

Distribution limited

WHC-95/CONF.201/INF.5
Paris, 6 June 1995
Original: English

UNITED NATIONS EDUCATIONAL,
SCIENTIFIC AND CULTURAL ORGANIZATION
CONVENTION CONCERNING THE PROTECTION OF THE
WORLD CULTURAL AND NATURAL HERITAGE

BUREAU OF THE WORLD HERITAGE COMMITTEE

Nineteenth session

UNESCO HEADQUARTERS, Paris, Room X (Fontenoy)
3-8 July 1995

Proposal for a World Heritage Information Network: Information
Technology in the Service of the Convention Concerning the
Protection of the World Cultural and Natural Heritage



Proposal for a World Heritage Information Network:

Information Technology in the Service of the
Convention Concerning the
Protection of the World Cultural and Natural Heritage

Version 4

*A draft working paper prepared for
the World Heritage Centre
preparatory to an Experts Meeting on Information Management*

by
Peter Stott, James Paine, and Francis Golding

20 June 1995

Acknowledgements

This preparatory work was made possible by the World Heritage Fund, the International Council on Monuments and Sites, IUCN/WCMC, ICCROM, and the Samuel H. Kress Foundation. The views expressed in this documents are those of its authors and do not necessarily correspond to those of the organizations to which they belong.

Table of Contents

1	Introduction	1
2	Analysis of Existing Information Resources	2
3	A World Heritage Information Network	7
4	Summary of Information Responsibilities	13
5	Experts Meeting	14
Annexes		
Annex 1	Technical background	16
Annex 2	Glossary of Terms	18

1. Introduction

1. The States Parties to this Convention shall endeavour by all appropriate means, and in It is the presumption of this particular by educational and information programmes, to strengthen appreciation and respect by their peoples of the cultural and natural heritage defined in Articles 1 and 2 of the Convention.

2. They shall undertake to keep the public broadly informed of the dangers threatening this heritage and of the activities carried on in pursuance of this Convention.

Article 27, World Heritage Convention

Article 27 of the Convention articulates the crucial role of information in carrying out the goals of the convention. It implicitly recognizes that the 'culture' of heritage protection must be integrated into all levels of society if the Convention's mission is to succeed. Equally implicitly, it is the role of the Convention's Secretariat to see that information receives the widest possible attention by the world community.

The new information technologies that have come into popular use in many countries in the last several years have had dramatic commercial, social, and educational implications in a wide variety of disciplines. One of the newest areas to be impacted is the field of international environmental law, where electronic mail and other forms of cheap and rapid information distribution offer extraordinary opportunities to strengthen the partnership between convention secretariats, states parties, non-governmental organizations, and resource managers.

New sources of site data, including but not limited to remote sensing, satellite and aircraft imagery and improved access to more conventional statistical data on populations, building types, and measures of economic growth have the potential either to overwealm resource managers or make significant advances in their management capabilities. Electronic communication itself makes possible both the rapid collection and distribution of this information. New analysis tools, especially geographic information systems (GIS), are instrumental in the management of complex sites.

A mandate was given to the World Heritage Centre (WHC) by the World Heritage Committee at its eighteenth session in Phuket, to hold a Technical Meeting on Information Management. A small preparatory meeting was held 7 February 1995, at which WHC staff, other UNESCO sectors, ICOMOS, IUCN, ICCROM and WCMC took part. This meeting laid the foundations for the Technical meeting.

It was the conclusion of this meeting that a formal Experts Meeting should be convened in Paris in late September 1995 on the subject of **information management as it pertained to the Convention**. The meeting would be guided by this working paper, which is designed to make explicit terms of reference of the meeting.

This report is a draft (20 June 1995) of that Working Paper, prepared for the Centre by the three authors, James Paine (WCMC), Peter Stott (WHC/ICOMOS), and Francis Golding, with the participation of the WHC staff and comments by the Advisory Bodies.

As this report will demonstrate, the information which the Centre, the Advisory Bodies, and the States Parties collect is not well managed or shared. The Committee's mandate is in part based on a recognition that the existing data collected by the Advisory Bodies and the Centre needs to be better managed.

The report is also driven by the rapid changes that have taken place over the last two years in information access as a result of the unprecedented growth in use of the Internet. Both WCMC and ICOMOS have separately initiated Internet servers during the last 18 months and have demonstrated its potential for promotion of World Heritage issues. UNESCO itself opened a gopher in February 1995 and has announced plans to establish a World Wide Web server later this year.

It is the premise of this working paper that the coordination of information management by all parties concerned will not only rationalize the roles played by all parties, but stimulate a new and powerful synergy between the parties to the benefit of all.

Part 2 of this report examines the existing state of shared information resources between the World Heritage Centre and its partners. In Part 3 we present a proposal for an integrated global "World Heritage Information Network", based on several core underlying assumptions or principles. Part 4 consists of a summary of proposed information responsibilities. In the concluding Part 5, we suggest an agenda for the September Experts Meeting.

2 Analysis of Existing Information Resources

At present there is an established information management system, to a large extent upon the annual cycle of site nominations by states parties, review by advisory bodies and consideration by the World Heritage Bureau and Committee, respectively. In addition there are activities relating to the state of conservation and reporting on existing sites, production of publications, a newsletter, queries from the public and so on.

2.1 UNESCO/World Heritage Centre

Although the World Heritage Centre nominally receives the nomination dossiers reviews them for technical completeness, content review is assigned to the Advisory Bodies, IUCN/WCMC and ICOMOS. Consequently, the WHC responsibility is primarily administrative, reflected in the "Country Profiles," database, now installed in the Centre's own Documentation Centre. This database includes lists of inscribed and proposed sites, other data concerning financial assistance to and contributions from State Parties; dates of contracted site missions; names and addresses of responsible parties, promotional activities, as well as the brief site descriptions, etc. This database has been developed on UNESCO's own database software, CDS ISIS.

Other database applications run at the Centre are dBase 4 (mailing lists), Excel (budgetary spreadsheets), and Folio (WCMC Site data sheets). The WCMC-provided program of site data sheets, applicable only to natural sites, is periodically updated along with their 5-year cycle of site monitoring.

Both the "Country Profiles" and WCMC site databases are now available to World Heritage staff through a new local area network (LAN), installed in June 1995. For the first time, the LAN also gives full Internet access to most of the staff, and makes possible the regular provision of World Heritage materials to the Unesco Internet gopher. This gopher, which opened in February, contains a top-level directory for the World Heritage Centre. To date, the gopher includes site lists, operational guidelines, states parties, convention text, the last five years of Committee annual reports, and reports of expert meetings. It is anticipated that with the establishment of the LAN, many more texts, including Newsletters and searchable back files of the

Committee and Bureau reports, will start to be made available. The gopher will be followed later this summer by a World Wide Web server. The gopher has the following address:

gopher://unesco.org/11./Heritage

2.2 International Council on Monuments and Sites (ICOMOS)

With the financial assistance of UNESCO, ICOMOS maintains at its Paris Headquarters the UNESCO-ICOMOS Documentation Centre, staffed with a full-time documentalist, interns, and volunteers. The Centre was established in 1974 to collect, catalog, and disseminate documents and publications on the preservation and presentation of immovable cultural property. Since 1982 the Documentation Centre has collaborated with the ICOM documentation center in the creation and maintenance of the "ICOMMOS" database, ICOM providing data on museology, and ICOMOS providing bibliographic data concerning monuments and sites. ICOMMOS is available to the World Heritage Centre through the UNESCO mainframe. Since 1986, the database has also been provided in an online form by the Canadian Heritage Information Network. The Documentation Centre also provides the archive for the nomination dossiers for all cultural properties inscribed on the World Heritage List. Two recent studies have called for these dossiers to be cataloged in a group of relational databases that would allow researchers and conservators easier access to the information contained in these dossiers. Funding has been provided by UNESCO for this purpose in the current year.

Discussions are currently ongoing concerning the role of the Documentation Centre in information exchange. Various reports have suggested that the Documentation Centre should be made available to a new Internet World Wide Web server, augmenting and in cooperation with the existing servers operated by ICOMOS Canada (see below). In particular, the ICOMOS Scientific Journal, new programs initiated on disaster preparedness, the Blue Shield Program, the catalog of the Documentation Centre, and selections from World Heritage files are candidates for electronic distribution via this Internet server.

ICOMOS's Internet involvement was begun by the Canadian National Committee (ICOMOS Canada). ICOMOS Canada initiated a local bulletin board system in 1992 to link members across Canada in a common network of information exchange. With the donation of space on a Canadian government computer, ICOMOS Canada opened a gopher in January 1994, followed shortly thereafter by a World Wide Web server. Installation and operation of the servers has been entirely by volunteers with network or conservation experience. The content of both servers reflects the international interest of the committee. All material has been either electronically scanned or submitted on disk, although the operators recognized from the start that eventually a *distributed* information system would be desirable, with individual national and scientific committees making files available on their own host computers. The gopher and web servers contain most of the ICOMOS charters and other organizational documents, and reports and newsletters from a selection of national and international scientific committees. Texts of relevant international treaties, and international agreements and resolutions of other organizations such as the Council of Europe and the CSCE have been included. In the absence of a UNESCO Internet server, UNESCO resolutions and World Heritage materials were also included in the ICOMOS Canada servers. Notably, the web server includes an experimental hypertext version of the World Heritage Convention marked up with links to relevant sections of the Operational Guidelines. The Internet address ("URL") of the two servers are:

World Wide Web (WWW): ***http://hpb1.hwc.ca:10002/*** and

Gopher: ***gopher://hpb1.hwc.ca:10000/11./icomos/***

ICOMOS Canada has registered two Internet domain names, "icomos.org" and "icomos.net" for use in electronic mail exchange. Neither of the names have yet been applied to the servers, which retain the name provided by Health and Welfare Canada, "hpb1.hwc.ca". The host computer is a Sun Sparc running Sun OS.

The United States National Committee of ICOMOS (US/ICOMOS), shares space and maintenance responsibilities on the ICOMOS Canada servers. In addition, through its Committee on Telecommunications, Information, and Technology, has developed several electronic mailing lists: *usicomos@world.std.com* for discussions of matters of interest to members generally; and *ccit@world.std.com* for communications issues. The Communications committee is actively encouraging other US/ICOMOS committees to develop similar mailing lists.

World Heritage Data: ICOMOS Canada has experimented with making full-text nomination dossiers available to the Internet via its World Wide Web Server, with hypertext heading links. [<http://hpb1.hwc.ca:10002/heritage.list.html>]

2.3 World Conservation Union / World Conservation Monitoring Centre (IUCN/WCMC)

Although IUCN has established an Internet domain for electronic mail (hq.iucn.ch), the organization at present relies on the World Conservation Monitoring Centre to maintain information on natural World Heritage properties. This largely comprises the preparation of descriptive summaries and more comprehensive, standard format data sheets on each nominated natural site; assisting IUCN in making comparative evaluations; researching and providing the names and addresses of expert reviewers; providing other relevant information to IUCN; updating existing data sheets and providing copies to the World Heritage Centre and IUCN; and responding to miscellaneous information queries. WCMC's activities are also closely linked to the IUCN annual state of conservation reports.

WCMC's long term objectives are to make information and data available to users through an open and transparent on-line information service. The services offered will be periodically expanded in response to feedback from users and to include further information that becomes available. WCMC has prepared a text retrieval database using 'Folio Views' software. This is a run-time system based on existing text files and a complete index on every word in the files. This therefore allows the standard format site descriptions to be searched extremely rapidly for any word or combination of words, using Boolean logic, proximity conditions, etc.¹

The WCMC computer system comprises a PC local area network comprising more than 65 PCs and a series of four Unix platforms, respectively. These are linked by a UTP Ethernet using two Gandalf intelligent hubs. A Sun SPARC Unix platform is used as an Internet data server. It is loosely coupled to the internal network and the other Unix platforms for security reasons. Uses of this machine include WCMC's WWW and Anonymous FTP servers, the MSDN and CIESIN servers (information services hosted by WCMC), and will soon also include a Gopher server and a WAIS server. Connectivity to the Internet is provided over a 64kbps leased line, through a Netblazer router. This is accessible to all computers within WCMC, although some facilities (such as WWW) require an X terminal or PC with MS-Windows. The Unix platforms are also accessible through a 14,400 baud modem. The PC network is accessible through a 2,400 baud modem using pcANYWHERE. The capacity to access the PC network from Internet is also available.

¹ For example, it is possible to identify all files where the word 'tiger' appears, or where both the word 'tiger' and 'poaching' appear.

WCMC internet services currently in operation comprise:

- **World Wide Web (WWW)** - for users of the WWW, WCMC has released its own WWW home page providing access to conservation data and information, including text, tables, maps and images. This can be accessed through the following URL:
<http://www.wcmc.org.uk>
- **Anonymous FTP** - this allows users of the Internet to copy files to and from a dedicated disk area at WCMC on which a variety of information is available already. The address of this disk is: *<ftp://ftp.wcmc.org.uk>*
- **List Server** - an electronic discussion forum for CITES-related issues using email.
- WCMC hosts a node for the **Microbial Strain Data Network (MSDN)**.
- **Biodiversity Information Network** - WCMC is one of five WWW nodes for the BIN21 network, that disseminates information relating to Agenda 21 and informs the global biodiversity community of regional contacts and current activities.

World Heritage Data: WCMC, like ICOMOS, has also experimented with making its World Heritage data available to the net, posting sample site data sheets:
http://www.wcmc.org.uk/convent/wh/wh_list.html

2.4 International Centre for the Study of the Preservation and the Restoration of Cultural Property (ICCROM)

ICCROM has established an electronic mail address (mc5356@mclink.it), and is considering utilizing the services of an allied organization, the Conservation Information Network (CIN) to post materials to the Internet.

2.5 Organization of World Heritage Cities

The OWHC Secretariat has established an electronic mail address (ovpm@llc.org) and is currently developing a reference data base on world heritage cities. A proposal is currently being prepared by Elan Informatique, a Canadian based firm specialized in electronic communications, to use Internet as a means to facilitate communication and exchange of information between cities as well as between the Organization and the general public. Thus, the Organization's Mission statement, its Newsletter, its Charter and the Management Guide for the safeguarding of World Heritage Cities, as examples, are documents that will become available to all on the Net. The OWHC site will link to other sources of relevant information available in other servers around the world. A Newsgroup will be set up to allow continuous discussion on the management of historic cities. A virtual library will also be set up, on the long run, to facilitate access to up to date documentation and information on the subject as well as to allow researchers, city planners, conservators and others to put their publications on the library's booklists.

A demonstration on the possibilities of Internet will be offered to participants to the OWHC Symposium on Communications that will be held June 1995 in Bergen, Norway. Discussions should follow on a strategy to help World Heritage Cities access Internet.

2.6 Servers operated by States Parties

Five government agencies known to the writers of this report already operate World Wide Web servers. Although only one (Australia's ERIN) currently offers World Heritage Information, the number of servers and the amount of World Heritage Information made available by governments will certainly grow in the near future. An important task of the Centre will be to help coordinate this activity and encourage a common structure where feasible.

2.6.1 Australia: Environmental Resources Information Network (ERIN)

World Heritage Data: The Australian server is the most advanced of any host on the Internet in depicting World Heritage Sites. ERIN provides an interactive map of World Heritage areas in Australia, site maps, and textual descriptions. ERIN also includes a summary of the Convention and its significant elements. URL:

<http://kaos.erin.gov.au/land/conservation/wha/auswha.html>

2.6.2 Canada: Canadian Heritage Information Network (CHIN)

CHIN is a national computer-based network that serves museums, libraries, and other heritage institutions both nationally and internationally. URL: <http://www.chin.gc.ca>

2.6.3 Canada: Parks Canada

Parks Canada has opened an experimental web server "as a means to test the appropriateness and feasibility of delivering information to the public via the WWW." It currently has available some tourism and heritage information. URL: <http://parkscanada.pch.gc.ca/>

2.6.4 France: Le Ministère de la Culture

The ministry operates both a web page and gopher. Although World Heritage sites are not specifically noted, the agency's inventory of French cultural patrimony, the *Inventaire Général*, has been linked to the Internet and is today the foremost example of a national Internet-accessible cultural inventory. URL: <http://www.culture.fr>

2.6.5 United States: National Park Service

In April 1995, the United States National Park Service opened a Web Page for the cultural resource protection programs of the agency. A World Heritage page is under consideration. URL: <http://www.cr.nps.gov>. Simultaneously with the new WWW page, the NPS National Center for Preservation Technology and Training opened a gopher. URL: <gopher://gopher.ncptt.nps.gov/>

2.7 Relational Databases of the Partners

As noted above, both the WCMC and ICOMOS have established or proposed relational databases based on World Heritage Site Data, assembled from nomination dossiers and condition reports. This set of linked databases will be expanded as other partners develop specific needs and sources. Issues relating to these definition of fields and responsibilities will be discussed at a preliminary meeting to be held in September immediately prior to the Technical Meeting.

2.8 Critique of existing information management

The existing systems do not adequately meet the needs of the principal participants and fail to make the best use of new technologies.

For example, the following shortcomings are evident:

- No participant has **direct** access to databases held by other participants (for example the database of natural sites held at WCMC or information on states parties held at WHC).
- There is no easy means by which updated and revised information can be transmitted from IUCN and WHC back to WCMC, other than by conventional means.
- The data is poorly known to the wider community and is generally only accessed by specialists.
- There is no electronic storage of nominations and their supporting documentation, thus making data access slow.
- The proposed state of conservation and reporting systems call for the production of regular reports by states parties, but at present there is no means of electronically storing and classifying these to make them really useful to everybody.
- There is a heavy fragmentation in the current system: for example the names and addresses of experts on individual sites are often only linked in the mind of key individuals, and not by means of an information management system.
- There is no linkage between the UNESCO-ICOMOS Documentation Centre and the information held therein on cultural sites and the database on natural sites maintained by WCMC.
- The public are faced with a fragmented face comprising to the outside viewer disconnected institutions with little or no relationship to each other.

3 A World Heritage Information Network

The underlying premise of the World Heritage Convention is that everyone has a stake in the conservation of the world's heritage -- not simply conservation specialists, resource managers, or government agencies. To safeguard this heritage, it is crucial that any network have the broadest possible audience. It should have the following **salient features**:

- Make use of new communications technology to provide '24 hour' links between existing and new databases between WHC, ICOMOS, ICCROM, and IUCN/WCMC and those set up by States Parties.
- Advance the flow of information to ensure currency, completeness, accuracy and to provide a cost-effective means of handling information requests promptly.
- Make information on all aspects of the Convention transparently available to the general public.

- Enforce the WH Convention by more effectively promoting it.
- Assist development of more efficient means of managing new information (eg state of conservation reports)
- Reduce reliance on the expertise and presence of specific individuals who carry critical information in their heads.
- Provide a coherent, organized information service to the media and general public.
- Support good management practice by making it easier for States Parties and site managers to share information with each other.

3.1 A *distributed network*

While today there are only four states parties with Internet servers displaying heritage information, there are potentially hundreds of stakeholders ranging from international organizations to individual site managers who can benefit from an increased flow of appropriate information. Even if it were desirable, no one organization or institution could be a repository for this dynamic information.

Through the use of the Internet, it is possible to create a **distributed information system** in which each stakeholder makes available on its own host computer the information with which that institution is expert or for which the institution is legally responsible. Through the integrated use of gopher and world wide web servers, a World Heritage Information Network can be created, as dynamic and current as each member of the network wishes to make it.

3.2 Design Principles

The design of this network flows from seven key principles:

- 1 *The greatest degree of participation and interaction will come from a network in which all parties participate actively;*
- 2 *The responsibilities of data provision and maintenance should be distributed to the servers closest to the source of the information;*
- 3 *The World Heritage Information Network should be a partnership between the World Heritage Centre and the other organizations with which it is associated.*
- 4 *All stakeholders must perceive a value in the network for the network to function effectively;*
- 5 *The servers must be expected to have multiple audiences, of widely differing expertise;*
- 6 *The principle of **transparency** should govern the distribution of information;*
- 7 *Because many sites and states parties may not have ready access to the information, alternative means of distribution will be required for core documents for the foreseeable future.*

3.3 Specific Recommendations

The following recommendations for the development of a World Heritage Information Network are organized and presented in accord with these seven principles.

- (1) *The greatest degree of participation and interaction will come from a network in which all parties participate actively.*

Recommendation 1: The World Heritage Centre should establish its own World Wide Web and gopher servers under the UNESCO domain.

The WHC servers would be responsible for posting and maintaining all official decisions and deliberations of the World Heritage Committee. Typically, this will include the Convention text, Operational Guidelines, Lists of the World Heritage and Heritage in Danger, Reports of Bureau and Committee meetings, and newsletters. Because of the time commitment required to maintain two servers (gopher and www) simultaneously, the chief emphasis should go into maintenance of the Web server, with duplicate core documents only supplied to the gopher. A lynx gateway should be provided from the gopher to the WHC web server.

Recommendation 2: The WHC servers should be equally available in English and French.

A choice in the gopher top menu or opening screen of the WWW would provide users with the choice of language. The inclusion of Spanish www pages and gopher menus would also be desirable.

- (2) *The responsibilities of data provision and maintenance should be distributed to the servers closest to the source of the information.*

Recommendation 3: The WHC should further encourage its partners and States Parties to the Convention to establish their own servers for World Heritage information.

Data sets should be presented by a server lying as close as possible to the *source* of the information, to permit updates and the timely posting of the material. This means that ultimately, given the capacity, *sites* should post material relating to their own property, in a format approved by the World Heritage Centre, the Committee, and the State Party concerned. Lacking that capacity, local universities, NGOs, or other designated bodies could provide their information on behalf of the site, on a voluntary or contractual basis.

Recommendation 4: To this end, the Centre should develop a package of materials (a "starter kit") recommending style sheets, headings, links, image formats, etc. The WHC and/or the advisory bodies should also be prepared to offer technical assistance to administrative agencies and site offices.

Recommendation 5: To facilitate the movement of files internally, between organizations, and to the servers as appropriate, all nominations and monitoring reports from States Parties should be, whenever possible, on disk.

Recognizing that this will not always be possible, the text of any nomination not in digital form, should be scanned immediately after its receipt from the State Party, and the digitized nomination transmitted to the advisory bodies along with the hard copy. The digital files should be limited to those parts of the text that form the core of the nomination, excluding all supplementary annexes and other documentation.

- (3) *The World Heritage Information Network should be a partnership between the World Heritage Centre and the other organizations with which it is associated.*

The core partnership organizations will be the Advisory Bodies, ICOMOS, IUCN/WCMC, and ICCROM. Each has a role in the protection of natural and cultural heritage beyond those sites on the World Heritage List. Other organizations, as they develop their information resources and communication ability should also be brought into the partnership. Their databases and expert bodies should be collaboratively linked with the World Heritage Information Network. The integration of their larger programs into the WHIN will provide valuable information for World Heritage management programs. At the same time, the widespread distribution of World Heritage information will provide models for the management of the cultural and natural heritage worldwide.

Recommendation 6: The roles of each organization should be clearly defined based on their expertise. Coordination and strategic planning should be the role of the World Heritage Centre, acting on behalf of the World Heritage Committee and the States Parties. Scientific content and data analysis should be the role of the advisory bodies.

Recommendation 7: A permanent working group should be established by the WHC, to include staff from the WHC and the Advisory Bodies to develop detailed recommendations for the Network.

Recommendation 8: The World Heritage Centre Web Server should be considered the 'core' of the World Heritage Information Network, and would make links to ICOMOS, WCMC, States Parties, and other servers as appropriate. Other partners should be discouraged from making direct links to other World Heritage participants *unless appropriate*. In addition to the information each partner provides about World Heritage, each might also include a link to the WHC for "Other World Heritage Information." This is necessary if there is to be a perceived structure to the presentation of World Heritage information.

Recommendation 9: While recognizing the benefits of the Network, the costs to each organization must also be identified, recognized and compensated.²

- (4) *All stakeholders must perceive a value in the network for the network to function effectively.*

For each institution to maintain an effective network there must be clear benefits that at least balance or preferably outweigh the costs. At a later stage, the stakeholders will include others partners who will also expect to see a positive benefit from collaborating in the maintenance of the network.

Recommendation 10: Use electronic mail discussion groups ("listservs") to link site managers as a 'community', allowing them to play a larger role in decisions taken at the international level.

Where desired, separate listservs could be established for different groups (e.g., World Heritage Cities). These listservs need not be run from a central host, but could be donated by one of the sites. WHC and the advisory bodies might wish to monitor the listservs to answer specific questions when they arose. Discussion in the listservs would

²Guidance on this matter is expected from the Experts Meeting.

help to identify common problems, which could be addressed by the Committee, the Centre, or one of the Advisory Bodies as appropriate.

Recommendation 11: Depending on the policy and resources of the state party, sites should be encouraged to establish their own servers which would be directly linked either to a national server or to the WHC server.

(5) *The servers must be expected to have multiple audiences, of widely differing expertise.*

A key principle for any information provider is that potential users will come from the widest possible range of backgrounds and interests, from the casual browser who has no knowledge of World Heritage (but whose long-term support may be valuable) to the specialist resource manager who may seek policy guidelines on a certain problem. This, it is important that information on each server be presented in as clear a structure as possible.

Recommendation 12: Information on the servers should be layered in stages of increasing complexity. Thus, the top level gopher menu, or www home page might show links to fact sheets or 'FAQs' (Frequently Asked Questions) and other types of basic information.

(6) *The principle of **transparency** should govern the distribution of information.*

Enforcement of the Convention's provisions is best obtained by wide public knowledge of the Convention, its provisions, and its sites. Wide popular support for the Convention will also encourage the continued moral and financial support of the States Parties. This is particularly important now that some governments are re-examining their international obligations. The Centre and advisory bodies will also instill confidence and support by the full application of the principle of transparency.

Recommendation 13: Promotion must continue to be one of the most vital roles of the WHC. Public education and participation should be encouraged wherever possible.

The Centre and/or the Advisory bodies should prepare fact sheets that summarize the provisions of the Convention and Operational guidelines. Frequent press releases distributed to the network should announce changes to the guidelines and their implications. The full text of the World Heritage Newsletter should be posted to the www server. Hypertext links should be built into these publications wherever possible.

Recommendation 14: The WHC should make all reports of the Committee and Bureau meetings available to the web server and provide a search engine that can pull up all references to a given topic. This will aid WHC staff as well as site managers and States Parties in identifying when issues had been discussed at past meetings and how the issues were resolved. The WHC should also make available its Country Data Sheets.

Recommendation 15: Certain types of information should be restricted even under a transparency principle. Thus, pending nominations should not be publicized; nor should actions or proposed actions that might jeopardize a subsequent decision by the World Heritage Committee.

Recommendation 16: The World Heritage databases developed by ICOMOS and WCMC should be coordinated and periodically combined as a single ascii text file to enable

searching on the WHC server. It is not anticipated that either database would require more than annual updates.

- (7) *Alternative means of distribution will be required for core documents for the foreseeable future.*

Despite the best intentions of States Parties, many sites and government agencies may not have Internet access for some time.

Recommendation 17: If new documents or discussion groups are developed, special efforts should be made to see that these are included or summarized in periodic postal mailings by the WHC.

Recommendation 18: Where appropriate, the WHC and advisory bodies should make an effort to assist states parties in developing electronic access to the network.

4. Summary of Information Responsibilities

World Heritage Centre

Text of the World Heritage Convention
Operational Guidelines
World Heritage List (with brief descriptions)
List of the World Heritage in Danger
List of Properties for which International Assistance has been granted (Art. 13)
Regional Reports on the State of World Heritage
List of Committee Members
Rules and Procedures of the Committee and the Financial Regulations
Reports of the Bureau (as far back as possible)
Reports of the World Heritage Committee (incorporating ICOMOS and IUCN recommendations)
Reports of the General Assembly of States Parties
States Parties Data Sheets (now being transferred to CDISIS)
World Heritage Centre Newsletter
List of States Parties
Blank forms for:
 Nominations
 Requests for Assistance;
 State of Conservation Reports
Map(s) of World Heritage Properties (Westermann will be asked to contribute)
Tentative Lists
Summary fact sheets:
 Convention
 Operational guidelines

ICOMOS Responsibilities

Text of nominations (excluding annexes) beginning with new nomination format in 1996?³
ICOMOS evaluations
Certain databases (to be discussed)

WCMC Responsibilities

Text of nominations (excluding annexes) beginning with new nomination format in 1996?
WCMC/IUCN data sheets
IUCN evaluations
Other appropriate information to be defined

³The new nomination format and date of its introduction will be discussed at the Committee meeting in December.

6 Experts Meeting

6.1 Draft terms of reference for the expert meeting:

6.1.1. To review the working document

6.1.2. To make recommendations on:

Strategic goals

Who are the current and potential users of World Heritage Information?

What are their needs?

Which needs are not being met?

How can these unmet needs be met?

What are the essential characteristics of a WHIN?

What the options for implementing a WHIN and how do you choose between them?

Tactical/implementation goals (Who does what, when and how?)

Short term and long term responsibilities

Costs and funding

- Agree on a core 'policy statement' and a set of closely defined aims and objectives to guide the strategic development of an information system;
- Identify critical success factors (CSF).
- Develop an Information System Strategic Plan (ISSP) for example to establish institutional responsibilities.
- Develop a detailed and technically specific Information System Tactical Plan (ISTP) to implement the ISSP.
- Develop a reiterative review and control methodology to measure success in attaining objectives and CSF.

6.2 Other Significant Issues

Full Text Dossiers. There has been extensive debate over whether or not to include full-text dossiers of the nominations and state of conservation reports. The technical capability is present (assuming that this is limited to the text nominations themselves and not to the annexes and supplementary illustrative material). The question arises over the uneven quality of these dossiers. It is widely recognized that many of the nominations, particularly those submitted in the first years of the Convention's operation, are weak or in some cases inaccurate. Therefore, one of the significant advantages of the new systematic state of conservation reports will that they will give sites and states parties an opportunity to amplify, correct, or even replace the original nomination with a more complete text. As a result, this report makes the recommendation that the full text of nominations and state of conservation reports should not be included until 1996, when the new nomination format is to be adopted and the state of conservation reports begin to be submitted.

This will not prevent poorly written, or occasionally inaccurate nominations or state of conservation reports from being submitted. Our recommendation, however, is that these should be published, with the clear statement that the nominations are posted *as submitted by the state party, without alteration*. The public availability of these documents will have a very positive effect on the whole process. The public will identify errors or comment on omissions; and site managers themselves and state parties will have a growing collection of model reports to emulate. In addition, because each nomination will be accompanied (as a separate file) by the recommendation/evaluation of the Advisory Body, there will be an opportunity for the Advisory Body to emphasize the actual values for which the site was inscribed, if these values were not stated as clearly as they should have been in the original nomination.

Data Sheets vs. Full Text. WCMC prepares regularly site data sheets in a standard format, updating these in a five-year cycle under a contract from the World Heritage Centre. They are already made available to the Centre in a Folio database, and will be available on the WCMC server. Should the same process be adopted by ICOMOS under a similar contract from the WHC? If so, would full-text nominations be redundant or unnecessary, bearing in mind the limitations noted above?

Universality. Does the seventh principle articulated here ("*Alternative means of distribution will be required for core documents for the foreseeable future*") undermine the value of the WHIN proposal? If there is not to be a universal system what is its status to be? At what level will it be opted out of, state party or site? If it is partial, how well will it answer questions when interrogated from outside those in the know? Will it hold basic (outmoded and partial) information on those sites and countries which are outside it, or direct enquiries elsewhere?

Does the voluntary nature of the proposed Network (States Parties, site have the option of participating or not, depending on capabilities and perceived need) place an inordinate burden on the World Heritage Centre and the advisory bodies (see Recommendation 6) to provide the information not provided by States Parties or sites? Is the centralizing role of Recommendation 6 inconsistent with the decentralizing role of principle 2 ("*The responsibilities of data provision and maintenance should be distributed to the servers closest to the source of the information*")?

Gopher vs. World Wide Web. The number of web hosts has grown much faster in the last year than has the number of gopher servers. It is widely recognized that web technologies offer greater flexibility than gopher servers. Using a text browser such as lynx, any user capable of accessing a gopher can also access a web server. Despite some continuing advances by the gopher developers, it is very possible that gopher servers will be entirely replaced by www servers in the next several years. Why then maintain two servers?

We concur with the UNESCO Bureau de Documents, Informatique et Telecommunication (DIT) and with the International Telecommunications Union which has come to the same conclusion, that despite the availability of lynx, there are many hosts from which access to the www is difficult, requiring a level of sophistication in the user that is unrealistic. Until lynx or an equivalent www text browser is found as commonly as gopher, UNESCO and the World Heritage Centre should maintain two servers.

This does not mean that every document on the web server also needs to be on the gopher. By establishing a lynx gateway between the gopher and web server, gopher users can have full access also to WWW documents.

Annex 1

Technical background

The **Internet** is loosely defined as the global 'network of networks'. More precisely, it is the collection of linked computers which use a common protocol, or suite of rules, to communicate, known as 'TCP/IP'. Developed in the late 1960s as a means of linking research institutions for the United States Army, the Internet today is the fastest growing communications medium in history: 30 million connections is a widely accepted estimate. Although there are many different Internet tools, the six functions most commonly encountered are **electronic mail**, **telnet**, **file transfer (ftp)**, **gopher**, **world wide web**, and **news (USENET)**. All are further defined in the glossary (Appendix 1), although here we will limit the discussion to electronic mail, gopher, and world wide web.

Electronic mail (e-mail) is the most commonly used form of communication on the Internet, since it can be used by any personal computer, regardless of whether or not it has a direct connection with the Internet. "Store-and-forward" software allows the packaging of groups of e-mail messages for transmission by telephone at regular intervals. The software includes file compression programs so that long-distance telephone charges can be kept to a minimum. Using software and a telephone line, computers anywhere can send and receive electronic mail messages, even if the country where the computer is located has not established Internet connectivity. In addition to one-to-one communication, e-mail can also be used for "one-to-many" communication, and thousands of mailing list discussion groups, known as **listservs**, have developed in recent years. These can be public, open to all interested subscribers, or they can be limited to select groups, for example, World Heritage site managers. There are electronic-mail interfaces for most of the more sophisticated tools. The most successful are gopher and world wide web.

The **Internet Gopher** is a read-only "distributed information system." It presents a simple menu consisting of a hierarchical list of files and directories, although the underlying software allows the files and directories to be on any gopher host. Developed in 1991 at the University of Minnesota for a campus-wide network, it uses a subset of Internet protocols to link gophers all over the world. Gopher's developers define it as "software following a simple protocol for burrowing through a TCP/IP internet." Files posted to the gopher are ordinary text files prepared with any word processing program.

Like gopher, **World Wide Web (WWW)**, the 'web' or W3) was conceived to answer an internal communication need of the European Organization for Nuclear Research (CERN) in Geneva. Like gopher, WWW is a document retrieval system defined by its protocol (Hypertext Transmission Protocol, or HTTP). Instead of menus, WWW employs codes embedded in the text ("hypertext") to make links to other documents or hosts. Selecting a given highlighted word allows the user to jump to another part of a document, another file, or another host computer. Links and format codes are embedded in the text using the Hypertext Markup Language (HTML). Thus, with some exceptions, HTML codes must be added to standard-word processor files before they can be read by web browsers. The client software provides a browser capable of recognizing hypertext links. Common browsers are **lynx** (text only), **Mosaic**, and **Netscape**.

Although the Web was developed at CERN two years before gopher, it was not until the first browsers capable of recognizing images and other types of media were developed in 1992 that web usage began to grow. Special browsing software now allows images to be displayed on the screen as well as text. Increasingly, animation and sound are included among these new media.

The most popular of the new 'hypermedia' browsers, Mosaic, was developed by the National Center for Supercomputing Applications (NCSA) and is available for free from NCSA (see glossary). More recently, the same developers have released an improved browser known as **Netscape**. The recent popularity of the Web has been entirely due to these new media and browsers. In part because it can also recognize a gopher menu, and because of its attractive ability to display images, WWW usage of the Internet has jumped dramatically over the past two years.

The WHC Web server should include on its home page an interactive map of World Heritage Sites. Sites could be color-coded as to whether they were natural, cultural, or mixed. States could be colored according to whether they were parties to the Convention. Clicking on a country would bring up a larger-scale map of the country with sites and other key features marked. Sites on the tentative list could also be noted. Given the capacity, as illustrated by Australia's ERIN, individual country maps could be the responsibility of States parties and the WHC could provide regional maps.

To make the World Heritage List easier to use, a key entry point to the list should be by subject category. A non-exclusive group of standard subject categories should be established that could be applied to each World Heritage Site. (Each site would undoubtedly be describable by more than one category, although it might be desirable to limit the number of categories to just those categories stated or implied by the name of the nomination.) A small working group from IUCN/WCMC, ICOMOS, and the WHC should meet to draft a list based on the preliminary list proposed by ICOMOS, existing nominations and anticipated future nominations.

ANNEX 2

Glossary of Terms

Bandwidth. A measure of the capacity of a cable or wire to transmit data, usually measures in bits. The fastest speed possible over a copper telephone wire is 56 kilobits-per-second. The 'T3' backbone of the Internet has a capacity of 45 million bps (Mbps).

Bookmark. A feature of gopher client software, allowing unique link-info identifiers to be saved to a personal bookmark file (".gopherrc"). When called to the screen by gopher's 'view' command, the bookmark list can be used to search and retrieve documents like a standard gopher menu. Most bookmark files can be edited to reorder the entries or change or delete a name using the client computer's text editor.

Conservation Information Network (CIN). An electronic network operated by the Canadian Heritage Information Network (CHIN) as a collaboration with the Canadian Conservation Institute, Conservation Analytical Laboratory of the Smithsonian Institution, ICCROM, ICOMOS, ICOM, and the Getty Conservation Institute. The network provides access to a three conservation databases (bibliographic, materials, and suppliers) of value to conservators, in addition to electronic mail.

FAQ Frequently-Asked-Questions

FTP. File Transfer Protocol. An Internet protocol allowing one computer to copy files from a remote computer. Thousands of computers make files available with 'anonymous FTP', a public-access version of FTP. URLs for ftp files begin with the suffix 'file://....' **Archie** is a set of global databases that regularly indexes ftp sites and can be queried by telnet to produce a list of computer hosts and paths where a given file resides.

Gopher. (See above). A distributed document delivery service using client-server software following an Internet protocol. Its interface is a menu consisting of a hierarchical list of files and directories. Gopher was designed by a team from the University of Minnesota who define it as "software following a simple protocol for burrowing through a TCP/IP internet." The global network of gophers is known as **gopherspace**. Like Archie, **Veronica** is a search engine designed to query all of gopherspace in order to retrieve a given file or directory. (Unlike WAIS, Veronica does not search the text of files.)

Home Page. The opening screen displayed by a World Wide Web server.

HTML. HyperText Markup Language, a text-formatting language used to define the various components of a World Wide Web document.

HTTP. HyperText Transmission Protocol, a suite of client-server rules governing the operation of World Wide Web within the Internet TCP/IP protocol.

Hypertext. Text with pointers or links to other text. Hypertext browsers, for example Mosaic, netscape, lynx, cello, etc, allow the user to jump to the text pointed to, whether in the same document or in a file on the opposite side of the globe. **Hypermedia** is a superset of hypertext and includes not only static images, but motion and sound as well. The client computer must be equipped with appropriate software to display these features.

Internet. Loosely defined as the network of electronic networks. More specifically, it is the network of linked computers using the TCP/IP protocols to communicate. The original core of the Internet was established in the late 1960s by the Department of Defense to link a small number of research institutions. In the early 1980s, the network was turned over to the National Science Foundation. The "NSFnet" is still considered the **backbone** of the Internet. Other commercial and non-profit networks which do not operate using TCP/IP protocols exchange electronic mail with the Internet through **gateways** employing the Internet addressing system, user@domain.

Listserv. Generically, an electronic mailing list. A listserv redistributes single messages sent to a list to every electronic mail address subscribed to the list. A common mistake is to confuse the listserv software with the list. Messages containing 'subscribe' and 'unsubscribe' commands must always be sent to the listserv, commonly in the form 'listserv@host' and never to the list itself (listname@host). Mailing lists may be **moderated** or **unmoderated**. Examples are MUSEUM-L, ARCH-L, HERITAGE.

Lynx. A World Wide Web browser developed by the University of Kansas. It displays text only, but the hypertext links are highlighted. It is the most graphically successful and popular of WWW browsers for client machines without the capacity to display images. For those clients not running their own lynx software, it can be run remotely from several gateways by the use of telnet or gopher commands. For instance, telnet to rsl.ox.ac.uk and login as 'lynx' or gopher to www.law.indiana.edu. The software is available by ftp from ftp2.cc.ukans.edu.

Mosaic. The most popular of the full capacity World Wide Web browsers, developed by the National Center for Supercomputing Applications (NCSA). Several different versions exist for different machines. The software is available by ftp from ftp.ncsa.uiuc.edu in /Web/.

Netscape. A commercial version of Mosaic, by the developers of Mosaic, now working under Netscape Communications Corp.

'News'. See USENET.

Protocol. A formalized suite of rules and message formats that two or more computers use in order to communicate.

TCP/IP. Transmission Control Protocol/Internet Protocol. Two protocols which describe how computers on the Internet communicate. By definition, the Internet is formed by those linked computers operating the TCP/IP protocols. Internet protocol standards are defined by **Requests for Comments** or **RFCs**. RFC 822, written in 1982, describes the format to be used for electronic mail.

Telnet. An Internet protocol and program allowing a user on one computer to log onto a remote computer. It is commonly used to access libraries, public databases and general access to other systems.

Top Menu. The opening menu displayed by a gopher.

URL. Uniform Resource Locator, made up of three parts: method of access, host computer, and path. If the port number is not the default setting, it is added after the host address. (Gopher defaults to port 70, WWW to 80, Telnet to 23.) Note in the examples below, the slightly different URL form for news. Examples:

ftp://ftp.wcmc.org.uk/

gopher://unesco.org

telnet://cast.uark.edu

http://hpb1.hwc.ca:10002/ICOMOS_Main_Page.html

news:alt.architecture

USENET news. The bulletin board system of the Internet. There are thousands of USENET **newsgroups** on every conceivable topic. They are arranged in a hierarchy of eight major categories: alt, comp, news, rec, sci, soc, talk, misc. Examples are alt.architecture and sci.archaeology. Although the media often concentrates on newgroups, the most popular are more likely to be dominated by avocational interests than are the listserv mailing lists. The result is that the noise-to-signal ratio is higher, and they are more prone to **flames**, abusive language and strident arguments. Many generate their own **FAQ** which is periodically posted to the newsgroup.

WAIS. Wide Area Information Server, developed by Thinking Machines Corporation of Cambridge, Mass. The WAIS search engine is commonly employed by gophers and web servers to search the text of one or more files.

WWW. (See above). World Wide Web, "a wide-area hypermedia information retrieval initiative aiming to give universal access to a large universe of documents." It is defined by the Hypertext Transmission Protocol (HTTP) and was developed in 1989 by CERN in Switzerland under the direction of Tim Berners-Lee.