

UNESCO

Memory of the World Programme

International Advisory Committee

Sub-Committee on Technology

Report of Meeting of Sub-Committee on Technology
Held at UNESCO Headquarters, Paris on June 13th and 15th 2002

Those Present:

Members of the Sub-Committee on Technology:

Dietrich Schüller (Chairman), Austrian Academy of Sciences, Vienna, Austria
Julián Bescós, Informàtica El Cortes Inglés, Madrid, Spain
George Boston (Rapporteur), Milton Keynes, United Kingdom
Lourdes Feria, Colima University, Mexico
Adolf Knoll, National Library of the Czech Republic, Prague, Czech Republic
Jonas Palm, The Royal Library, Copenhagen, Denmark

UNESCO Officers:

Abdelaziz Abid, Programme Officer for the Memory of the World Programme
Axel Plathe, Information Society Division (part-time)
Joie Springer, Information Society Division (part-time)

Michael Alexander (British Library, Boston Spa, United Kingdom), Joelle Garcia (IFLA PAC Programme, Paris, France), de Lusetet (European Commission for Preservation and Access, The Hague, The Netherlands), Dave de Roure (University of Southampton, United Kingdom) and Marie-Thérèse Varlamoff (IFLA PAC Programme, Paris, France) were unable to attend and tendered their apologies.

See Annex A for contact details for the participants.

1. Introduction and Adoption of the Agenda

The proposed Agenda was accepted (see Annex B). The Chairman, Dietrich Schüller, explained that the meeting would be split into two parts by a *Consultation between Manufacturers and Archivists on the Long-Term Preservation of Audiovisual Recordings* to be held on Friday June 13th. The Consultation was partly organised by the Memory of the World Programme and the members of SCoT were accordingly invited to take part.

2. Statement from UNESCO

Abdelaziz Abid, the UNESCO Programme Officer for the Memory of the World, welcomed the members of the Sub-Committee on Technology to UNESCO Headquarters. He reminded the participants of the work of the Programme and outlined what he hoped the meeting would achieve.

M. Abid reported that CD of the publication written by the members of SCoT - *Safeguarding the Documentary Heritage: A Guide to Standards, Recommended Practices and Reference Literature Related to the Preservation of Documents of All Kinds* - was now available in English and French. A Spanish edition was now being produced and versions in other languages would be considered if there was sufficient demand.

Other projects and publications being supported by the Programme included One Hundred Years of Architecture in Colombia, a catalogue of the manuscripts forming the Mashtots Matenadaran collection in Armenia, a collection of oriental miniatures from Uzbekistan and the memory of Poland. A project documenting the trans-Atlantic Slave Trade was also being assisted by the supply of equipment and training to a number of the countries taking part in the project.

The biennial meeting of the International Advisory Committee held in Cheonju City, Republic of Korea in June 2001 had agreed a new set of Guidelines for the Programme. The first set were adopted in 1995 and had served the Programme well during its formative years. As the Programme matured, however, it had become clear that the Guidelines required updating in the light of the experience gained.

A training seminar for people from South East Asia had been held in Cheonju City after the meeting of the IAC. Many of the people attending were not involved with the Programme - indeed, many had not heard about the Programme before receiving invitations to attend the training seminar.

The events in Cheonju City and the work of the Memory of the World Programme had impressed the city government to the extent that they have offered to fund a Memory of the World prize to be awarded by a jury appointed by the IAC at its biennial meeting.

A further training seminar is to be held in Vietnam in March 2003 and there will be Regional meetings for the Programme in China and Quito, Ecuador.

3. Role of the Sub-Committee on Technology

Dietrich Schüller introduced this item by reviewing the history of SCoT. The Sub-Committee was founded at a time when the concept of digitisation was relatively new to many people. Much of the early work of SCoT was directed at answering the spoken, and unspoken, questions about digitisation that were giving people cause for concern. This had resulted in the Programme being wrongly viewed as a programme for digitisation by many people. Digitisation was, in fact, only one tool available to archivists and librarians - albeit, an important tool. The Programme viewed the preservation of the original documents as being of equal, if not greater, importance as the creation of copies on digital or other formats.

The inexorable decay of carriers, however, made it necessary to make recommendations for the transfer of information to new carriers. Transfer standards for a number of types of document had been included in the first Guidelines for the programme. These standards required regular reviewing and the publication of the recommendations was, therefore, best done separately from the Programme Guidelines.

At the previous meeting of SCoT in Madrid in January 1999, it had been agreed that the Sub-Committee would draft a publication giving practical advice about the processes of digitisation of analogue original documents. This was in answer to a request from IFLA for such advice for its members. Some chapters had been drafted but the project had lost impetus. Other publications were now available that cover this area. Is there a need for SCoT to continue with this project.

In fact, was there a need for the members of SCoT to collectively undertake to write any publication themselves. Would it not be better for SCoT to become a commissioning body to have articles written to fill gaps in the published information?

After a wide ranging debate, the Sub-Committee agreed that there was a need for a monitoring body to filter the texts available and to commission authors to fill gaps in the literature. In addition, SCoT should produce a list of recommended works and, where appropriate, arrange for translations from the original into other languages.

The Sub-Committee also discussed the need to produce listings of equipment suitable for various tasks. It was agreed that this was difficult because of the dangers of recommending one manufacturer in place of another. There were also great variations in the distribution patterns and support of products from different manufacturers. It would be impossible for SCoT to produce a list of recommended brands as a different list would be required for different countries. Joie Springer referred to the *Guide to the Basic Technical Equipment for Audio, Film and Television Archives* produced by the Technical Co-ordinating Committee in 1995. She suggested that this could form a model for any guide to equipment purchases. George Boston agreed to circulate copies of the book to all members of SCoT who did not have a copy.

Abdelaziz Abid asked if the Sub-Committee considered the composition of the group to be correct. Was there a need to open the Sub-Committee up to new members? Was the geographic spread too narrow?

Dietrich Schüller responded by pointing out that three of the initial four members of SCoT had been appointed as representatives of the NGOs in the archive and library world while he had been chosen as an independent Chairman of the Sub-Committee because of his activities within UNESCO. Since the first meeting, people had been invited to join this core group when the need for additional specialist skills was felt. This pragmatic method had enabled SCoT to vary its size, increasing and decreasing in numbers in response to need. By this means the Sub-Committee was able to keep its membership under control and thus be more responsive to demands.

The current participants in the SCoT and their areas of expertise are as follows:

Dietrich Schüller - Chairman (appointed by UNESCO)
Michael Alexander - printed texts (recommended by IFLA)
Julián Bescós - manuscripts (recommended by the ICA)
George Boston - audiovisual materials (recommended by IASA)
Lourdes Feria - digital publishing
Adolf Knoll - old books
Jonas Palm - photographs and paper
David de Roure - World Wide Web

Areas that may require the recruitment of new people include electronic documents and the preservation of digital data. There was caution about opening SCoT up to information technology specialists because their agenda was rather different to the preservation role of SCoT. The Directorate General XIII of the European Commission had ran into difficulties on this point. It had undertaken too many projects that did not have a practical outcome. UNESCO is possibly the only international organisation that has remembered that even digital data requires a physical carrier and requires preservation.

The suggestion from Abdelaziz Abid that there was no need to recruit an expert in the storage of digital data provoked a strong debate. There was agreement that the problems of controlling large data stores containing TeraBytes of information and the need to undertake periodic migrations of the data to new systems required expertise in the field of data control.

Dietrich Schüller questioned whether SCoT should include more than one expert from a field. The consensus was that the Sub-Committee should invite only one specialist in each field to take part. Each expert to act as a gateway to other experts in their field. If a person was not active in the work of the Sub-Committee - either by not attending meetings or responding to the correspondence - a replacement should be considered.

While much of the work was undertaken by exchange of e-mails and letters, there was still a need for meetings. It was acknowledged that meetings would require funding and Lourdes Feria suggested that video conferencing may offer an alternative. It was agreed that video conferencing was a less satisfactory method for the relatively unstructured discussions that a group like SCoT needs to have. E-mail provides a cheap, swift and easy method of communications but it needs to be supplemented with group debates. A one day meeting held annually, perhaps in conjunction with some other event that members of SCoT will be attending, would be an ideal to aim for.

Abdelaziz Abid said that there was pressure to widen the geographical spread of the membership of groups such as SCoT. About 80% of the Consultants and Experts appointed by UNESCO were from Europe and North America. Dietrich Schüller responded by pointing out that in the areas of technical expertise covered by SCoT, the research and, therefore, the people was primarily based in Europe and North America. This inexorably led to the recruitment of people from these continents to SCoT. If SCoT was to continue being a centre of expertise then it was inevitable that it will be dominated by people from countries in the developed world.

Lourdes Feria asked if the SCoT and, through it, the Memory of the World Programme were emphasising digitisation at the expense of other technologies. Dietrich Schüller replied by saying that the MofW Programme has primary aims of supporting the preservation of and access to documents of all types. There is no intention of supporting any technology above others subject to the technology being able to assist in achieving the twin primary aims of the programme. Preservation is an essential prerequisite to access. Digitisation is a powerful tool in the provision of access. In addition, for some documents, digitisation is the only tool currently available that is able to ensure the long-term preservation of the information.

4. Review of Existing Publications

Dietrich Schüller opened the discussion by questioning whether the *Technical Standards for Digitisation*, published in 1995, should be updated, or even kept in print. After a brief debate, it was agreed that any technical standards for the digitisation of a family of documents should be incorporated into the appropriate part of the Digitisation Practice Guide currently in progress.

The debate was then widened to discuss the future publications policy for SCoT. It was agreed that the role of SCoT was not to draft technical publications but to ensure that people requiring advice were guided to suitable existing works produced by the specialist NGOs and other bodies. SCoT should aim for a series of books covering the formats within the Memory of the World Programme. Some of these will be existing works such as the ICA/IFLA *Guidelines for Digitisation Projects for Collections and Holdings in the Public Domain* currently being finalised under contract to UNESCO. Other topics may be the commissioning of a work to fill a gap in the literature. The approved works should, subject to the approval of the International Advisory Committee, bear the Memory of the World imprint. The RAMP series of publications formed a precedent, as did the use of the UK Open University imprint on books produced by commercial publishers and on the recommended reading list for students.

The SCoT foresaw the need for two parallel series of works. The first dealing with the collection management problems for the various families of information carriers and aimed at the collection management team. The second series of works to deal with the technical problems - preservation, restoration, transfer to new carriers etc. - in detail for the technical staff. The two series should be available both in print and on the web and be supported by catalogues of the works.

a. New Publications

a. Guidelines for Digitisation Projects for Collections and Holding in the Public Domain

Axel Plathe joined the Sub-Committee for this item. He explained that he was the UNESCO Officer responsible for commissioning this work from a group of ICA and IFLA members. It was recognised that the publication overlapped with a project currently in progress by SCoT. Any comments made by SCoT would be passed to the Chair of the working group for consideration. The working group would also consider whether the finished publication should bear the Memory of the World imprint.

Julián Bescós had prepared a number of comments to be discussed (Annex C). He said that he felt that the ICA/IFLA work lacked study cases to amplify and explain the ideas expressed. This lack could be remedied and, at the same time, the material on audiovisual carriers being prepared by SCoT could be added. This would be better than two parallel works.

Axel Plathe said that he was happy with the idea of an annex containing study cases but felt that the incorporation of AV matters at this stage would be very difficult. The publication is about to receive its final proof reading prior to printing. Minor items can be added subject to the approval of the authors.

Adolf Knoll said that any case studies included should give indications of costs and concrete parameters for the tasks to be undertaken. Jonas Palm supported this and added that a discussion of the relative merits of digitisation and more traditional preservation techniques for textual materials should be included. It may be that traditional methods of preservation may be less expensive than digitisation.

Dietrich Schüller commented that the title was too broad. It implied that omitted carriers were covered by the publication. He added that while digitisation was not a preservation technique for paper based materials, it was for many AV carriers. He emphasised the need to keep original material in high quality storage to preserve the carriers for as long as possible whether or not the material was copied to other carriers by any method. More precise advice was needed in the ICA/IFLA work about the resolution required for different forms of textual material. Such advice would be of very great help when estimating the cost of any transfer project. The digital storage requirement of text is much smaller than that needed by AV materials.

The estimate of the rate of transfer possible by a trained operator was challenged. SCoT members were concerned that the low rates of scanning quoted would deter people from undertaking digital transfers because of the perceived high cost of any project. Axel Plathe said that he would pass these concerns to the writing team.

The SCoT supported, in general, the work undertaken by the ICA/IFLA group in preparing the publication, *Guidelines for Digitisation Projects for Collections and Holding in the Public Domain*. The only reservations were that the work should have a title that better reflected the contents and that a few specific points within the text should be addressed. If the ICA/IFLA group agreed, the work should bear the Memory of the World imprint and form the first in a series of publications on various aspects of collection management and preservation matters. SCoT agreed that the carriers not covered ie. audiovisual and photographic materials, should be the subject of a parallel work.

a. Digitisation Practice

In the light of the policy decisions agreed earlier, it was agreed that this work, together with the ICA/IFLA work, would form one of a series of works covering the academic principles of collection management. The sections drafted by Jonas Palm and others are at a more detailed, technical level. These would form a second group of publications.

The discussion returned to the proposed policy for publications. The SCoT agreed that there should be one or more overview documents to act as an introduction to preservation. The overview document to be supported by two strands of texts; one dealing with collection management topics and the second with more detailed technical matters.

Within this framework the ICA/IFLA work provides the collection management publication for textual materials and a revised version of *Safeguarding the Documentary Heritage* can form an overview document.

Further works will need to be commissioned. These should include collection management texts covering audiovisual carriers and born-digital material. More technical texts are also required. The IASA paper *The Safeguarding of the Audio Heritage: Ethics, Principles and Preservation Strategy* can form a component but should be expanded to cover other audiovisual materials. The results of the study contract given to Colin Webb at the National Library of Australia to draft an initial text on digital materials will also fit into the programme of publications.

The placing of still photographs was questioned. Photographs are both a part of textual materials and an audiovisual medium. It was agreed that work on photographs should be included within publications covering textual and audiovisual materials even if this meant duplication.

The SCoT considered whether any new publications should be placed on the Web only. While this would have considerable cost savings, it was felt that the spread of access to the Web was not sufficient to ensure that all people were able to have the opportunity of gaining access to the information. The SCoT agreed that printed copies should be available in parallel with publication on the Web.

a. Draft Charter for the Preservation of the Digital Heritage

This item was introduced by Dana? ????. Other Charters have tended to concentrate on “Why” certain actions should be taken. For this Charter, the intention was that it should spell out “What” and “How” the actions should be done. There was a great need to ensure that the great number of digital documents on the web and elsewhere should not be allowed to disappear without trace. Action was particularly important in areas outside of Europe and North America where some initiatives to preserve public domain material from the web have begun. This preservation must, however, also include safeguards for personal information about individuals and groups - material such as medical records, political and religious affiliations etc.

George Boston referred to the UK Data Protection Act that, under the control of an independent Commissioner, has successfully defended the rights of individuals against the wrongful use of information about them by government departments.

Abdelaziz Abid reminded the SCoT of the steps that lead from a Charter to a Recommendation and finally to a Convention. The Heritage of the World is not only formed of artefacts and documents in solid form but is increasingly formed of digital data. The main proponent of the Charter is the Netherlands government. At the last meeting of the General Conference, a paper and draft Charter were requested to aid the debate at the next meeting of the 2003 General Conference. Comments had to be received by the end of August to be considered for inclusion in a preliminary draft and commentary to be circulated later this year.

There was a danger that developing countries may create an extensive digital heritage before considering safeguards against misuse. The proposed Charter would encourage the drafting of safeguards.

The SCoT discussed the points raised. Comments included:

- Minority groups should not be specifically mentioned. This is not needed if the safeguards are applied to all.
- Concern was expressed that authors of works on the web may lose control of their work.
- Was the intention that the Charter should only include material on the web or was it to cover material on private networks. If the latter, what level of “coercion” was foreseen.
- The software needed to read the data also requires preserving. It is a special form of data.
- The Charter should not be used as a means of developing the spread of access to digital information. This would divert attention from the purpose of this Charter - the preservation of the primary (the information) and secondary (software) strands of data. The improvement of access to digital information was the role of the Information for All programme.
- The draft Charter is, in its present form, too long and complex. It needs to be distilled down to about two pages dealing with this relatively new manifestation of Cultural heritage.

Dietrich Schüller said that the Charter was intended to cover Born-Digital material only. This is not clear from the title of the Charter. Because much of this material exists in digital format only, there was a need to establish strategies to preserve them in the same way that the traditional textual and audiovisual materials are preserved for future generations. The draft Charter needs to define what is to be included more clearly. Material not included in other Charters and Conventions should be the primary target of this Charter.

The SCoT agreed that it needed to be kept informed of the progress of the Charter and offered their assistance with advice on technical aspects of the work.

d. Possible Revision of *Safeguarding the Documentary Heritage*

Dietrich Schüller reviewed the history of *Safeguarding the Documentary Heritage: A Guide to Standards, Recommended Practices and Reference Literature Related to the Preservation of Documents of All Kinds*. He reminded the SCoT that the work was originally a text document and had been developed by IFLA as an illustrated CD-ROM. The CD was available in English and French and a Spanish edition was currently being produced.

After a short debate on the options available, it was agreed that any revision should form part of the publications policy agreed earlier.

6. Future Projects

Abdelaziz Abid reviewed the list of projects about to start or already in progress. There were to be Consultations for Central and Eastern Europe and for Southern Africa in 2003. Dietrich Schüller commented that the 2003 IASA Conference was scheduled to be held in Pretoria in September. It offered an opportunity to widen the scope of both events. He added that the Austrian Academy of Sciences would be willing to assist with the Consultation in Central and Eastern Europe.

Abdelaziz Abid continued by informing the SCoT of a further meeting to discuss the co-operation of the Internet Archive with the Library of Alexandria project was also being arranged. A debate was in progress to resolve the question of the inclusion of websites on the World Register of the Memory of the World.

7. Any Other Business

Dietrich Schüller said that, in line with the earlier discussions about the frequency of meetings of the Sub-Committee, he would recommend that a meeting of the SCoT should be arranged for June 2003. To reduce the time away from normal work, the meeting should be on a Saturday and, perhaps, in York.

8. Closure of the Meeting

Dietrich Schüller thanked everyone for giving up their time to attend the meeting. He also

asked Abdelaziz Abid to convey the thanks of the SCoT to the personnel of UNESCO who had done so much behind the scenes to make the meeting a success.

Annex A

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6th Meeting of the UNESCO Memory of the World Sub-Committee on Technology

Paris, June 13th and 15th 2002
Room B-8.38, Bonvin Building, 1 Rue Miollis

Meeting to Run 09.30 to 18.00 Each Day

Proposed Agenda

1. Introduction by Chairman - Dietrich Schüller
2. Statement from UNESCO - Abdelaziz Abid
3. Role of the Sub-Committee on Technology - examination and redefinition of the Sub-Committee in the light of recent developments
4. Review of Existing Publications Produced by SCoT
 - a. Technical Standards for Digitisation - review and update of the 1995 publication
 - b. Access to Electronic Publications within the Memory of the World Programme
5. New Publications - drafts have been circulated by Dietrich Schüller
 - a. The ICA/IFLA Guidelines for Digitization Projects for Collections and Holdings in the Public Domain - this is a parallel work concentrating on textual materials - how do we interface with it?
 - b. Digitisation Practice - continuation of the SCoT project begun in Madrid - how does it fit with the work being undertaken by other NGOs
 - c. Preservation of the Digital Heritage - review of the draft Charter
6. Review of the Original SCoT Publication and the Subsequent CD-ROM "Safeguarding the Documentary Heritage"
7. Future Projects
8. Any Other Business
9. Closure of the Meeting

COMMENTS ON THE ICA-IFLA GUIDELINES FOR DIGITIZATION PROJECTS

By Julián Bescós

In my opinion it is a very valuable document concerning the different aspects involved for undertaking digitization projects in libraries and archives, and well referenced.

If it is possible, I would be very much in favour to include in the same document some remarks or recommendations and to include other aspects, as they are mentioned and outlined below.

INTRODUCTION

Definition

Page 6. Paragraph 2: “ *Guidelines concerned with planning and setting up projects..... with ...separately financed and usually short term activities, not with programmes as an integral part of an institution’s mission or strategy*”

In my opinion, digitising projects could be undertaken as separated projects from the current activities of the libraries and archives or as part of the daily activities of the centres. It is similar to the microfilm case. These projects require some special work for selection and preparation of material, but once the project is running it is like another work undertaken by the library or archive.

For example, in a digitising project concerning the digitisation of 500.000 pages of manuscripts in a medium size or big centre, it is required typically the following personnel:

- 1 archivist in charge of the project, selection and preparation of material, (with perhaps 1 assistant)
- 1 technical computer person
- 2 operators for digitising
- some persons for cataloguing and indexing, if the catalogue has to be completed or enhanced

That work can be finished in 2 years.

Most of the digitising projects, in which my company is involved for the installation of computer systems in archives (in around 50 centres) are not special projects, but projects integrated in the daily activities of the centres.

Making the decision

Page 8. Paragraph 3: “ *Digitization will be a costly exercise...requiring the establishment of an infrastructure to ensure continued access to the digital file*”

In my opinion, the cost of digitalisation has been magnified in excess in different sections of this document. The installation of an information system can be significant if many tasks to be performed by the centre and related with the computerisation system are included in the digitization project: cataloguing, access to information, researcher control, holding control, administrative tasks, etc. In any case the installation of a computer system is much less expensive than, for example, to install a laboratory of document restoration or a laboratory for microfilm.

Also, it is a question of scale and aims of the project. At one extreme case, digitalisation can be performed with only one PC workstation and another PC for access. This is much less expensive than a microfilm zenithal camera and a reader.

On the other hand, infrastructure of computer systems for access are usually already available in libraries and archives.

Perhaps, the cost could be placed with the right figures by including in the document some practical study cases.

Preservation

Page 8. Paragraph 5: “ *... a digital image is not a preservation master. The only way that digital reformatting contributes positively to preservation is when the digital surrogate reduces physical wear and tear on the original, or when the files are written to computer output microfilm that meets preservation standards for quality and longevity*”

When digital surrogates are available in libraries and archives, its use for access instead of the original is usually mandatory and exclusive, and so the digital image can be considered as a preservation master that with some migration policies can be copied indefinitely without loss, or transferred to any digital media. Microfilm also requires a policy for supervision and guarantee of preservation condition.

Cost saving

Page 9. Paragraph 2: “ *The whole process, selection, scanning, creating records etc. requires heavy expenditure and long-term maintenance of the digital assests has its own high costs* “

The cost involved in a digitization project itself is similar to the cost involved in a microfilm project. Many companies providing microfilm services have moved now to give digitising services. The creation and introduction of cataloguing data is more expensive than digitising. In all cases the most expensive factor is the man power required for microfilming, digitising

and creating descriptive data.

On the other hand, the whole process of creating records and digitising enables to give to the researchers a better service, reducing the time used for searching and consultation of the required information.

Urgency of building digital repositories

Page 9. Paragraph 3: “ *Preservation of digital information is undoubtedly expensive and requires highly skilled technical staff and equipment* “

Preservation of digital information is not expensive in the case that standard compression, files, media and popular operating systems are used. Highly skilled technical staff is only required if the library or archive is going to setting up the digitising work and access by themselves. This way of working by internal development by the personnel of the centre is unusual in libraries and archives, where the management systems are provided by external companies.

Skilled technical staff is not strictly required if the digitising and access system is provided by a company with experience in the field. One or two computer technicians (for selection of solutions, testing, administration of the system, quality control and operation) are desired if the work is going to be included in the current activities of the centre.

Other decisions to be made

Page 9. Paragraph 7: “ *Whether to digitise from the original or from microfilm* “

The image quality is higher when digitising from the original than from microfilm. In the case that microfilm is available for digitising, attention should be paid to the quality of the microfilm since it will limit the possibilities for having digital images with good quality.

I would add in this section the following points:

Define the scope of the digitising project. If it is the first project in this area for the institution, it could be very appropriate to begin with a pilot project with a reduced number of digitising workstation and access (perhaps one for digitising and one for access) in order to know in practice the advantages, limitations and drawbacks of digitisation and access.

Whether to implement the digitising and access procedures by themselves or with the contribution of a IT company with installations and experience in the area. Although the use of internal skills is appropriate for testing and gaining own technical experience, it could be more efficient, practical, professional and finally less expensive to have the contribution of an external IT company. The fast changes that are being produced in the IT field have a significant influence on different aspects involved on digitising projects: digitising devices, storage media, backup, preservation of digital information, conversion procedures, data base manager, local and Web access, etc. As a consequence the digitising projects should be undertaken from a professional point of view in order to choose the best solution and minimise the influence of the changing technology. For a company involved in these cultural environments is mandatory the

transfer and preservation of the digital information.

Whether a hybrid solution can be reached, involving microfilm for preservation and digital images for access, the approach scan first and creating computer output microfilm from the digital files has shown¹ to produce higher image quality and lower cost for creating both microfilm and digital images, than the opposite approach of first film and after digitising the microfilm.

¹ KENNEY, A.R. (2000) Digital to Microfilm Conversion: A Demonstration Project 1994-1996. Cornell University Library. Department of Preservation and Conservation. Final Report to the National Endowment for the Humanities
<http://www.library.cornell.edu/preservation/pub.htm>

1. SELECTION

Page 14.

Perhaps it would be of interest to add at the end of the section the following comment:

As an example, in the Project of Computerization of the Archivo de Indias, the digitalisation of eleven million images (12% of total images), selected with criteria of greatest use for consultation, condition, description status and political reasons satisfy 30% of the total users' requests². Around one million digital images are currently displayed on the screen by year and 85.000 printed copies are produced from the digital images without requiring the originals.

2. TECHNICAL REQUIREMENTS AND IMPLEMENTATION

2.1.2.3 Image enhancement processes

Page 19. I think of interest to add something like:

The most usual way for image capturing in digitising projects is aimed to obtain digital images with good fidelity with respect to the original. In case of originals with legibility problems, such as low contrast, ink bleeding, stains, etc., special attention should be paid to the bit depth in order to obtain enough information to be possible after capturing to enhance the image with image enhancement algorithms. These enhancement techniques could be applied when access by the users if they want so, but not when capturing in order to preserve the fidelity of the original document avoiding the introduction of possible undesired artefacts on the image. This approach also avoids the need of taking special decisions by the operators when digitising^{3,4}.

2.1.2.4 Compression

Page 19. Paragraph 3: "*In general "loss less" compression is used for master files and "lossy" compression techniques for access files.*"

I think of interest to add something in the following sense:

Alternatively to the case of store two images, one master file and another access file,

² GONZALEZ, P. (1999) Computerization of the Archivo General de Indias: strategies and results. Section on Selection of Documents to be Digitized. Washington, DC, Council on Library @ Information Resources. (Publication N0 76).
<http://www.clir.org/pubs/reports/gonzalez/contents.html>

^{3,4} GONZALEZ, P. (1999) Computerization of the Archivo General de Indias: strategies and results. Section on Digitization. Image Quality.
BESCOS, J. (1989) Image Processing Algorithms for Readability Enhancement of Old Manuscripts. Electronic Imaging 89, Pasadena, CA, Vol.1, 392-97

other approach that should be considered is based on:

For each document to obtain only one image access file with the best image quality (resolution, bit depth and compression) enabled by the present technology, in order to obtain the informational content of the document and also get reasonable volumes of digitised images in time, reasonable sizes for storage and display in monitors, transmission time by the networks, reasonable access time and reasonable costs.

It is sure that “master images” obtained today could be obtained with a better appearance and colour fidelity in some years, so reducing the interest of getting today “master images”, usually monochrome. (In a similar way the introduction in the past of colour images in TV sets strongly reduced the interest for the black and white TV images). On the other hand to obtain today colour master images with colour fidelity would be very costly. The present “very expensive master images” can really become of second class quality with respect to the appearance to be reached in some years.

Alternatively to obtain master images it could be considered to obtain a higher volume of digital images, using the available present technology with the quality parameters adjusted for the informational document content and reasonable production volumes and costs.

I find of interest to include and described here or in other sections of the document the following aspects:

Storage media

Hard disks, CD-R, DVD, tapes, etc. Number of copies, policies, backup, etc.

Digitising devices

Main specifications of Flat bed and zenithal scanners. Limitations of digital cameras

Technical standard values

Update the values given in Annex A of the MoW document on General Guidelines

Access to the catalogue and images

Access from the own local reading room; from CD-R in standalone workstations; finally by Internet

Access to massive description data and images with the use of a data base manager. Functions for navigation and searching, display of images, etc..

Image enhancement Functions

Although Chapter 6. “ Development and Maintenance of Web Interface” considers the access, it mainly describes the last step for providing services by the Web, based on the development of the Web interface by skilled technicians of the centre. Some remarks about it are:

Access to catalogue and digital images are usually provided first locally in the own centre, before providing services by Internet.

The search and access to massive description data and images, locally and by

Internet, should be supported in a database manager for efficient service.
This way of work requires skilled technicians in the centre

Examples of computer systems to be accessed

Digitising workstations as part of the whole system (for cataloguing, digitising, access control, holding control, etc.). Automatic or manual service of images. Redundant elements.

Services required. Planning, installation, training, technical assistance

Backup policies. Update. Migration.

Criteria for the selection of digitising and access solutions

Generals: PC, operating systems, database managers, user interfaces, modules

Capture devices

Storage

Access

Some Study cases

A theoretical case to be performed at present

One or two projects recently performed

CONCLUSION

I would be in favour to complete ICA/ IFLA Guidelines with:

Different remarks as suggested above, after its discussion

Other aspects or points to be considered, in a more extended way in the document are:

Storage media

Digitising devices

Technical standard values

Access to the catalogue and images

Examples of computer systems to be accessed

Criteria for the selection of digitising and access solutions

To include some study cases, in short (1 or 2 pages). This can include a theoretical case to be performed at present, and also one or two projects recently performed. It has a lot of advantages, in order to describe:

Objective of the project, main goals and planning

Give practical figures for volume of digitalisation, resolution, bit depth, compression, files sizes and storage media

Hardware used, equipments, types of available scanners, software, and services required from the computer companies, etc.

Personnel and space involved for the work and service

Cost of the project

As a result, perhaps the best approach is to produce a **Joint ICA/IFLA and ScoT Publication as Guidelines for Digitization Projects.**