive. Dutch consultants were attached to the project as well.

The National Archives of Brazil co-operates with other organizations in Brazil and abroad. It takes part in the National Plan for the Digitization and Access to Culture and Knowledge, launched in 2010 by Brazil's Ministry of Culture, which hosts a digital preservation workgroup focusing on data grid storage. Globally, it participates since 2007 in the third phase of the International Research on Permanent Authentic Records in Electronic Systems (InterPARES), a collaborative international project, headquartered in Canada, investigating the physical preservation of electronic records and the maintenance of their authenticity over time. Future actions for Brazil include the plan to incorporate

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[3] http://www.cornwell.co.uk/edrm/moreq.asp

the digital preservation issue in Brazil's scientific research agenda, and tighter bonds need to be built between archivists and specialists in the fields of Communications and Information Technology.

2.3. Poland: National Digital Archive
The National Digital Archives (NDA) is a central state archive, belonging to a network of Polish state archives which also includes the Central Archives of Historical Records, the Archives of New records and 31 regional archives. It came into being when the Warsaw Archives of Mechanical Records changed its name and scope in 2008, in response to the important changes that take place in the recording, storing and popularizing of archive materials. The NDA has inter alia the following tasks:
-   storing digital materials including 'electronic records' and websites;
-   maintaining and making accessible audiovisual materials;
-   digitization of analogue materials;
-   providing access to archive records and materials online;

NDA is not only concerned with digital and audiovisual archiving, but with traditional archiving as well: conservation of analogue materials is an integral part of its digitization programmes. A review of National Strategies from other countries was carried out while preparing NDA's programme. However, the UNESCO Charter and Guidelines, and the EU Recommendation on the Digitisation and Online Accessibility of Cultural Material and Digital Preservation[4] of 2006 turned out to be the most important policy papers when NDA was created. They are still relevant at this moment. In his presentation, Bończa Tomaszewski compared the EU Recommendation with the UNESCO Charter.

The EU Recommendation and the UNESCO Charter differ considerably in scope, and the two instruments approach what they have in common from different angles. In the Charter digital heritage is described as embracing 'cultural, educational, scientific and administrative resources, as well as technical, legal, medical and other kinds of information created digitally, or converted into digital form from existing analogue resources'[…] Digital materials include texts, databases, still and moving images, audio, graphics, software and web pages'. (article 1). In the first introductory paragraph of the Recommendation, 'Europe's collective memory' or 'cultural material' is said to include 'print (books, journals, newspapers), photographs, museum objects, archival documents, audiovisual materials'. UNESCO's digital heritage is on the one hand much broader, as it includes technical, legal or medical information, whereas the European Commission seems to addresses culture in a narrower, more traditional sense. But on the other hand is the Charter considerably more restricted then the Recommendation as it encompasses documentary heritage so far as this exists in digital form (and encloses digitalized analogue materials as a marginal case: article 7; 'Born digital materials should clearly be given priority), the European Union's Recommendation includes all heritage, not only documents, but also objects, digitized, or to be digitized in the future.

For UNESCO, digital heritage is a goal in itself: many digital resources 'have lasting value and significance, and therefore constitute a heritage that should be protected and preserved for current and future generations' (article 1). The Charter can be said to be future orientated; the Commission developed the Recommendation in the framework of its i2010 initiative, that focuses on 'information technologies for economic growth, job creation and the quality of life for European citizens'. It is more connected to the present.

Other differences between the two instruments reflect the differences between the two organizations that produced them. The European Union is an organization that can considerably influence the policies of its, comparatively affluent, Member States. It can therefore recommend the establishment of a common multilingual access point (introduction, 9) large scale digitisaton facilities (recommendation 4) and the development of quantitative targets for digitisation (recommendation 2). As copyright has

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[4] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:236:0028:0030:EN:PDF

been harmonized in the European Union through a number of European Union directives, the Recommendation can address the problem of orphan works (introduction 10) or state the necessity to remove barriers to the use of works which are in the public domain. UNESCO can speak about these things only in very general terms; Member States need to cooperate (article 11) and need the appropriate legal and institutional frameworks to secure the protection of their digital heritage, (article 8).

The Recommendation is three years younger than the Charter, and discusses phenomena like web harvesting and orphan works that are not as such mentioned in the Charter; yet the UNESCO Charter discusses a whole range of fundamental issues that the more practical Recommendation passes over in silence: the need for digital continuity (article 5), selection of material (article 7) and, attitudinal change alongside technological change (article 3).

Tomaszewski ended his presentation with some general considerations about the impact of the UNESCO charter in national and institutional strategies for digital preservation. The Charter urges to focus on world wide access and take rapid technological change into consideration alongside slow reacting governments. However, it neglects digitised cultural heritage and also underestimates the role of private partners in achieving permanent access. An addendum should provide more "know how solutions" on a practical level, e.g. on human resources, funding and standards.

3.   Some trends extracted from the presentations and discussion

A first conclusion could already be drawn while preparing the Warsaw workshop: it seems that no research has been conducted on the reception and implementation of the Charter and Guidelines since 2003. UNESCO is sometimes criticized for neglecting this kind of follow-up activities connected to its standard setting instruments. Critics will often be inclined to infer from lack of research to lack of impact. Yet the workshop showed that the Charter and Guidelines have informed the strategies for digital preservation in widely different countries[5].

It is true that UNESCO has conducted a survey amongst Member States and relevant NGOs six years after the adoption of the instrument, asking questions on experiences gained with the Charter and on the possible necessity for further standard setting in the area of digital heritage. The number of reactions received was small, and no results could be published. The countries and organisations that handed in responses were strongly convinced that the issues raised in the Charter were still relevant, and that the Charter should be made better known. There was no unanimity on how to achieve this. Suggestions ranged from periodic reporting to writing an updated Charter and to upgrading it to a stronger instrument, for example a Convention.[6]

The presentations suggest that the Charter for the Preservation of the Digital Heritage is still a relevant instrument. The South African experience points to a certain Western bias in some of its presuppositions. The Guidelines stand more in need of a revision, especially in their more practical parts. Between 2003 and 2011 the science of digital preservation has developed enormously and the

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[5] Beside the countries presented in the three case studies, we can also point to the Netherlands, were the *Koninklijke Bibliotheek* (National Library) has used the Guidelines for many years to introduce novices to the complexities of digital preservation. Besides, the *Koninklijke Bibliotheek* refers to the Charter's definition of digital heritage in the letters it addresses to administrators of websites it wishes to include in its web harvesting programme. Site administrators are enticed, it seems, to give permission for harvesting by cunningly associating the notions of UNESCO, heritage and the their website. This policy seems to work: some webmasters have even put a copy of the letter on-line, as a proof that the National Library accords a kind of World Heritage status to the website.

[6] Personal communication of Ms Joie Springer, UNESCO Secretariat.

sector possesses real experiences with large scale preservation and digitisation projects. To capture the state of the art was already ambitious in 2003; in 2011 it is probably an impossibility. In this light it is telling that the Memory of the World Sub-Committee on Technology decided in 2006 not to update the *Guide to the Standards, Recommended Practices and Reference Literature Related to the Preservation of Documents of All Kinds*[7]; this task has become too vast and too expensive. The same goes for thematic on-line databases like PADI[8], which was maintained by the National Library of Australia from 1997 until 2010. It is clear that an addendum to the Charter and Guidelines can be only realised if there is a focus on developments of strategic importance, combined with a high level of community involvement.

A comparison of the standard setting work of UNESCO and the European Union yields some interesting insights. On the one hand we see that the EU Recommendation on the Digitisation and Online Accessibility of Cultural Material and Digital Preservation of 2006 does not supersede, for EU Member States, the UNESCO Charter. The documents show fundamental differences in their goals, scope and underlying assumptions. From the Brazilian adoption of MoReq, on the other hand, we see that standards set by the European Union can be adopted by countries far outside the European region.

In the presentations as well as in the ensuing discussions, the relation between born digital heritage and digitised analogue material came up time and again. When UNESCO adopted the decision to elaborate an instrument on digital heritage, the focus was clearly on born-digital material. This is evident from the first sketch for the Charter, that was presented to the 164th Executive Board in the spring of 2002[9]. The scope of the materials to be treated in the instrument is described as follows: 'a large part of the world's information is now produced digitally, and most of this exists in digital form only. The web functions as a resource for information and communication as well as a cultural space where a diversity of materials are produced that cannot easily be classified in well known categories.' The strict limitation to born digital is to be understood from the *focus on preservation* issues that guided the specialists at that time. From this point of view, the difference between born digital and digitized analogue materials is fundamental: if a migration to a new format is impossible, analogue materials can normally be digitized again; but for born digital materials there are no second chances, and this unique vulnerability was the reason for an instrument especially targeted to this type of heritage.

The inclusion of digitized heritage within the compass of the Charter was only agreed upon at a later stage, as a results of the discussions in the Executive Board. It still shows in the text of the Charter: article 1 (scope), treats the two types equally: 'the digital heritage […] embraces cultural, educational, scientific and administrative resources, as well as technical, Legal, medical and other kinds of information created digitally, or converted into digital form from existing analogue resources.' Yet in article 7 (selecting what should be kept) it says '"born digital" materials should clearly be given priority'.

From a *focus on access* the difference between the two types is far less important. This emphasis on access is more natural to most heritage institutions; presenting their treasures in a digital environment is not so different from what they were doing before the advent of the internet. Moreover, they are strongly urged by governments to capitalize upon their collections in these times of financial crises.

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[7] see the report of the Report of the Ninth Meeting of the Sub-Committee on Technology of the International Advisory Committee of the Memory of the World Programme:
http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/CI/CI/pdf/mow/mow_9th_technical_sub_committee_final_report_en.pdf
[8] http://www.nla.gov.au/padi/
[9] http://unesdoc.unesco.org/images/0012/001255/125523e.pdf

The economic importance of on-line access to digital heritage has grown, and this too makes the distinction less important.

4.   Some ideas on an addendum
In the preceding section, we touch already on the *form* that an addendum to the Charter and Guidelines can be given, e.g. an interactive web forum on strategic issues, kept up to date by the sector itself. This might be a more appropriate form than a static document on paper. Yet, bearing in mind the target group of policy makers – highly relevant for the global community of Member States that is UNESCO – it should ideally be combined with periodical updates on the relevant developments, written with this target group in mind. It this way, the Charter, generally considered to be too little known, would be regularly brought to the attention of governments.

The Workshop made it very clear that an addendum, in whatever form, should be a very inclusive effort. The Charter addresses a global problem after all. The work, therefore, should be undertaken in the framework of one or more of the relevant platforms that UNESCO has to this purpose, like the Sub-Committee on Technology or the Information for All Programme. During his summing-up of the Warsaw Conference, Assistant Director-General Kārkliņš suggested that the subject could be discussed further during the UNESCO Conference on Digital Heritage that will be organized in 2012.

An addendum to the Guidelines for the Preservation of the Digital Heritage should discuss the most fundamental issues that influence the practice of long time digital preservation and digitization since the adoption of the Charter. Some of the themes that came up at the Warsaw Workshop should undoubtedly find a place in it, for example the influence exercised by technological developments like cloud computing; the appearance of commercial actors in the field of digital preservation; the experiences of non-Western countries in digitizing their heritage and the responsibility for digital heritage that cannot be attributed to a country. An interesting example of this last issue is the archive of Twitter, that has recently been transferred to the Library of Congress.

Annex: Charter on the Preservation of the Digital Heritage

15 October 2003

The General Conference,

Considering that the disappearance of heritage in whatever form constitutes an impoverishment of the heritage of all nations,

Recalling that the Constitution of UNESCO provides that the Organization will maintain, increase and diffuse knowledge, by assuring the conservation and protection of the world's inheritance of books, works of art and monuments of history and science, that its "Information for All" Programme provides a platform for discussions and action on information policies and the safeguarding of recorded knowledge, and that its "Memory of the World" Programme aims to ensure the preservation and universal accessibility of the world's documentary heritage,

Recognizing that such resources of information and creative expression are increasingly produced, distributed, accessed and maintained in digital form, creating a new legacy – the digital heritage,

Aware that access to this heritage will offer broadened opportunities for creation, communication and sharing of knowledge among all peoples,

Understanding that this digital heritage is at risk of being lost and that its preservation for the benefit of present and future generations is an urgent issue of worldwide concern,

Proclaims the following principles and **adopts** the present Charter.

The digital heritage as a common heritage

Article 1 – Scope

The digital heritage consists of unique resources of human knowledge and expression. It embraces cultural, educational, scientific and administrative resources, as well as technical, legal, medical and other kinds of information created digitally, or converted into digital form from existing analogue resources. Where resources are "born digital", there is no other format but the digital object.

Digital materials include texts, databases, still and moving images, audio, graphics, software and web pages, among a wide and growing range of formats. They are frequently ephemeral, and require purposeful production, maintenance and management to be retained.

Many of these resources have lasting value and significance, and therefore constitute a heritage that should be protected and preserved for current and future generations. This ever-growing heritage may exist in any language, in any part of the world, and in any area of human knowledge or expression.

Article 2 – Access to the digital heritage

The purpose of preserving the digital heritage is to ensure that it remains accessible to the public. Accordingly, access to digital heritage materials, especially those in the public domain, should be free of unreasonable restrictions. At the same time, sensitive and personal information should be protected from any form of intrusion.

Member States may wish to cooperate with relevant organizations and institutions in encouraging a legal and practical environment which will maximize accessibility of the digital heritage. A fair balance between the legitimate rights of creators and other rights holders and the interests of the public to access digital heritage materials should be reaffirmed and promoted, in accordance with international norms and agreements.

Guarding against loss of heritage

Article 3 – The threat of loss

The world's digital heritage is at risk of being lost to posterity. Contributing factors include the rapid obsolescence of the hardware and software which brings it to life, uncertainties about resources, responsibility and methods for maintenance and preservation, and the lack of supportive legislation.

Attitudinal change has fallen behind technological change. Digital evolution has been too rapid and costly for governments and institutions to develop timely and informed preservation strategies. The threat to the economic, social, intellectual and cultural potential of the heritage – the building blocks of the future – has not been fully grasped.

Article 4 – Need for action

Unless the prevailing threats are addressed, the loss of the digital heritage will be rapid and inevitable. Member States will benefit by encouraging legal, economic and technical measures to safeguard the heritage. Awareness-raising and advocacy is urgent, alerting policy-makers and sensitizing the general public to both the potential of the digital media and the practicalities of preservation.

Article 5 – Digital continuity

Continuity of the digital heritage is fundamental. To preserve digital heritage, measures will need to be taken throughout the digital information life cycle, from creation to access. Long-term preservation of digital heritage begins with the design of reliable systems and procedures which will produce authentic and stable digital objects.

Measures required

Article 6 – Developing strategies and policies

Strategies and policies to preserve the digital heritage need to be developed, taking into account the level of urgency, local circumstances, available means and future projections. The cooperation of holders of copyright and related rights, and other stakeholders, in setting common standards and compatibilities, and resource sharing, will facilitate this.

Article 7 – Selecting what should be kept

As with all documentary heritage, selection principles may vary between countries, although the main criteria for deciding what digital materials to keep would be their significance and lasting cultural, scientific, evidential or other value. "Born digital" materials should clearly be given priority. Selection decisions and any subsequent reviews need to be carried out in an accountable manner, and be based on defined principles, policies, procedures and standards.

Article 8 – Protecting the digital heritage

Member States need appropriate legal and institutional frameworks to secure the protection of their digital heritage.

As a key element of national preservation policy, archive legislation and legal or voluntary deposit in libraries, archives, museums and other public repositories should embrace the digital heritage.

Access to legally deposited digital heritage materials, within reasonable restrictions, should be assured without causing prejudice to their normal exploitation.

Legal and technical frameworks for authenticity are crucial to prevent manipulation or intentional alteration of digital heritage. Both require that the content, functionality of files and documentation be maintained to the extent necessary to secure an authentic record.

Article 9 – Preserving cultural heritage

The digital heritage is inherently unlimited by time, geography, culture or format. It is culture-specific, but potentially accessible to every person in the world. Minorities may speak to majorities, the individual to a global audience.

The digital heritage of all regions, countries and communities should be preserved and made accessible, so as to assure over time representation of all peoples, nations, cultures and languages.

Responsibilities

Article 10 – Roles and responsibilities

Member States may wish to designate one or more agencies to take coordinating responsibility for the preservation of the digital heritage, and to make available necessary resources. The sharing of tasks and responsibilities may be based on existing roles and expertise.

Measures should be taken to:

(a) urge hardware and software developers, creators, publishers, producers and distributors of digital materials as well as other private sector partners to cooperate with national libraries, archives, museums and other public heritage organizations in preserving the digital heritage;

(b) develop training and research, and share experience and knowledge among the institutions and professional associations concerned;

(c) encourage universities and other research organizations, both public and private, to ensure

preservation of research data.

Article 11 – Partnerships and cooperation

Preservation of the digital heritage requires sustained efforts on the part of governments, creators, publishers, relevant industries and heritage institutions.

In the face of the current digital divide, it is necessary to reinforce international cooperation and solidarity to enable all countries to ensure creation, dissemination, preservation and continued accessibility of their digital heritage.

Industries, publishers and mass communication media are urged to promote and share knowledge and technical expertise.

The stimulation of education and training programmes, resource-sharing arrangements, and dissemination of research results and best practices will democratize access to digital preservation techniques.

Article 12 – The role of UNESCO

UNESCO, by virtue of its mandate and functions, has the responsibility to:

(a) take the principles set forth in this Charter into account in the functioning of its programmes and promote their implementation within the United Nations system and by intergovernmental and international non-governmental organizations concerned with the preservation of the digital heritage;

(b) serve as a reference point and a forum where Member States, intergovernmental and international non-governmental organizations, civil society and the private sector may join together in elaborating objectives, policies and projects in favour of the preservation of the digital heritage;

(c) foster cooperation, awareness-raising and capacity-building, and propose standard ethical, legal and technical guidelines, to support the preservation of the digital heritage;

(d) determine, on the basis of the experience gained over the next six years in implementing the present Charter and the guidelines, whether there is a need for further standard-setting instruments for the promotion and preservation of the digital heritage.