Intergovernmental Oceanographic Commission
Reports of Meetings of Experts and Equivalent Bodies

IODE Group of Experts on Marine Information Management

Fourth Session
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UNESCO

Abstract

During its Fourth Session the IODE Group of Experts on Marine Information Management reviewed the actions completed during the past intersessional period. Of the sixteen actions planned, twelve were completed. During this year's session the Group focused its discussions and intersessional action plan on (i) development of a directory of MIM training opportunities; (ii) options for developing countries to obtain scientific literature; (iii) electronic document delivery technologies; (iv) electronic communication over the INTERNET and other services; (v) development of a catalogue and full-text CD-ROM of IOC publications; (vi) development of MIM Publications Series; (iv) revitalization of the MEDI catalogue; (v) standard structures for bibliographic and directory databases; (vi) closer cooperation with the ASFA Board to develop Micro CDS/ISIS user interfaces; (vii) development of an International Directory of Marine Science Libraries and Information Centres; (viii) development of a Global Directory of Marine Science Institutions and Scientists; (ix) incorporation of marine information in the GTSPP CD-ROM. The Group also discussed the relevance of MIM within the framework of UNCED. The Group stressed the need for UN agencies to increase its cooperation in the field of Marine Information Management and MIM capacity building in developing countries.

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SUMMARY REPORT

1.   OPENING OF THE SESSION

The Chair of the Group, Mrs. Pauline Simpson welcomed the participants to the Fourth Session of the IODE Group of Experts on Marine Information Management and expressed appreciation for the IOC support enabling the action plan and future strategies to be implemented. The Chair also thanked the local organizers, NOAA, for their preparations.

Mr. Ronald Fauquet, Deputy Director of NODC/WDC-A, then opened the meeting on 6 October at 9.30 am at the National Oceanographic Data Centre, Washington DC, USA. In his welcoming address Mr. Fauquet referred to the IOC Global Oceanographic Data Archaeology and Rescue Project (GODAR) expressing the close relationship between information and data. He also explained the role of the NODC/WDC-A in providing information to both the scientific community and the general public.

The Technical Secretary for the meeting, Mr. Peter Pissierssens, welcomed the participants on behalf of the Secretary IOC and expressed appreciation for their interest and involvement.

2.   ADMINISTRATIVE ARRANGEMENTS

The Chair invited comments on the provisional agenda (Document IOC/IODE-MIM-IV/1 prov.) and the provisional timetable (Document IOC/IODE-MIM-IV/ 1 Add. prov.). **The Group adopted the agenda and timetable**

The Group designated Mrs. Linda Temprosa and Mr. Peter Pissierssens as rapporteurs for the session. Though it was expected to work in plenary the Group decided to establish an *ad hoc* drafting group to deal with the composition of the Group.

3.   REPORT ON INTERSESSIONAL ACTIVITIES

3.1   REPORT ON THE STATUS OF IMPLEMENTATION OF THE ACTION PLAN ASSIGNED TO THE GROUP BY ITS THIRD SESSION AND BY THE IODE COMMITTEE

The Chair expressed appreciation to the Group for the completion of the Action Plan within the tight one-year timescale.

3.1.1   Report on diagnostic procedures and definition of minimum requirements for providing information services on national and/or regional level

The Group referred discussion on this action item to agenda item 4.

3.1.2   Identify standard bibliographic data structure and documentation

The Group referred discussion on this action item to agenda item 6.2.

3.1.3   Identify standard directory record structure

The Group referred discussion on this action item to agenda item 6.2.

3.1.4   Send circular letter to the IOC member States with the request to deposit funds in the IOC Trust Fund and/or regional centres, earmarked for information centres and libraries in developing countries to u se for funding bibliographic searches and document delivery services from Marine Information Centres of Excellence.

The Technical Secretary explained that sending a circular letter to the member States would most likely, in view of the lack of detail, not result in a positive response from the Member States. **The Group agreed** that the Member States should be approached by means of concrete proposals drafted during the Session of the Group or during the intersessional period.

3.1.5   Organize training activities

The Technical Secretary referred to the KMFRI-RECOSCIX (WIO) Regional Training Course on Microcomputer-based Library Information Management, Mombasa, Kenya, 10-21 August 1992 (IOC Training Course Report No. 17); and to the IOC-SSTC-SOA Training Course on Marine Information Management and ASFA, Tianjin, China, 19-30 October 1992 (IOC Training Course Report No. 21). Information was also provided on individual training opportunities in established information Centres such as ICLARM, Plymouth Marine Laboratory, etc.

The Group then considered future possibilities for training activities. This brought the discussion to training activities organized by other organizations and institutions. Reference was made to Belgium's MIST (Management of Information in Science and Technology) which will be organized in 1994; to a First International Workshop on Aquatic Information Centres planned in Chile in December 1993. This resulted in discussions on the possibility to develop a directory of training opportunities in Marine Information Management. This item was referred to agenda item 4.

3.1.6   Study of document delivery services for developing countries

The Group referred discussions on this item to agenda item 6.3

3.1.6.a Investigate and report on document delivery via international telecommunications networks.

The Group referred discussions on this item to agenda item 6.3

3.1.7   Recommend procedures to facilitate transfer of useful surplus publications to developing countries.

No progress was made on this item during the intersessional period. It was suggested that the best vehicle for the distribution of information on available surplus publications would be the newsletters and electronic bulletin boards of specialized groups such as IAMSLIC and EURASLIC. However, the use of electronic bulletin boards requires the availability in developing countries of access to such facilities which cannot be assumed. Regional networks may solve this problem. Costs for shipment of surplus publications could possibly be covered by the donating institution, the regional project or, in the case of major publication donations, by other sources.

The Group noted the work of INASP (International Network for the availability of Scientific Publications) supported by the European Commission and UNESCO as an alternate formal channel for distribution of surplus publications.

It was recognized that publication transfer requirements could be sub-divided in two groups: (i) surplus documents; and (ii) journals. **The Group decided** that an *ad hoc* working group (Y. Sankare, IAMSLIC members) would draft recommendations with regard to possible options for developing countries to obtain documents of the above-mentioned groups.

3.1.8 Investigate ways and means to implement electronic communications in developing countries

The Technical Secretary reported on the offer made by the USA to sponsor OMNET electronic mailboxes for IOCINCWIO member state institutions. It was noted that the offer would involve payment of the OMNET charges, whereas the user institutions would cover the local telecommunication expenses. He also referred to a parallel offer of the USA for the IOCARIBE region. The Technical Secretary pointed out that this kind offer would represent a big step towards opening up these regions to the marine science community. The Group appreciated the efforts made by various donors in supporting OMNET mailboxes.

In view of the basic difference between dedicated networks such as OMNET and worldwide computer networks such as INTERNET discussions followed on the need for an introductory paper on access and use of electronic networks for electronic mail, searching, file transfer, etc. Again noting the increasing use of INTERNET within the scientific community **the Group agreed** on the relevance of such a document. The **Group decided** to set up an *ad hoc* working group (G. Rao, R. Gelfeld, L. Temprosa, P.Pissierssens, IAMSLIC) for such a paper.

3.1.9 For NOAA to open an OMNET bulletin board in order to enable Group of Experts on Marine Information Management *to* communicate during the Intersessional period.

It was noted with appreciation that this bulletin board had been set up in May 1992 and had been used during the intersessional period. Mr. Robert Gelfeld reported that all Group members had been able to access the bulletin board except Mr. M.P. Tapaswi of India. Although it had been attempted to forward bulletin board messages to Mr. Tapaswi by telex this had not proven successful.

Nevertheless it was observed by the Group that the general tendency in the scientific community now is to use the INTERNET as the major communication network. However it was noted that there exists a facility to transfer messages between OMNET and INTERNET. **The Group decided** accordingly to set up an INTERNET GEMIM list as a follow-up of the OMNET bulletin board (see 3.1.9). The GEMIM OMNET Bulletin Board will be cancelled when the INTERNET list is operational.

3.1.10 Develop CD-ROM of UNESCO-IOC documents

The Technical Secretary referred to Document IOC/IODE-MIM-IV/11. He said that due to lack of in-house expertise, staff and funds, the Secretariat had not been able to implement the development of the CDROM. Attempts to obtain technical guidance from some individuals and institutions had not been successful. The Technical Secretary invited the Group to provide the Secretariat with guidance on this matter. Dr. Ron Wilson explained that Canada's Marine Environmental Data service has had considerable experience in document scanning and storage through the implementation of the GTSPP CD-ROM and would be able to

provide the Secretariat with the necessary technical guidance. **The Group agreed** that the IOC Secretariat will contact Dr. Wilson for further information. **The Group urged** the IOC Secretariat to develop the IOC CDROM.

It was noted that as a first phase of the development of an IOC CD-ROM, a definitive catalog of IOC publications, preferably computer-readable, would be very timely and **accordingly the Group requested** the Secretariat to proceed with the development of a catalog of IOC publications as soon as possible with the possible loading of the IOC catalogue on electronic carriers such as the ASFA CD-ROM or INTERNET as a follow-up action.

3.1.11   Provide brief report on interoperability between library catalogues and data directories

Reference was made to Document IOC/IODE-MIM-IV/15. With regard to this **topic the Group strongly recommends** the use of internationally accepted standards, especially the Common Communication Format (CCF) for Factual Data, developed by UNESCO, to describe data sets, projects etc., and by doing so, to promote the exchange of both bibliographic and factual data sets.

The Group emphasized the need for adoption of the ISO standard for interfaces, to promote the accessibility of Marine databases through Wide Area Networks (WAN).

3.1.12 Carry out a pilot project to rescue historical Marine Information at the WDC-A Oceanography to assess resource requirements

Reference was made to Document IOC/IODE-MIM-IV/16. Mr. Ron Moffat, Associate Director of the WDC-A, gave an overview of data archeology activities of the WDC-A Oceanography. These involve digitizing of historical data sets in manuscript or magnetic tape form. Importance is also given to associated meta-data. Mr. Gelfeld referred to GODAR as an important IOC-endorsed data archaeology project. The NODC/WDC-A, in 1992, has recovered approximately 1,000,000 oceanographic profiles.

The Group reminded the GODAR coordinator of the ability of the information community to assist with the identification of historical sources.

3.1.13 Assess the number, currency and quality of the manual records which constitute the International Directory of Serial Publications in Aquatic Sciences and Fisheries, currently held by FAO

The Chair reported that the list has just been published as part of the ASFIS Reference Series (ASFIS-12). However it was noted that a considerable amount of work remains to be done and **the Group recommended** that FAO should continue the updating of the list, which is available at CSA in machine readable format.

3.1.14 Contact WMO with regard to their inclusion of full MEDI information in INFOCLIMA and report to the Group and the IODE Committee

The Group referred discussions on this item to agenda item 6 1.

3.1.15 Recruit a consultant to prepare a paper assessing the current situation of ASFIS and ASFA with regard to policies, management structure and operation, and presenting alternatives in view of possible changes.

The Group referred discussions on this item to agenda item 7.

3.1.16 Recruit expertise to carry out a feasibility study of a 'International Global Centre on Marine Information'

It was recalled that the consultant's report (Document IOC/IODE-XIV/23), which had been prepared prior to IODE-XIV, had been referred to the Group by the IODE-XIV for discussion.

The Group supported the objectives of the project in general terms but, considering the substantial financial implications of the establishment of an International Global Centre on Marine Information, the Group did not support its adoption. The Group discussed successful information analysis activities in regional centres such as ICLARM and PIMRIS and agreed that a national and regional approach to information analysis will better meet geographic and subject priorities.

The Group stressed the need for documenting and publicizing information analysis products already being developed.

The Group recognized the work performed by Mr. Allen Varley and in view of the value of this work **the Group recommended** that the report be revised for publication and distribution in the MIM Publications Series identified under agenda item 6.2.

3.2.   MIM WITHIN THE IODE CONTEXT AND OTHER IOC GLOBAL AND REGIONAL ACTIVITIES

The Technical Secretary gave an overview of Document IOC/IODE-MIM-IV/6 highlighting items relevant to Marine Information Management mentioned during IODE-XIV, IOC-XVII, IOCINCWIO-III, IOCEA-III, IOCARIBE-IV and WESTPAC-II. He identified public awareness, the global directory of marine scientists and the marine science country profiles as items which may be considered for inclusion in the future action plans of the Group.

Dr. Wilson reinforced the issue of capacity building and the need to ensure appropriate follow-up to all training activities. He also stressed the importance of meta-data and their relevance to Marine Information Management.

4.   POLICY DEVELOPMENT IN MEETING THE NEEDS OF DEVELOPING COUNTRIES IN MIM

Representatives from developing countries or regions, relevant organizations or programmer, were invited to provide information on their activities related to Marine Information Management to the Group.

ICLARM

Mrs. Linda Temprosa of ICLARM (International Centre for Living Aquatic Resources Management) informed the Group of ICLARM's activities. Mrs. Temprosa provided information on a comparative study of information services within the framework of the SIFR (Study of International Fisheries Research Needs for Developing Countries) in the Asia region. The comparative study will entail the development of a union list of serials for the region and will involve 45 libraries in 13 countries.

PIMRIS

Mr. Ganeshan Rao provided details on PIMRIS (Pacific Islands Marine Resources Information System), a cooperative network between South Pacific Commission, University of the South Pacific, Forum Fisheries Agency and South Pacific Applied Geoscience Commission. He provided information on the capacity building activities of PIMRIS such as training which includes both training attachments and on-site assistance (the 'outreach' programme). Through the latter a total of fourteen institutions were provided with assistance. To facilitate the training activities PIMRIS has produced an introductory manual, covering library management and library database development using Micro CDS/ISIS). A union holding list is being developed: institutions and island countries are requested to send electronic copies of their holdings to the PIMRIS Coordinating Unit where the input is merged into a central holdings database. Of the 14 countries which are cooperating, 9 have provided input. At this moment the database contains 10,730 records. Due to lack of manpower the records do not include abstracts. As far as the structure is concerned PIMRIS uses a modified version of the Australian MARC format.

With regard to Public awareness Mr. Rao introduced the PIMRIS newsletter plus various information products which provide information on the cooperating institution's activities. Of a print-run of 400 copies one-third is sent outside the region. The University of the South Pacific also pays attention to the grass-roots level through its public marine education programme.

PIMRIS also has understandings with a wide variety of organizations like ICLARM, CSIRO, IOI, ICOD, IAMSLIC etc. to establish links with institutions outside the Pacific Islands Region.

CRO

The Centre de Recherches Océanologiques (CRO) based in Abidjan, Côte d'Ivoire, was introduced by Mr. Yacouba Sankare. He referred to the many marine science related institutions in the sixteen countries of the IOCEA region, the considerable number of produced papers, and the ensuing need for information exchange.

Reference was then made to Document IOC/IODE-MIM-IV/13 (A project for the creation of an aquatic sciences and fisheries information network for the Central Eastern Atlantic Region (RECOSCIX-CEA). Mr. Sankare summed up the objectives, services and planned products of the project which has been initiated in July 1993 by the IOC, following the endorsement of the pilot phase by the region during the Third Session of IOCEA. Mr. Sankare also referred to RECOSCIX-WIO as a guiding example for the development of RECOSCIX-CEA.

The development of a regional directory of marine institutions and scientists, and a newsletter were cited as first priorities in the development of the project.

The Group noted with satisfaction the continued development by the IOC of regional information networks. The Group adopted Recommendation MIM-IV.1

The importance of informing the general public on the proceedings of scientific research in the region was also regarded as important. The production of information analysis products would therefore be included in the activities of RECOSCIX-CEA. Specialized in-depth bibliographies were identified as useful and feasible analytic products. This brought the discussions to the need for early involvement of information experts in program/project development so information needs and products can be included at the earliest stage. It was noted that scientists have an incomplete idea of the services which information experts can offer.

Under this agenda item Document 7 (Report on diagnostic procedures and a definition of minimum requirements for providing information services on a national and/or regional level) was introduced by Mr. David Moulder. He explained that the document attempts to define minimum requirements to develop sustainable information services. He referred to the 1993 ASFA Advisory Board meeting where it was decided to use a modified version of this document as a guideline for the acceptance of new ASFA input Centres. It was stressed that these are guidelines which may need revision in the light of particular requirements. It was further noted that stability of funding and more general, the sustainability of the institution are also crucial factors. Finally, language capabilities of the centre's staff should also be considered.

The Group recognized the quality and relevance of the document and, taking into consideration the interest shown by the ASFA Advisory Board, **the Group recommended** the publication of the document in wider distribution after minor revision within the MIM Publications Series identified under Agenda item 6.2.

UNCED

Copies of UNCED Agenda 21, Chapter 17 were circulated and general discussions followed. A working group was established which formulated a recommendation which was discussed and revised in plenary. **The Group adopted Recommendation MIM-IV.2**

5.   PLACE OF THE IOC MIM PROGRAMME AMONG UN AGENCIES AND OTHER INITIATIVES IN MARINE INFORMATION MANAGEMENT WITH SPECIAL REFERENCE TO UNCED

The Group regretted that the invited UN bodies and programmer UN DOALOS/OLA, FAO and UNEP were not present. The Group briefly exchanged information on Marine Information Management activities of some of these agencies.

The Group stressed the importance of coordination and complementarily between the UN bodies and programmes. **The Group invited** the UN agencies to identify focal points for Marine Information Management which will actively participate in the development of Marine Information Management activities and with whom the Group will be able to communicate.

6. DEVELOPMENT OF THE MIM SERVICES/PRODUCTS PROGRAMME

6.1 MEDI CATALOGUE

The Technical Secretary reported that the third edition of the printed MEDI catalogue has been published in 1993. As recommended during IODE-XIV a product quality evaluation questionnaire has been included in this version and replies are being collected. Following the evaluation of the responses to this questionnaire the IOC Secretariat will formulate a management policy for MEDI. Discussions followed on the relevance of MEDI for MIM. It was agreed that a unique referral system such as MEDI is relevant to MIM and should be maintained within lOC's activities. However, it was noted that the further development and maintenance without financial and/or staff support to the Secretariat by the Member States would be doubtful. The suggestion to include MEDI in larger data-oriented systems was rejected as MEDI would then lose its IOC identity. Ocean-PC was mentioned as a possible alternative. Dr. E. De Smet offered to convert the MEDI catalogue, which is currently only available in Wordperfect format, into Micro CDS/ISIS database format.

To enable wide access by the marine scientific community Dr. Wilson offered the MEDS INTERNET server as a host for the MEDI system. The MEDI system will be available to the scientists through the INTERNET which will also allow monitoring of use of the system. On the basis of the use of the system during the intercessional period the next session of the Group will recommend future development of MEDI.

In order to discuss the technical aspects of computer access to the MEDI system a working group was established composed of Dr. Wilson, Mr. Gelfeld, Dr. De Smet and Mr. P.Pissierssens.

In view of the revitalization of MEDI as described above **the Group urged** the IOC Secretariat to continue its role in collecting and inputing MEDI input.

6.2 MIM PRODUCTS

It was noted that documents currently published as part of the IOC publication series do not reach all members of the target groups. The Group suggested that this could be partially attributed to the current document classification system which does not allow for subject specific distribution. This brought discussions to possible distribution channels for (GE)MIM related publications.

It was also observed that documents prepared as working documents for the Group's sessions were not fully put to use as they were never distributed beyond the Group members. It was agreed that some working papers merit general distribution.

The Group agreed on 'MIM Publication Series' as a group title for its publications. These series could include manuals, selected working papers, strategy papers, working group reports, standards, directories, etc.

The Group agreed that the publication of a MIM Newsletter was not necessary as it would lead to duplication with other such publications, such as IAMSLIC-, EURASLIC Newsletter, PIMRIS Newsletter, NAGA, IMS, WINDOW, etc.. **The Group agreed** that publicizing of GEMIM activities and products could be achieved through contributions in these existing newsletters. In order to identify possible outlets **the Group recommended** the development of a reference list of newsletters related to marine sciences and/or marine information. **The Group requested** IAMSLIC and affiliates to develop such a list and to make it available electronically.

6.2.1   Development of a standard bibliographic structure

Reference was made to Document IOC/IODE-MIM-IV/8 (The development of a standard bibliographic database structure). Discussions during the ASFA Board on the possible use of MIBIS or ASFISIS as standard structures were recalled. **The Group agreed** that, although MIBIS provides a very good user manual, the structure does not have all fields required for ASFA and the rules for inputing the fields do not entirely correspond with those defined for ASFA input. Mr. Moulder also informed the Group that he has received from FAO a copy of the AGRIS database format which is similar though not identical to the ASFA input structure.

The Group recommended the development of a joint project proposal between the Group and the ASFA Advisory Board for the development of an 'off the shelf product for the management of bibliographic records which will comply with the requirements for ASFA machine readable input, but will also include local library management requirements. A comprehensive users manual should also be developed. The Group **established** a working group composed of Mrs. Heather Cameron and Dr. De Smet which will draft the project proposal.

The Group recommended the submission of the proposal to the ASFA Advisory Board for funding by the ASFA Trust Fund.

6.2.2   Standard directory record structure for organizations, individuals and their research interests

It was observed that some countries or projects have already developed directories of marine scientists and institutions. Examples like RECOSCIX-WIO and UKMERG were mentioned.

The Group commended the working group for the work done in Document IOC/IODE-MIM-IV/9 (Standard directory structure for organizations, individuals and their research interests) and the Group **adopted** the structure. However, **the Group requested** the working group to consider revision of the structure on the basis of the recently revised CCF format. **The Group recommended** the development of a standard structure for a library directory and serial holdings list.

6.2.3   Thesaurus

Extending discussions to the use of standardized bibliography tools the Chair reported being approached by publishers of marine science core journals for an indexing vocabulary. The ASFA Thesaurus has been identified as the major indexing tool although it is recognized that it will not cover all requirements of marine science journal publishers. Discussions will proceed on the possible use of the ASFA Thesaurus as a base list.

Mrs. Watts reported on a prototype project to test the ASFA Thesaurus as a key database in a semantic network. The results of this project, which is undertaken by 13 US agencies, will be available in January 1994.

6.3   GLOBAL DIRECTORY OF MARINE INSTITUTIONS AND SCIENTISTS

The Chair referred to the 1983 UNESCO Directory which, although outdated, is still considered as very useful. Due to the size of the undertaking, it was not considered feasible to develop a global directory in a centralized manner. However, as many individual countries or projects, as well as regional or international projects have developed their own directories it was suggested to merge these different products to create a global directory. Examples of projects or organizations which developed directories were cited: RECOSCIX-WIO, SEAFDEC, FAO South Pacific Regional Fisheries Support Programme, etc. It was further considered that such a global directory should be made available in electronic form.

The Group recommended the hiring of a consultant to make an inventory of existing directories. The study should further (i) investigate the used softwares and database structures; (ii) investigate the possibility to convert the structures into the standard directory structure developed by the Group; (iii) convert and load the databases into the global directory as they become available; and (iv) load the global directory onto an INTERNET server.

The Group recommended the establishment of a coordinating unit for the Global Directory of Marine Institutions and Scientists at IOC which will collect updates, maintain the Global Directory, and take a proactive role in the further development of national, regional and international directories of marine institutions and scientists.

The Group requested the IODE Chairman to seek an INTERNET server to host and provide international electronic access to the Global Directory of Marine Institutions and Scientists, an essential tool for the marine data, information and scientific community. **The Group requested** IOC to investigate the establishment of an IOC INTERNET server.

6.4   NEW TECHNOLOGIES

Reference was made to document IOC/IODE-MIM-IV/10 prepared by Mr. T. Moritz who suggests the use of the ARIEL software for the transmission of documents over the INTERNET, after comparing it to several other systems. It was mentioned that CISTI (Canada Institute for Scientific and Technical Information) is currently testing the ARIEL software.

The Group concluded that the reliability of the system has not been demonstrated and that it would be premature to embark on a pilot project involving developing countries at this time. **The Group recommended** that further developments in this field should be closely monitored in the intersessional period with a view to reconsider the possibility of a pilot project for document delivery via the INTERNET during the next intersessional period. **The Group requested** IAMSLIC to identify an expert in this matter.

7.   **ASFIS/ASFA - STATUS AND FURTHER DEVELOPMENT**

Mr. Moulder provided an overview of the developments related to ASFA following the decision of FAO to terminate the current production agreement with ASFA's publisher CSA. Reference was made to consultations between FAO and national partners and between the UN co-sponsors which paved the way for the redefinition of responsibilities with regard to the further development of ASFA. He further reported that FAO, during the 1993 ASFA Advisory Board, had been reconfirmed as the ASFA Secretariat.

In view of the responsibilities given to the UN bodies and programmer **the Group stressed** the need for the establishment of a permanent MIM/ASFA professional post at the IOC Secretariat. It was said that a consultant post provides insufficient guarantees in view of the many projects and tasks related to Marine Information Management and the increased IOC responsibilities in ASFA.

The Group urged the Secretary IOC, with the promise of strong active support from the IODE Chair, to request the Director General of UNESCO to restore the previously existing post for Marine Information Management in the 27C/5 of the 1994-1995 biennium. **The Group agreed** on a job description for the Marine Information Management professional which is attached as Annex V.

Dr. De Smet provided a demonstration of a draft version of his user-friendly CDS/ISIS user interface adapted for ASFA data input which allows for selecting field input from authority lists such as Geographic Authority List, Author Authority List, Thesaurus, etc. He also demonstrated his novice-oriented search interface as well as the HEURISKO search interface. The Group commended Dr. De Smet for his work which showed a breakthrough in the use of CDS/ISIS as an advanced but user-friendly bibliographic management software.

In view of the relevance of the demonstrated interface to the production of machine-readable ASFA input, **the Group recommended** the drafting of a project proposal for the further development of the abovementioned interface for submission to the ASFA Board for funding by the ASFA Trust Fund as a matter of urgency. A drafting group was appointed for the proposal, composed of Mrs. Carol Watts and Mr. Moulder. **The Group requested** the ASFA Board to participate in defining the specifications of the interface.

8. MARINE INFORMATION AND DATA: AN INTEGRATED APPROACH

The Chair reiterated the IOC policy to integrate data and information in applicable products. This received a positive response from IODE-XIV and has resulted in GEMIM participation in GTSPP.

Dr. Wilson introduced document IOC/IODE-MIM-IV/14 (Draft proposal for publication of a GTSPP CD-ROM series) and described the history of development of this CD-ROM. He explained that it was also planned to store history of products, data summaries, reports etc. on the CD-ROM. Dr. Wilson drew the attention of the Group to the draft list of possible GTSPP information components which could be included in the GTSPP CD-ROM. **The Group recommended** the inclusion of bibliographic and directory information which would strengthen the product.

Dr. Wilson requested the Group to provide more information on text retrieval software such as CDS/ISIS with a view to including it as a database engine on the CD-ROM. **The Group agreed** that a technical workgroup will be established to investigate the requirements for an 'off-the-shelf' CDS/ISIS application incorporating an appropriate database structure based on GEMIM standards.

Reference was made to Ocean-PC, initially developed for data manipulation applications. **The Group recommended** the inclusion of information management software and databases within the concept.

9. PREPARATION OF A MARINE INFORMATION MANAGEMENT ACTION PLAN FOR THE NEXT INTERSESSIONAL PERIOD

The Group noted with satisfaction the substantial number of actions completed during the past intersessional period and agreed on follow-up actions for several items. New priorities set by the Member States during meetings of the IOC Assembly and IOC Governing and Subsidiary Bodies prompted the identification of future actions.

The Group considered the proposals of an *ad hoc* drafting group which was established during the Session to prepare a draft of an Action Plan and **the Group adopted** Recommendation MIM-IV-3 which includes actions to be taken in the coming 2 years in accordance with identified priorities and responsibilities.

The Group requested the Chair and the Technical Secretary to undertake all necessary actions in order to organize financial and staff support for the implementation of the agreed actions.

10. ELECTION OF THE CHAIR OF THE GROUP

The Technical Secretary informed the meeting of the IOC procedure for the election of a Chair of subsidiary bodies and invited the Group to give the names of candidates. **The Group unanimously re-elected** Mrs. Pauline Simpson as Chair of the Group.

11. OTHER BUSINESS

Composition of the Group

The composition of the Group was discussed in detail. The Group noted that it is now composed of only three members i.e. H. Cameron (Canada), C. Watts (USA) and P. Simpson (UK), the latter also being the Chair. Referring to the IOC Circular Letter No. 1392 on the IODE Handbook in which the IOC Member States were requested to inform the IOC Secretariat on changes to the list of national representatives for IODE and members of IODE Subsidiary Bodies, the group expressed its hope that the Member States would nominate a representative 'pool' of information experts out of which future members of the Group can be selected. It was regretted that UN, FAO and UNEP which had been invited as observers were not able to participate.

Nevertheless the Group appreciates the substantial participation of observers from many Member States with a wide geographic distribution.

The Group established an *ad hoc* working group which provided recommendations with regard to the composition of the Group. The Group adopted Recommendation MIM-IV.4

Place and date of the next session

The Group requested the IOC Secretariat to investigate the possibility to organize the next session of the Group in a developing country, taking into consideration the logistical and financial implications. The Group would welcome the opportunity to have the meeting within the setting of a regional information centre in a developing region.

Taking into consideration that the Group has been revitalized substantially during the past intersessional period and further recognizing the need for more in-depth actions during the next intersessional period, **the Group agreed** to hold its next session in 1995.

12. ADOPTION OF THE SUMMARY REPORT

The Group adopted the draft summary report of its Fourth Session. **The Group instructed** the Technical Secretary and the Group's Chair to undertake the necessary editing and corrections when progressing the final version.

13. CLOSURE OF THE MEETING

The Chair closed the meeting on Saturday 9 October 1993 at 14h30 .

ANNEX I

AGENDA

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   INITIATIVES IN MARINE INFORMATION MANAGEMENT WITH SPECIAL REFERENCE
   TO UNCED
6. DEVELOPMENT OF THE MIM SERVICES/PRODUCTS PROGRAMME
   6.1 MEDI CATALOGUE
   6.2 MIM PRODUCTS
   6.3 GLOBAL DIRECTORY OF MARINE INSTITUTIONS AND SCIENTISTS
   6.4 NEW TECHNOLOGIES
7. ASFIS/ASFA - STATUS AND FURTHER DEVELOPMENT
8. MARINE INFORMATION AND DATA: AN INTEGRATED APPROACH
9. PREPARATION OF MARINE INFORMATION MANAGEMENT ACTION PLAN FOR THE
   NEXT INTERSESSIONAL PERIOD
10. ELECTION OF THE CHAIR OF THE GROUP
11. OTHER BUSINESS
12. ADOPTION OF THE SUMMARY REPORT
13. CLOSURE OF THE MEETING

ANNEX II

RECOMMENDATIONS

Code	Title
Recommendation MIM-IV.1	Development of Regional Information Networks
Recommendation MIM-IV.2	MIM and the . United Nations Conference on Environment and Development
Recommendation MIM-IV.3	Action plan of the Group for 1993-1995 .
Recommendation MIM-IV.4	Composition of the IODE Group of Experts on Marine Information Management

Recommendation MIM-IV.1

DEVELOPMENT OF REGIONAL INFORMATION
NETWORKS

The IODE Group of Experts on Marine Information Management,

Acknowledging that Marine Information is a common resource, the rational growth and use of which is indispensable for understanding the ocean and for the wise exploitation and management of its resources,

Noting the recommendations made during UNCED for the encouragement of subregional, regional or global cooperating mechanisms and networks,

Taking into consideration the experience gathered during the pilot phase and operational phase of the regional project RECOSCIX-WIO,

Noting the request of the IOCEA region to develop a regional marine information network,

Requests the IOC Secretary and IOC Member States to seek and provide the necessary funds to enable the development of the pilot phase and operational phase of the RECOSCIX-CEA project;

Further requests the IOC Secretary and IOC Member States to develop national or regional information networks where IOC Member States have identified the need for such undertaking.

Recommendation MIM-IV.2

MIM AND THE UNITED NATIONS CONFERENCE ON ENVIRONMENT AND
DEVELOPMENT
(UNCED)

The IODE Group of Experts on Marine Information Management,

Noting with satisfaction the importance accorded to information in Chapter 17 of Agenda 21, and in particular the need for the exchange of information and data; for public education, awareness and information programmer; for the provision of an integrated policy and decision making-process; and for capacity building,

Recalling the many ways in which these differing aspects of Marine Information Management are being successfully addressed through the Group of Experts on Marine Information Management's Action Plans,

Stressing the catalytic role of the Marine Information Manager in the acquisition, organization, exchange and dissemination of information and meta-data about the marine information,

Recognizing the importance of ocean resources to developing countries, and the need for capacity building and human resource development in Marine Information Management,

Urges UN agencies, regional and national institutions to coordinate and strengthen their links in marine information;

Further urges IOC and its IODE to support GEMIM initiatives such as (i) the development of links between data and information programmer, using approaches that are "integrated in content and precautionary and anticipatory in ambit", and building on the pilot work being undertaken on the GTSPP CD-ROM; and (ii) the provision of standards for the exchange of information, and interoperability between data and information.

Recommendation MIM-IV.3
ACTION PLAN OF THE GROUP FOR 1993-1995

The IODE Group of Experts on Marine Information Management,

Recalling Recommendation IODE-XIV.7 of the Fourteenth Session of the IOC Committee on International Oceanographic Data and Information Exchange, on the Development of ASFIS/ASFA and the IOC Future Role in it,

Noting the discussions which took place at the 1993 ASFA Advisory Board,

Noting with appreciation the development by the IOC of a regional information exchange network (RECOSCIX-CEA) in the Central Eastern Atlantic region,

Stressing the need for cooperation and coordination between agencies and programmes in the field of Marine Information Management,

Having reviewed its completed and ongoing activities,
Being aware of the severe financial constraints under which IOC is operating,

Adopts a plan of action for the intersessional period 1993-1995 as given in the Annex to this Recommendation.

Annex to Recommendation MIM-IV.3

MIM ACTION PLAN 1993- 1995

ACTION	Responsibility	Date due
1. Development of a directory of training opportunities in MIM		
1.1 Feasibility study	L. Temprosa	12/93
1.2 Directory development	L. Temprosa (Coordinator)	12/94
2. Drafting of recommendations with regard to possible options for developing countries to obtain scientific literature	Y. Sankare (Coord.) IAMSLIC	6/94
3. Study of electronic communication systems	R. Gelfeld (Coord.) G. Rao L. Temprosa E. Einarsson IOC	4/94

4. Establishment of a GEMIM INTERNET Mailing List	R. Gelfeld	11/93
5. Development of an IOC Catalogue of Publications	IOC	7/94
6. Development of an IOC CD-ROM	IOC	7/95
7. Study of information analysis products	IOC	4/94
8. Revision of diagnostic procedures	D. Moulder	12/93
9. Revitalization of the MEDI catalogue		
9.1 Study of technical requirements for providing the MEDI catalogue through the INTERNET	R. Gelfeld E. de Smet R. Wilson IOC	2/94
9.2 Conversion of the MEDI file to a data base in CDS/ISIS format	E. De Smet	6/94
9.3 Loading of the MEDI database on the INTERNET server	R. Wilson (Coord.)	7/94
9.4 MEDI use and quality evaluation	R. Wilson (Coord) R. Gelfeld E. De Smet IOC	7/95
10. Preparation of a project proposal on a joint project between the Group and the ASFA Board to develop an 'off the shelf' product for the management of bibliographic records.	H. Cameron (Coord.) E. De Smet	2/94
11. Revision of the standard directory structure with reference to the CCF	D. Moulder (Coord.) E. De Smet	12/93
12. Development of a standard structure for an International Directory of Marine Science Libraries and Information Centres	EURASLIC (Coord.) IAMSLIC	6/94
13. Development of a standard structure for Serial Holding Lists	D. Moulder	6/94
14. Thesaurus		
14.1 Discussions with Publishers	P. Simpson	5/94
14.2 Report on Semantic network	C. Watts	2/94

15. MIM Publication Series	IOC	ongoing
16. Monitoring of further developments in document delivery over the INTERNET	P. Brueggeman G. Rao	7/95
16.1 OMNET-INTERNET Comparison paper	C. Norton	6/94
17. Preparation of a report on the incorporation of the information component in the GTSPP CD-ROM	H. Cameron (Coord.) E. De Smet P. Simpson D. Moulder IOC	3/94
18. Development of a Global Directory of Institutions and Scientists		
18.1 identification of available directories	IOC	8/94
18.2 investigate the possibility to convert the structures into the standard directory structure	IOC	12/94
18.3 convert and load the databases into the global directory	IOC	3/95
18.4 load the global directory onto an INTERNET server.	IOC	7/95
18.5 establish coordinating unit for updating and maintaining of the database	IOC	7/95
19. Develop an ASFA-MIM CDS/ISIS data entry user-friendly interface project proposal for submission to the ASFA Board for funding from the ASFA Trust Fund	D. Moulder (Coord.) C. Watts	3/94
20. Development of a worldwide list of Marine information related newsletters	P. Mofjeld (IAMSLIC) J. Webster (IAMSLIC)	1/94

Recommendation MIM-IV.4

**COMPOSITION OF THE IODE GROUP OF EXPERTS ON
MARINE INFORMATION MANAGEMENT**

The IODE Group of Experts on Marine Information Management,

Noting that the number of Group members has reduced to three,

Recognizing that active participation of Group members is required in the implementation of the Action Plan,

Noting further that the role and importance of Marine Information Management is growing,

Welcoming with appreciation the numerous observers at the session,

Regretting the lack of participants from other UN agencies,

Noting with appreciation the importance given to information by UNCED,

Urges Member States to identify suitable Marine Information Management experts to participate as Members of the Group;

Requests the IOC Secretary to establish a balance between developing and developed countries in the composition of the Group;

Welcomes participation of NGOs and IGOs in the Session and activities of the Group;

Urges UN agencies involved in Marine Information Management activities to actively participate in the Session and activities of the Group.

ANNEX III

LIST OF PARTICIPANTS

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ANNEX IV

LIST OF DOCUMENTS'

Document Code	Title	
WORKING DOCUMENTS		
IOC/IODE-MIM-IV/1 prov.	Provisional Agenda	2
IOC/IODE-MIM-IV/1 Add. prov.	Provisional Timetable	2
IOC/IODE-MIM-IV/2	Annotated Provisional Agenda	3-11
IOC/IODE-MIM-IV/3	Summary Report	10
IOC/IODE-MIM-IV/4 prov.	Provisional List of Documents	2
IOC/IODE-MIM-IV/5	List of participants	2
IOC/IODE-MIM-IV/6	Intersessional Report with Recommendations Adopted by IOC Governing and Regional Bodies Relevant to MIM	3.2/5
IOC/IODE-MIM-IV/7	Report on Diagnostic Procedures and a Definition of Minimum Requirements for Providing Information Services on a National and/or Regional Level	3.1/4
IOC /I ODE-MIM -IV/ 8 Bibliographic	The Development of a Standard Database Structure	
IOC/IODE-MIM-IV/9	Standard Directory Record Structure for Organizations, Individuals and their Research Interests	
IOC/IODE-MIM-IV/ 10 3.1/6.3	Document delivery via the INTERNET	

' This list is for reference only. No stocks of these documents are maintained, except for the Summary Report.

IOC/IODE-MIM-IV-11	Development of an IOC Full-text CD-ROM	3.1/6.
IOC/IODE-MIM-IV-12	Feasibility Study of a Global Marine Information Analysis Network	3.1
IOC/IODE-MIM-IV-13	A project for the creation of an Aquatic Sciences and Fisheries Information Network for the Central Eastern Atlantic Region	4
IOC/IODE-MIM-IV-14	Draft proposal for Publication of a GTSPP CD-ROM Series	8
IOC/IODE-MIM-IV/15	Catalog Interoperability	3.1
IOC/IODE-MIM-IV/16	Data Rescue at WDC-A, Oceanography	3.1
IOC/IODE MTM TV/17	Draft Action Plan	9

INFORMATION AND OTHER REFERENCE DOCUMENTS

IOC /IODE-MIM -IV/Inf	Information on Arrangements and Services Available for the Session
IOC/IODE-MIM-I/3 November	Summary Report of the IODE group of Experts on Marine Information Management, First Session (Rome, 19-23 1984)
IOC/IODE-MIM-II/3 December	Summary Report of the IODE Group of Experts on Marine Information Management, Second Session (Moscow, 8-9 1986)
IOC/IODE-MIM-III/3	Summary Report of the IODE Group of Experts on Marine Information Management, Third Session (Wormley, 27-30 April 1992)
IOC /IODE-XII/3 International (Moscow, USSR	Summary Report of the IOC Technical Committee on Oceanographic Data Exchange, Twelfth Session 10-17 December 1986)
IOC/IODE-XIII/3 Session	Summary Report of the IOC Committee on International Oceanographic Data and Information Exchange, Thirteenth (New York, USA, 17-24 January 1990)
IOC/IODE-XIV/3 Session	Summary Report of the IOC Committee on International Oceanographic Data and Information Exchange, Fourteenth (Paris. France. 1-9 December 1992)

IOC/IODE-XIV/16	Future Development of ASFIS/ASFA & the IOC role in it
IOC-XVII/8 Annex 6	Development of ASFIS/ASFA and the IOC future role in it
IOC/INF-722	Executive Summary of the *ad hoc* Consultation of Experts on Marine Information Management (Enghien-les-Bains, France, 12 1 6 October 1987)
IOC/INF-834	IODE Handbook, Revised Edition, 1991 Unesco
IOC/INF-94 June	ASFA Advisory Board Meeting (UNESCO-IOC, Paris, 21-25 1993)
IOC /TEMA-V/3 22	Summary Report of the IOC Committee for Training, Education and Mutual Assistance in Marine Sciences, Fifth Session (Paris, February -1 March 19911
IOC Manuals and Guides No. 16	MEDI Catalogue (Third Edition 1993)
IOC Manuals and Guide No. 23	Marine Information Centre Development: An Introductory Manual
IOC Training Course Report. No 17 (Mombasa,	IOC-KMFRI-RECOSCIX (WIO) Regional Training Course on Microcomputer-based Library Information Management Kenya, 10-21 August 1992)
IOC Training Course Report No. 21	IOC-SSTC-SOA Training Course on Marine Information Management and ASFA (Tianjin, China, 19-30 October 1992

ANNEX V

JOB DESCRIPTION MARINE INFORMATION MANAGEMENT PROFESSIONAL IOC

The Group of Experts on Marine Information Management,

Noting that the time has come when IOC can take a lead among ICSPRO agencies in Marine Information Management and in ASFIS in particular;

Recognizing that Marine Information will be an important component of any future structure of GOOS and other future marine science programmes;

Noting further that Marine Information Management strategy and ASFIS can not be successfully implemented without additional staff support in the IOC Secretariat;

Recommends that the IOC Secretary should take all necessary actions in order to have in the Secretariat a permanent UNESCO staff member taking responsibility for Marine Information Management action plan follow-up;

This person will work on Marine Information Management in general and on ASFIS in particular, and will have the following job description:

Assist IOC Member States in the planning and development of Marine Information Management systems and services;

Promote the Marine Information Management Programme and Activities through relevant international bodies and programmes;

Coordinate activities defined in the Action Plan prepared by the Group of Experts in Marine Information Management including TEMA activities;

Coordinate the further development and production of MIM products, processing of information, preparing outputs and dissemination of products;

Represent the IOC on the Aquatic Sciences and Fisheries Abstracts (ASFA) Board; Promote and further develop the IOC component of ASFIS;

Develop regional information networks and assist the IOC Secretary in seeking extrabudgetary funding for the successful implementation of these networks;

For this the incumbent will be required to have the following expertise:

Experience in the development and management of marine information services.

Experience with techniques used in Marine Information Management, including CD-ROMs, optical character recognition and electronic information transfer;

Word processing, spread-sheets and database management systems with special emphasis on the Micro CDS/ISIS software;

Telecommunication techniques, including electronic mail and local area networking;

ANNEX VI

LIST OF ACRONYMS

AGRIS	Agricultural Science Information System (FAO)
ARIEL	document transmission system software
ASFA	Aquatic Sciences and Fisheries Abstracts
ASFIS	Aquatic Sciences and Fisheries Information System
ASFISIS	ISIS database structure for ASFA
CCF	Common Communication Format
CDS/ISIS	Computerized Documentation Service/Integrated Set of Information Systems
CEA	Central Eastern Atlantic
CISTI	Canada Institute for Scientific and Technical Information
CRO	Centre de Recherches Océanologiques (Abidjan, Côte d'Ivoire)
CSA	Cambridge Scientific Abstracts
CSIRO	Commonwealth Scientific and Industrial Research Organization (Australia)
EURASLIC	European Association of Aquatic Science Libraries and Information Centres
FAO	Food and Agriculture Organization of the United Nations
GE	Group of Experts
GEMIM	Group of Experts on Marine Information Management (IOC)
GODAR	Global Oceanographic Data Archaeology and Rescue Project (IOC)
GOOS	Global Ocean Observing System (IOC)
GTSPP	Global Temperature-Salinity Pilot Project
HEURISKO	User-friendly search interface for CDS/ISIS databases
IAMSLIC	International Association of Aquatic and Marine Science Libraries and Information Centres
ICLARM	International Center for Living Aquatic Resources Management (Philippines)
ICOD	International Center for Ocean Development (Canada)
ICSPRO	Inter-Secretariat Committee on Scientific Programmes Relating to Oceanography
IGO	Intergovernmental Organization
IMS	International Marine Science (Newsletter IOC)
INASP	International Network for the availability of Scientific Publications
INFOCLIMA	World Climate Programme Data Referral System (WMO)
IOCARIBE	IOC Sub-Commission for the Caribbean and Adjacent Regions (IOC)
IOCEA	IOC Regional Committee for the Central Eastern Atlantic (IOC)
IOCINCWIO Western	IOC Regional Committee for the Co-operative Investigation in the North and Central Indian Ocean (IOC)
IODE	International Oceanographic Data and Information Exchange (IOC)
IOI	International Ocean Institute (MSIDA, MALTA)
ISO	International Standards Organization
KMFRI	Kenya Marine and Fisheries Research Institute (Kenya)
MEDI	Marine Environmental Data Information and Referral System (IOC)
MEDS	Marine Environmental Data Service (Canada)
MIBIS	Microcomputer-based Bibliographic Information Systems (IDRC, Canada)
MIM	Marine Information Management (IOC)
NAGA	ICLARM Newsletter

NGO	Non-Governmental Organization
NOAA	National Oceanic and Atmospheric Administration (USA)
NODC	National Oceanographic Data Centre (IOC)
PIMRIS	Pacific Islands Marine Resources Information System (Fiji)
RECOSCIX	Regional Cooperation in Scientific Information Exchange
SEAFDEC	Southeast Asian Fisheries Development Centre
SIFR	Study of International Fisheries Research Needs for Developing Countries
SOA	State Oceanic Administration (China)
SSTC	State Science and Technology Commission (China)
UKMERG	United Kingdom and Republic of Ireland Directory of Marine and Freshwater Institutions, Scientists and Research Engineers database

DOALOS/OLA	UN Division for Ocean Affairs and the Law of the Sea, Office of Legal Affairs
UNEP	United Nations Environment Programme
WDC	World Data Centre (IOC)
WESTPAC	IOC Sub-Commission for the Western Pacific Region (IOC)
WINDOW	Western Indian Ocean Waters (RECOSCIX-WIO Newsletter)
WIO	Western Indian Ocean
WMO	World Meteorological Organization

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