

**Report of the Eighth Meeting of
the Sub-Committee on Technology of
the International Advisory Committee for
the UNESCO Memory of the World-Programme**

Amsterdam, Tuesday 17th and Wednesday 18th May 2005



**European Commission on Preservation and Access (ECPA)
c/o KNAW, Trippenhuis, Kloveniersburgwal 29,
NL-1011 JV Amsterdam, The Netherlands**

Those Participating:

Members of the Sub-Committee: Julián Bescós, George Boston, Adolf Knoll, Fernando Osorio, Jonas Palm, Dietrich Schüller and Marie-Thérèse Varlamoff.

Guests of the Sub-Committee: Stephan Ipert and Yola de Luset and Anne Muller (ECPA) - part-time

UNESCO Programme Officer: Abdelaziz Abid

An address list for the participants is contained in Annex B

1. Welcome

Dietrich Schüller welcomed the members of the Sub-Committee and their guests to the eighth meeting of the Sub-Committee on Technology. He thanked the Royal Netherlands Academy of Arts and Sciences and the European Commission on Preservation and Access for offering their premises for the meeting.

2. Administrative Items

The Report of the previous meeting held in Paris in February 2004 was approved. The draft Agenda for the meeting (see Annex A) was agreed and one additional item was tabled for discussion under Any Other Business - draft rules of procedure for the Sub-Committee.

3. Memory of the World Projects

Dietrich Schüller reminded the Sub-Committee that the International Advisory Committee at its meeting in Gdansk in 2003 had asked the S-C to examine the technical soundness of project proposals. One group of proposals had been considered at the previous meeting of the S-C in Paris in February 2004. Since then, another seven proposals had been received by the Secretariat.

The Sub-Committee discussed each of the proposals and their comments are contained in Annex C.

4. Jijki Prize

Dietrich Schüller said that the Bureau of the IAC had met in Paris in March 2005 to create a shortlist from the original the 36 nominations. Before the IAC made its final decision in China in June, the Sub-Committee on Technology was asked to comment on the technical aspects of each of the seven shortlisted nominations. The main criterium to be considered was whether the nomination had made a significant contribution to the preservation and accessibility of documentary heritage.

The S-C agreed to the request and discussed each nomination. It was decided that the discussion would be on two levels - a debate as to the viability of the technical elements of the nominations and a discussion as to whether the technical aspects met the criterium. Annex D contains the comments of the S-C members.

One of the nominations was from the Czech National Library. Adolf Knoll agreed to withdraw from the meeting while this nomination was being discussed.

5. Publications

a. Proposed Booklet - *Safeguarding the Documentary Heritage*

The text of the booklet was introduced by Jonas Palm. He said that the work was aimed at people working in administrative and management areas of archives and libraries who wanted a basic primer on the technical issues facing their collections. Marie-Thér se Varlamoff said that the sections on traditional carriers were weak and the brief bibliography was short of entries. She offered to write a few paragraphs and provide suitable citations to strengthen the traditional materials section. Fernando Osorio agreed to provide citations for film carriers.

Julián Bescós said that some passages of text were missing from the copy circulated before the meeting. George Boston said that he would investigate and ensure that the text was complete before circulating the draft again. He was also asked to insert page numbers in the draft.

Abdelaziz Abid asked that the completion of the text be treated as very urgent. He wanted to have translations made and copies produced for the IAC meeting in China in mid-June. It was agreed that the final text will be supplied to M. Abid by May 31st.

The S-C discussed the possible design of the leaflet. It was agreed that some images were needed to break up the expanse of text. A design other than a simple booklet was also desired.

Yola de Lusenet showed examples of some large leaflets produced by ECPA. These included multi-fold A4 and A5 documents which contained the equivalent of 16 sides of A4 paper. She recommended that a professional layout designer be used to ensure that the work had the maximum impact on the target audience.

b. Proposed Booklet - *Guidelines on the Use of Recordable CDs and DVDs as Storage Media in Archival Collections*

Dietrich Schüller introduced the draft text received from Kevin Bradley and circulated to the S-C prior to the meeting. Dietrich's overall opinion was that the text was very good but that the last section required some further work. Kevin Bradley agreed with this and was already working on a new draft of the last chapter. The S-C was reminded of the reasons for commissioning this work. Several publications had been released that advised archives and librarians about the use of optical media but failed to warn of the need to ensure that the blank discs used were of high quality, that the recordings made were of high quality and that the discs required monitoring at regular intervals to ensure the survival of the data.

Julián Bescós agreed. He said that the text reflects his own experience. The other members of the S-C agreed with this view.

Fernando Osorio asked if it was possible to add a keyword in the outer margin of each page to help readers find the section that they were seeking.

Abdelaziz Abid asked about the costs of storing digital copies on optical discs. Dietrich Schüller said that the major cost was the preparation of the source material and the capture of the information. The cost of the machines and the blank discs was relatively small in comparison. Jonas Palm said that the costs given in the illustrations required updating. Dietrich Schüller said that this had already been noted and was in hand. He added that the reduction in cost of hard discs and of tape backup systems was making these media more attractive for small users.

A number of questions of detail were asked. Dietrich Schüller referred the questioners to the appropriate section of the text.

Marie-Thérèse Varlamoff said that she found the text too complex and had not read it all. Dietrich Schüller said that this was rather worrying as the text was intended for non-technicians. He asked her to make another attempt to read the text and then to report back to the S-C.

Because of the need to wait for the revised section which will not be ready before July 1st, it was agreed that the existing text would be presented to the IAC at its meeting in China in June. The text will be available in print form and on the web. Jean-Marc Fontaine would be asked to undertake the French translation under contract. UNESCO would arrange for a first draft of a Spanish translation and Julián Bescós and Fernando Osorio would undertake the final editing of this version. Editions in Arabic, Chinese and Russian would also be commissioned with the first translation of each checked by technicians fluent in those languages.

c. IASA Publication - *Guidelines on the Production and Preservation of Digital Audio Objects*

A copy of this publication was circulated to the S-C by Dietrich Schüller. The book had been published by IASA and was the first text to be allowed to use the Memory of the World logo. There were two main parts to the book. The first part dealt with the problems of extracting the required signal from the original carrier whether analogue or digital. The second part examined the advantages and disadvantages of the various digital target media.

The book is obtainable via the IASA website at: <http://www.iasa-web.org/>

d. Update of *Safeguarding the Documentary Heritage: A Guide to Standards etc.*

Dietrich Schüller reminded the S-C that this had been written in 1998 and had subsequently been used as the core text of the IFLA CD-ROM with the same title. The texts of both the book and the CD were in need of updating. The question to be answered was “Do the publications still meet a need?”

Abdelaziz Abid said that both the printed and the CD versions had been very popular and stocks of both were very low. The CD was more of a workshop on preservation and was, therefore, more popular. Editions had been produced in Arabic, French and other languages. In addition, the latest publication from the Council on Library and Information Resources written by Fred Byers and entitled *Care and Handling of CDs and DVDs* was also proving popular.

Dietrich Schüller said that IASA had corresponded with CLIR about the book to draw attention to some of its shortcomings. The S-C should have been asked to examine the text before the meeting to enable it to be discussed.

Jonas Palm said that in his opinion the 1998 text should not be revised. He would prefer to see a synthesis of existing texts on the climatic parameters and the design of storage facilities for the various types of media. Some members of the S-C disagreed. A debate followed about storage conditions.

- The use of traditional methods of building.
- The relaxation of storage parameters if resources did not permit the realisation of the ideal.
- The balance between temperature and relative humidity.
- The danger that the existence of such relaxations may be used by accountants as reasons for not applying best practice.

The S-C decided that a new publication containing two parts. The first containing the synthesis of design parameters for stores; the second containing specialist sections based upon the 1998 texts. The introduction to each of the sections forming part two should be revised and the information about standards and recommended texts should be updated. The section on electronic publications should be replaced by a text about the use of hard drives and other computer based storage media.

George Boston agreed to prepare a framework for the proposed new work and to then collate and edit the texts. He said that the addition of images would help make the text more readable and asked for the authors of the sections to add pictures to their work. The S-C asked if it would be possible to contract out the writing of the section on traditional carriers, the creation of a select bibliography and the lists of standards. Abdelaziz Abid agreed that this was potentially possible.

e. The European Commission on Preservation and Access

Yola de Lusenet explained the history of ECPA to the S-C. She said that it had been formed eleven years ago and had been modelled on the Commission on Preservation and Access in Washington. It was funded by its partner institutions and from projects. Yola had joined the organisation ten years ago as Executive Secretary and her background was in publishing. This had proved to be very helpful with the first area of work of ECPA - acid paper.

Because of the small staff (2.4 people) the range of activities at any one time was limited although nothing was dropped completely. Recently completed was the work on an EU funded project - SEPIA - which dealt with photographs. Just starting was another EU funded programme - TAPE - which was scheduled to run for three years. This was dealing with audiovisual materials. Earlier work had been on paper and microfilming.

One constant, however, was ECPA's involvement in training. This took the form of expert meetings, publications and assisting with courses organised by the partners in ECPA. A major strand of the work was the interpretation of technical matters for non-technicians. Another strand was the reflecting to libraries and archives the concerns of academics about the presentation of data.

Abdelaziz Abid said that ECPA was doing a great deal of work with few staff and was to be commended. George Boston commented that there was a danger of duplication of effort. One way to avoid this was the cross-use of published material. He asked if it was possible for the SCoT to obtain permission to use ECPA material and, if so, who was the person to approach. Yola de Lusenet replied that it was possible and that she was the person to contact.

6. Digital Preservation Costs

Dietrich Schüller said that he had proposed this topic for discussion by the Bureau of the Information for All Programme partly because of the growing interest in using computer storage for archive and library materials. Potential users frequently asked about the capital and running costs of such systems. Answers were easily available about the set-up costs but the running costs of a store were less clear.

The Bureau concluded in its last meeting in Oct 2004 that the Secretariat further investigates this issue, including identifying work being carried out with other agencies, and report back to the next Bureau meeting which will take place in April 2006. The SCoT is asked to examine the issue and provide precise terms of reference for a study that could be commissioned by the Secretariat (see Annex E.1 and E.2)

The SCoT agreed to consider the topic. Dietrich Schüller said that the cost of digital media and hardware is steadily reducing. This is having an effect upon the way that preservation is viewed. There is, however, an underlying problem. That is the preservation and maintenance of the software needed to control the machinery and to de-code the data. UNESCO has been active in the past by creating and supplying software such as CD-ISIS. There was a need for an affordable Hierarchical Storage Medium (HSM). Can UNESCO provide such a system?

Abdelaziz Abid said that UNESCO was beginning to run down its support of the various software systems that it had created. The cost of commercial software to replace it has become cheaper and there is less need for UNESCO to be actively creating software packages.

Dietrich Schüller then said that, taking all the costs of maintaining a storage facility and maintaining the data and the software in to account, current costs for storage were estimated to be about ten Euro per Gigabyte each year. This needed to be reduced. The target figure was a cost of storage of about one Euro per Gigabyte per year.

Jonas Palm said that the Swedish National Library had been investigating its storage costs. It estimated them to be about six Euros per Gigabyte per year. He presented some information about the management system used by the Swedish National Library for digital documents (see Annex F).

Julián Bescós presented information about the costs of storage at the Archivos de Sevilla. During a two year period, 250 bundles of papers with 40 pages per bundle can be prepared, indexed and catalogued. This would take about 330 days. The scanning takes less time. The two people can scan 600 pages a day using about 160GB of storage. This would take about 17 days - a total of 2720GB. The cost of the capture process would be about €250,000. Storage for two years would cost about €14,500. This comes to about €2.67 per GB per year.

Dietrich Schüller asked if the cost of storing one Terabyte for one year could be provided. One Terabyte is a realistic size of store for a small collection. It was agreed that members of the SCoT would approach various storage facilities to find out how much it would cost to store one Terabyte for one year, for five years and ten years.

- Dietrich Schüller would discuss the matter with Del Eilos to validate the questions to be asked.
- The other members of the SCoT would then approach their contacts in the computing world to seek answers to the questions.
- Abdelaziz Abid would talk with representatives of NGOs active in this area such as the CODATA.

The answers to the questions would be collated and analysed to identify areas where efforts could be made to reduce costs.

7. Future Activities

The SCoT agreed to continue the technical evaluation of project proposals and nominations for the Jijki Prize.

The SC discussed the creation of an on-line technical bibliography. It was noted that there were several such bibliographies already. IFLA, the National Library of Australia and ECPA all have an on-line bibliography. It was agreed that members of the SC should look at these and see if any further action should be taken eg. adding citations or, possibly, combining the bibliographies.

Abdelaziz Abid said that there was a need for a tutorial for the preservation of digital objects. Marie-Thérèse Varlamoff said that the PAC Centre for the Asia/Pacific area based at the National Library of Australia has some specialism in this and should be approached to see if they would be prepared to undertake the creation of a tutorial that could be both web-based and issued on CD.

Adolf Knoll said that the Czech National Library may also be able to help. Yola de Lusenet said that ECPA was interested in such a tutorial but could not offer help itself at this stage.

8. Any Other Business

a. Membership of the SCoT

Dietrich Schüller reminded the members of the SC that at their previous meeting in Paris they had decided that an expert in the rarer forms of traditional materials such as palm leaves would be a helpful addition to the group. Jonas Palm had suggested Mrs Saroja Wettasinge, Director National Archives of Sri Lanka in Colombo. It had been hoped that she could have been invited to attend the current meeting but a lack of finances had not made this possible. It was agreed that Dietrich Schüller would write to Mrs Wettasinge to see if she was prepared to join the SC.

Abdelaziz Abid said that the IAC would be discussing regulations for the sub-committees at its meeting in China. This was an opportunity for SCoT to influence the deliberations of the IAC. He submitted a draft set of Rules of Procedure prepared for the Register Sub-Committee. The SCoT discussed these and made some changes (see Annex G).

The SC was concerned that a balance be struck between bringing new blood into the group but also retaining a strong strand of continuity. In addition the SC stressed that, although it was important to ensure a wide geographical spread of members, expertise was the over-riding criteria for membership of the SCoT. Similarly, the members of SCoT should not be appointed because of their membership of a particular organisation although the range of NGOs etc represented should be maintained.

Abdelaziz was requested to make the revised draft Rules of Procedure available to the IAC before they met in mid-June.

9. Close of Meeting

The Chairman of the SCoT Dietrich Schüller thanked the members of the SC for attending and taking part in an intensive meeting. He thanked Abdelaziz Abid and his colleagues at UNESCO for facilitating the work of the group. The hosts, ECPA and the KNAW, were warmly thanked for the hospitality that had helped ensure a productive meeting. In particular Yola de Lusenet and Anne Muller were thanked for their preparatory work.

GLB 27V2005

ANNEX A

Draft Agenda

1. Welcome
2. Administrative Items - Agreeing the Agenda; approving the Minutes/Report of the last meeting; agreeing the timetable etc of the meeting; other routine administrative items.
3. Memory of the World Projects - A review of the project proposals received since the last meeting of SCoT.
4. Jijki Prize - To consider the viability, from a technical standpoint, of the seven shortlisted nominations for the US\$30,000 Jijki Prize.
5. Publications:
 - a. Proposed booklet - *Safeguarding the Documentary Heritage*
 - b. Proposed booklet - *Guidelines on the Use of Recordable CDs and DVDs as Storage Media in Archival Collections*
 - c. IASA Publication - *Guidelines on the Production and Preservation of Digital Audio Objects*
 - d. Update of *Safeguarding the Documentary Heritage: A Guide to Standards etc.*
6. Digital Preservation Costs - This topic was proposed by Dietrich Schüller for discussion by the Bureau of the Information for All Programme. The Bureau concluded in its last meeting in Oct 2004 that the Secretariat further investigate this issue, including identifying work being carried out with other agencies, and report back to the next Bureau meeting which will take place in April 2006. The SCoT is asked to examine the issue and provide precise terms of reference for a study that could be commissioned by the Secretariat.
7. Future activities
8. Any Other Business
9. Close of Meeting

ANNEX B

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ANNEX C

Project Proposals

2004-16 - Chile

Images of an Invisible Country:

TeleAnalysis and Recovery of Chile's Audiovisual Memory

This proposal was a re-submitted version of the proposal discussed in Paris in February 2004. The S-C noted that the target media was still DVD and that the size of the project - the transfer of 47 U-Matic video tapes - was unchanged. The view of the S-C was unchanged.

The nominators of the project were advised that, rather than trying to create a copying facility, it would be more sensible to send the tapes to a specialist house that was experienced in handling U-Matic tapes and possessed both the expertise and the equipment to overcome any defects in the tapes. The overall cost would be greatly reduced and the probability of success greatly increased.

The S-C further recommended that the IAC approach the Association of Moving Image Archivists (AMIA) and ask them to review the project and assist the proposers to re-draft the nomination.

2004-17 - India

Śaiva Manuscripts Publication Project

This project to preserve a large collection of documents written on palm leaves was also considered in Paris in 2004. A number of questions were asked but most remain unanswered.

The size of the project remains unknown. It is noted that there are about 11,000 manuscripts each consisting of a number of pages. The proposers have not responded to the S-C's request for information about the future preservation of the original documents or of the copies made. It is intended that an external facility is to perform the copying. No information was supplied about the level of expertise possessed by the company. Doubts were expressed about the technical standards to be used for capturing the images. The S-C were also worried that no consideration appeared to have been given to making microfilms in addition to digital copies.

The S-C were concerned about the condition of the palm leaves but were also concerned about the viability of the project as proposed. Stephan Ipert said that he was intending to visit Pondicherry in September and will discuss the project with the proposers.

2004-18 - Republic of Macedonia

Digitisation of Cultural Heritage

The opinion of the S-C was that this proposal was not a project but a Mission Statement - a laudable statement of what the proposers hope to achieve. The paper does not request assistance from UNESCO. It sets out the objectives that the authorities of the Republic of Macedonia hope to achieve by the implementation of a long term plan for the digitisation of documents for cultural, scientific and educational purposes. The success of such projects is, however, dependent on having both a well prepared plan for the copying of the original documents and a clear idea of the long term strategic, personnel and financial implications of the future preservation of both the original documents and the copies.

2004-19 - India

Tamil Palm Leaf Manuscript Project

This is another re-submission of an earlier project proposal. The project is generally well thought through. It proposed that both digital and microfilm copies be made of each palm leaf but, as with the other proposals, there is no information about plans for the future preservation of the digital and microfilm copies.

The palm leaves of the Institute of Asian Studies, the proposers of the project, were entered on the International Register of the Memory of the World in 1997. Palm leaves to be included in this project are also held by a number of other institutions who will retain the leaves after the images have been captured. It is likely that the level of preservation will vary greatly depending on the in-house skills available to each institution. A programme of conservation training for the custodians would be advisable to ensure the maximum life for the originals.

2004-20 - France

Research and Consultation of Digitised Ancient Arabic Manuscripts (Rouzana)

As with the proposal from the Republic of Macedonia, this is not a project proposal. It is a statement of the intention of the proposers to digitise Arabic documents held in a number of institutions. The S-C noted that there are no plans to make microfilm copies in parallel with the digital copies. The S-C also noted that there is no discussion of the future preservation of the digital images.

2004-21 - Argentina

Improvement of the Preservation of and the Access to the Viceroyalty Documents of the Archivo General de la Nación

This is a well-planned but conventional project to improve the storage of and access to an important collection of documents that was included in the International Register of the Memory of the World in 1997.

The S-C noted that it was proposed to make microfilm copies of the documents only. It was pointed out that the use of computers in Argentina is, at present, relatively limited. If the usage of PCs increases, it may be possible to make good quality digital images using the microfilm as the source. This would be dependent on the original capture work being performed at a high standard and that the microfilms were carefully stored and used in the intervening period.

2004-22 - Ethiopia

Ethiopian Manuscripts and their Oral Commentaries

This is a three part project which was submitted for consideration in 2004. One part deals with the preservation of existing microfilm images of documents. The second part is for the capture of images of more original manuscripts. The third deals with the recording of oral commentaries on the manuscripts that have been preserved by generations of clergy and scholars.

1. Many manuscripts were copied to cellulose based microfilm. This is beginning to show signs of decay. The microfilm needs to be preserved.
2. It is estimated that there are half a million codices and manuscripts in monastic libraries that are under threat from decay, collectors and use in the liturgy. To preserve the texts, they need to be microfilmed and/or digitised.
3. In parallel with the written documents, there is a long history in Ethiopia of passing oral commentaries on the written texts through the generations of the clergy. This transmission was disrupted in the years after the revolution of 1974. The commentaries need to be recorded before they vanish.

The S-C considered that the best solution for the first part was for the decaying microfilm to be copied to a modern polyester based film and, perhaps, to a digital medium. For the part of the project dealing with the capture of images, a standard microfilming and/or digitisation workshop would be required. The recording of the oral commentaries would be best done by the Culture Sector as part of the Intangible Heritage Programme.

2004-23 - South America: Regional Committee for Latin America and the Caribbean

Registering the Documentary Heritage of Latin America and the Caribbean

This is not a technical project. The project concentrates on the dissemination of knowledge. It is worthwhile in that it helps to set a standard of selection for the various Registers. There is a need, however, to ensure that any work done by this project remains in step with the work being undertaken in this area by national bodies such as Radio Educación in Mexico.

ANNEX D

The Jijki Prize Shortlisted Nominations

2005-01 - Australia

PANDORA

The SCoT agreed that while this was a technically excellent nomination it was by no means unique. Several other institutions had similar systems. There was some debate as to whether PANDORA was a pioneering system but this was inconclusive. There were earlier, but simpler, systems that make it difficult to argue that PANDORA was the first of its type.

2005-02 - Colombia

Archivo del Patrimonio Fotografico y Filmico del Valle del Cauca

This was considered to be a technically sound project but not innovative. In a world context it was not seen as being outstanding but definitely significant within the context of Colombia.

2005-03 - Czech Republic

The National Library of the Czech Republic Preservation Programme

Adolf Knoll left the meeting room during the discussion of this nomination.

The technical standards of the work undertaken by the Czech National Library were excellent. The Library was not in the first ranks of the pioneers of the use of digital technology for preservation and access but was constantly working to improve the technology. It was noted that the Library had assisted and advised a number of other institutions in Central and Eastern Europe to begin digitisation programmes by offering an integrated preservation and access system of a proven high technical standard.

2005-04 - Egypt

Prof. Fathi Saleh

Abdelaziz Abid reported that since the Bureau meeting that had drawn up the shortlist, it had been discovered that this nomination had been submitted by Prof. Saleh himself and did not have the support of the Egyptian National Commission. This contravenes Statute 6 of the statutes (see below).

6. Nomination of candidates

The Director-General of UNESCO shall invite the submission of nominations to the secretariat of the Prize, by 31 December of every even year, from the governments of Member States, in consultation with their National Commissions, and from intergovernmental organizations (IGOs) and international non-governmental organizations (INGOs) maintaining official relations with the Organization. The work of the IGOs and INGOs must be in the field of preservation and conservation of documentary heritage. Each Member State, IGO and INGO may designate no more than three candidates for each biennium.

This nomination fails to meet this requirement and, therefore, cannot be considered.

2005-05 - India**National Mission for Manuscripts**

This is a nomination from a young and active institution that was founded in 2003 to actively seek out and preserve the manuscripts held in the many institutions throughout India. The work of the institution is technically good and is significant for all of India.

2005-06 - Nicaragua**Instituto de Historia de Nicaragua y Centroamérica
at the Universidad Centroamericana**

While accepting the need to rescue what remains of Nicaraguas documentary heritage after natural disasters, wars and civil unrest, the SCoT felt that this was an overambitious project that lacked any focus. In some areas, notably the video copying, the technical standards used are low. A greater level of liaison with the international specialist archive and library associations may help with the preservation of the wide range of materials that the Instituto is trying to deal with.

2005-07 - Tanzania**International Criminal Tribunal for Rwanda**

The SCoT considered the technical standards being used for the recording of the proceedings of the Tribunal to be acceptable. There were great concerns, however, about the future preservation of the original documents. There are many documents now and this number will grow. Finding or building a repository to hold them will be difficult and the future preservation will be expensive. This has not been adequately addressed by the proposers. It was noted that it is proposed to make copies of at least some of the material with a view to creating study centres in adjoining countries. Again, the short-term and long-term costs of such action have not been considered fully.

ANNEX E.1

UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION

Intergovernmental Council for the Information for All Programme

Seventh Meeting of the Bureau

UNESCO House, Paris, Fontenoy Building, Room VIII, 18-20 October 2004

New agenda item on “Digital preservation costs” (Under Item 11 “Miscellaneous”)

Proposal by Austria

A. Background

1. As digital technologies open new horizons in access to, and preservation of information of all kind, UNESCO has significantly encouraged and promoted the use of ICTs in the service of education, science, and culture. An ever growing proportion of documents is born-digital, and many traditional documents, specifically audiovisual like sound and video, can only be preserved digitally in the long-term.

2. The “Charter on the Preservation of the Digital Heritage”, adopted in 2003 by UNESCO’s General Conference provides a declaration of principle designed to assist Member States in preparing national policies to preserve, and provide access to, digital heritage.

B. Outline of the issue

3. The cost factor is a crucial element of ensuring digital preservation. Digital storage costs are still high, despite ever decreasing hardware and storage media prices. Present **annual** costs of professional digital preservation, comprising hard- and software, are around 7-10 (8.50 - 12 US \$) per Gigabyte. Apart from hardware, digital preservation requires the ongoing checking of data integrity, and refreshment or migration of endangered data, when required. With ever growing amounts of storage capacities - even small digital collections storing multimedia content very swiftly grow into **Terabyte** dimensions - this can only be accomplished by software controlled automation. Additionally, hierarchical soft management (HSM) becomes imperative, once collections have grown to that sizes.

4. Software costs have (yet) not seen a similar development like hardware and media. Prices are still oriented on traditional clienteles like banks and insurances with their documents of likewise low storage requirements. Thus, even small cultural and scientific corpora of digital data reach or even exceed storage requirements of financial and similar institutions. Consequently, digital preservation costs today soon exhaust the financial capacity of many archives, libraries, and documentations centres. This situation is also a significant threat in the attempt to bridge the digital divide.

C. Possible role of UNESCO

5. UNESCO should address this issue, by pointing the relevant software developers to this situation. Given the enormous importance of that issue for the further continuous availability of information, UNESCO may even wish to consider the development of freeware packages in this field, following the successful example of CDS-ISIS.

D. Possible action of the IFAP Bureau

6. The **Bureau** may wish to take the following action:

- a) Consider the issue at its 7th meeting;
- b) Include an item on “Digital Preservation Costs” on the agenda of the 4th session of the Council (2006);
- c) Commission a study including recommendation for international action in the area of digital preservation cost for submission to the Council at its 4th session;
- d) Involve relevant IFAP National Committees in the preparation of the study.

ANNEX E.2

Distribution: limited
Paris, 18 March 2005
Original: English

IFAP-2005/Bureau.VIII/Inf. 6

UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION

Intergovernmental Council for the Information for All Programme

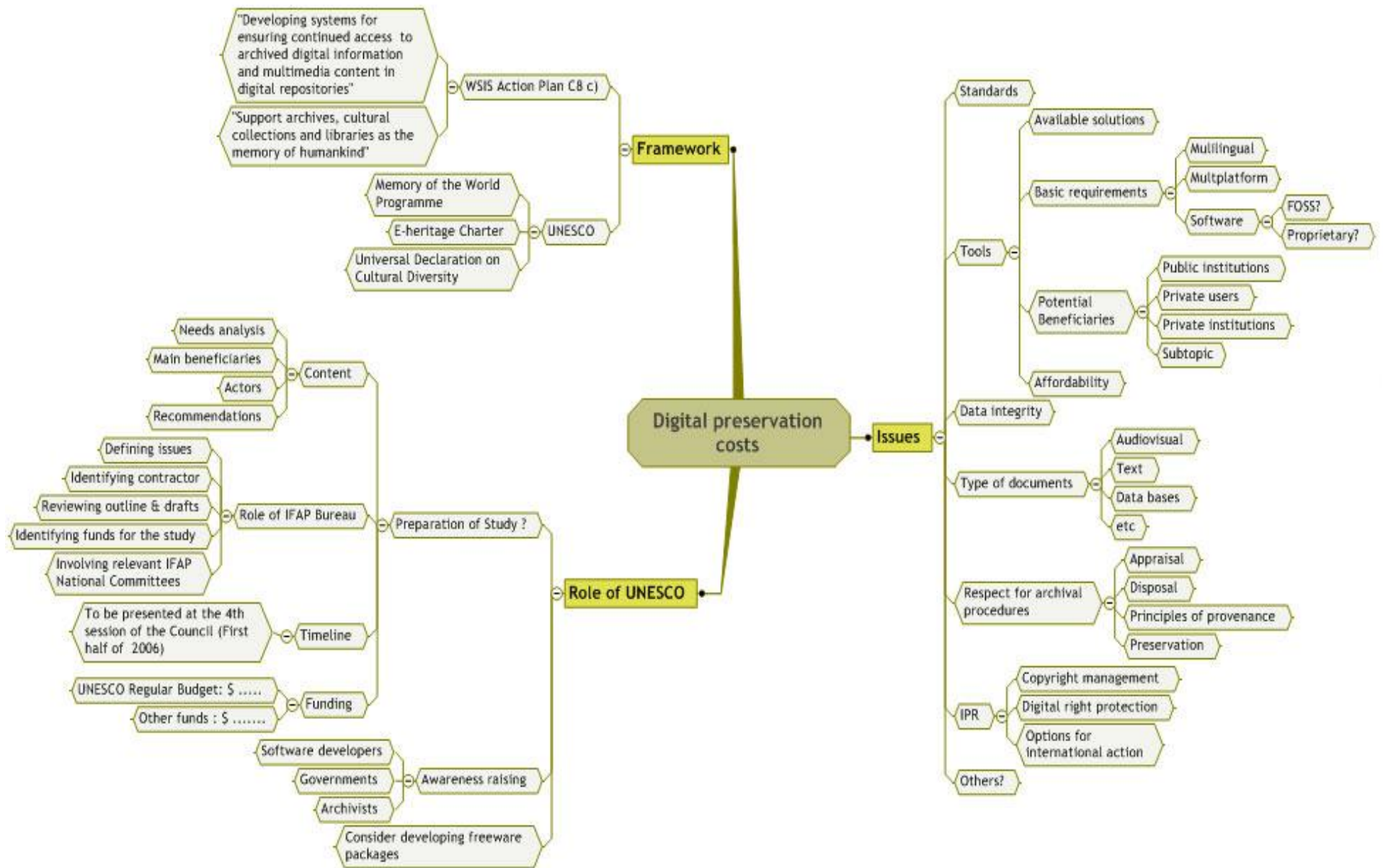
Eighth Meeting of the Bureau

UNESCO House, Paris, Fontenoy Building, Room VIII, 4-6 April 2005

Item 6 of the provisional agenda

Digital Preservation Costs

1. The Bureau, at its 7th meeting, noted the high costs of digital storage (hardware and software), especially for multimedia materials. The Secretariat was asked to investigate this issue, including identifying work being carried out by other agencies, and report back to the next Bureau meeting.
2. The Secretariat has examined the subject and presents a map outlining the framework for possible action, main issues and suggestions for UNESCO's role (Annex).
3. The Bureau may wish to suggest that this issue be further discussed by the Memory of the World Sub-Committee on Technology during its forthcoming meeting, in Amsterdam, the Netherlands, 17-18 May 2005.



ANNEX F

Comparison of the Storage Costs Using an HSM and a COM System at the Swedish National Archives

The system was based upon a mix of digital storage and analogue microfilm storage. The type of storage used varied according to type of material.

- Material that was “born-digital” remained in the digital domain.
- Audio and video material was digitised and stored digitally.
- Scanned documents were treated in one of three different ways depending on their likely level of use and importance:
 - They may be left in the digital domain to “die”.
 - They may be maintained in the digital domain.
 - They may be copied to microfilm and stored in cold film vaults (Computer on Microfilm - COM - system).

For occasional viewing of the COM material, the microfilm can be used but, if at a later time the material was required frequently or it was decided to make it available on the web, the microfilm images can be re-scanned back to the digital domain.

Comparative costs of the Libraries HSM system for digital storage and the COM system for analogue microfilm were given. In the table below the costs are given in Swedish Kroner for one Gigabyte stored for ten year periods. The real cost of the COM system will vary depending on the number of transfers back to the digital domain. The costs are given for 100% transfers during every ten year period and for no transfers.

	Years 6 - 15	Years 16 - 25	Years 26 - 35
Hierarchical Storage Medium	101.13	112.55	132.97
COM system with all microfilms transferred back to the digital domain	32.34	35.99	42.42
COM system with no transfers	3.05	3.82	4.76

While the information is stored on the microfilm, the COM system does not have to bear the costs of the regular upgrading and replacement of the digital hard and software.

ANNEX G

Draft Rules of Procedure for the Sub-Committee on Technology

Rule 1 - Membership

1.1 The Sub-Committee on Technology (SCoT) shall be composed of eight members comprising a Chairperson appointed by the International Advisory Committee (IAC) and members chosen for their specialist expertise. A rapporteur shall be selected by the SCoT from among its members.

1.2 Additional temporary members may be invited to attend a specific meeting if the SCoT feels that special expertise is required for the discussion of a particular topic.

1.3 The term of office of members of the SCoT shall be four years. They are immediately eligible for re-appointment. In order to ensure continuity of the working methods of the SCoT, no more than five members may be replaced every four years.

1.4 For the first period of operation of these Rules of Procedure only, four members will be appointed for four years and four for two years. Those appointed for two years will be eligible for re-appointment for a full four year term.

1.5 The members of the SCoT shall recommend suitable replacements to the IAC when necessary.

Rule 2 - Functions

The SCoT shall discharge the functions assigned to it by the IAC.

Rule 3 - Sessions

The SCoT shall normally meet at least every two years. Periodic meetings and consultations shall, however, be conducted through electronic media to reach decisions. The SCoT shall also hold virtual meetings as the need arises.

Rule 4 - Agenda

The agenda shall be drawn up by the UNESCO Secretariat in consultation with the Chairperson of the SCoT. It shall be communicated to the members of SCoT six weeks before the opening of each session.

Rule 5 - Functions of the Chairperson

5.1 The Chairperson shall declare the opening and closing of meetings, direct the discussions, ensure observance of these Rules, accord the right to speak, put questions to the vote and announce decisions. He or she shall rule on points of order and, subject to these Rules, shall control the proceedings and maintenance of order.

5.2 If the Chairperson is no longer able to hold office, the IAC shall choose a member of the SCoT to become Chairperson for the unexpired portion of the term of office. The IAC shall nominate a replacement member for the unexpired portion of the term of office to fill the vacancy in the membership of the SCoT.

Rule 6 - Secretariat

A representative of the Director-General of UNESCO shall participate in the work of the SCoT without the right to vote. He or she may at any time submit either oral or written statements on any matter under discussion. The Secretariat of SCoT shall be provided by the Information Society Division of UNESCO.

Rule 7 - Working Language

The working language of the SCoT shall be English.

Rule 8 - Working Documents

The working documents shall be communicated to the members one month before the opening of each meeting of the SCoT.

Rule 9 - Points of Order

During the discussion on any matter, a member of the SCoT may at any time raise a point of order, which point of order shall forthwith be decided upon by the Chairperson. Any member can appeal against the ruling of the Chairperson which can only be overturned by a majority of the members present and voting.

Rule 10 - Suspension, Adjournment and Closure

Any member of the SCoT may at any time propose the suspension or adjournment of a meeting or the adjournment or closure of a debate. Such a motion shall be put to the vote immediately and decided upon by a majority of the members present and voting.

Rule 11 - Voting Rights

Each member of the SCoT shall have one vote. Consensus will be sought as the normal basis for decision making on each topic. Otherwise decisions will be made on the basis of a simple majority vote of those present. In the case of a tie, the Chairperson shall have the casting vote.

Rule 12 - Suspension

Any provision of these Rules, except where it reproduces provisions of the Statutes of the Memory of the World Programme or decisions of the General Conference of UNESCO, may be suspended by a decision taken by a two-thirds majority of the members present and voting.

Rule 13 - Reports

The SCoT shall present reports on its work and recommendations to the IAC.