IOC/INF-1236
Paris, 24 May 2007
Original: English

INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION
(of UNESCO)

INFORMATION DOCUMENT

IMPROVING THE IOC'S PERFORMANCE MANAGEMENT SYSTEM: IODE REPORTING AS A PILOT PROJECT

Summary. This IODE report contains detailed information on (i) IODE response to decisions by IOC Governing Bodies during the period 2005–2006; (ii) the IODE Programme and the IOC's performance management system; (iii) the implementation status of IODE-XVIII resolutions and recommendations; and (iv) main programme successes and milestones during the period April 2005–March 2007.

1. STRUCTURAL ISSUES

1.1 RESTRUCTURING OF THE IOC AND ITS IMPACT ON IODE

On 1 January 2006, the IOC's Ocean Services section formerly headed by Peter Pissierssens, was abolished. The programmes formerly part of the Section were re-assigned as follows:

(i) the IODE Programme has been placed in the OOS Section (Ocean Observations and Services which further includes GOOS and JCOMM), headed by Dr Keith Alverson;

(ii) the ITSU programme has been placed in the new Tsunami Section, headed by Dr Peter Koltermann; and

(iii) the Ocean Mapping programme is now under the direct supervision of the IOC Executive Secretary.

1.2 IMPACT OF THE IODE REVIEW AND ITS FOLLOW-UP

It is recalled that **IODE-XVIII** (2005), as a follow-up to the IODE review, commissioned by the IODE Committee, made several decisions with the objective to streamline the IODE structure and to make it more efficient and effective. The following modifications were made:

(i) objectives of IODE were modified, adding as (v) "to support international scientific and operational marine programmes of IOC and WMO and their sponsor organizations with advice and data management services" (Recommendation IODE-XVIII.1);

(ii) number of IODE Officers was reduced to include the Chair and Vice-Chair, 2 Chairs of IODE Groups of experts, and 1 Chair of the Joint IODE/JCOMM ETDMP;

(iii) system of RNODCs was abolished (and their functions assumed by ODINs, as relevant);

(iv) system of IODE regional coordinators was abolished (and their functions included in the terms of reference of the ODINs);

(v) established IODE national coordinators for oceanographic data management, and IODE national coordinators for marine information management;

IODE-XIX (2007) further reviewed and assessed the follow-up to the IODE Review and made the following decisions/recommendations related to structural issues:

(i) In view of the increasing demands on the Chair (due to e.g. responsibilities in JCOMM, GOOS, etc) and the imbalance between the tasks of the Chair and Vice-Chair, the Committee decided to **revise the management structure by electing two Co-Chairs** rather than Chair and Vice-Chair. The Committee adopted **Resolution IODE-XIX.1** (*The IODE Chairs*);

(ii) IODE-XVIII had adopted Resolution IODE.XVIII.3 (**IODE Groups of Experts**) which instructed the Chairs of the Groups of Experts to finalize a revised structure and strategy for the Groups of Experts. In particular the Chairs were tasked to address issues like:

- recommending a new structure and membership format for the IODE Groups of Experts, which offers flexibility, increased access to expanded pool of experts, and stronger focus on completion of tasks, whist also maintaining a wider coordination role;
- suggesting mechanisms for improving communication and reporting between IODE Groups of Experts and National Co-ordinators for both data management and information management;

- including in the new mechanism, the potential for establishing steering groups based on specific projects, and gaining appropriate expert advice when required;
- suggesting mechanisms for improving communication amongst IODE Groups of Experts, and for offering direction to IODE Groups of Experts from the IODE Officer Group;

IODE-XIX adopted Recommendation IODE-XIX.2 redefining the terms of reference of its Groups of Experts as follows:

(i) Objectives:

a. IODE Groups of Experts will undertake detailed scientific and technical studies and/or co-ordination tasks, by subject or region, as identified by the IODE Committee;

b. IODE Groups of Experts, including the JCOMM/IODE ETDMP, will monitor scientific and technical developments, and identify needs to be addressed by IODE, as pertaining to their IODE subject area and propose a work programme with clear priorities, for consideration by the IODE Committee;

c. To facilitate implementation of the Groups of Experts work programme, the Groups of Experts will (i) seek cooperation from IODE national coordinators; (ii) develop and implement projects with clear objectives and deliverables, and take responsibility for the coordination and management of such projects.

(ii) Membership:

a. the total number of Members of IODE Groups of Experts should not exceed 8;

b. the Groups should be composed of not more than 4 long-term members; and not more than 4 short-term members;

c. The long-term members will be selected by the Executive Secretary, based upon nominations from Member States and further based upon individual expertise as relevant to the concerned IODE Group of Expert. Long-term members can remain a member of the Group during not more than 4 inter-sessional periods;

d. The short-term members shall be selected by the long-term members of the Group, based upon their specific expertise, documented in the OceanExpert system, related to specific tasks or projects and will remain a member during, preferably, not more than two inter-sessional periods;

Figure 1 illustrates the new terms of reference and interactions between the Groups of Experts, IODE Committee, IODE National Coordinators and Projects.

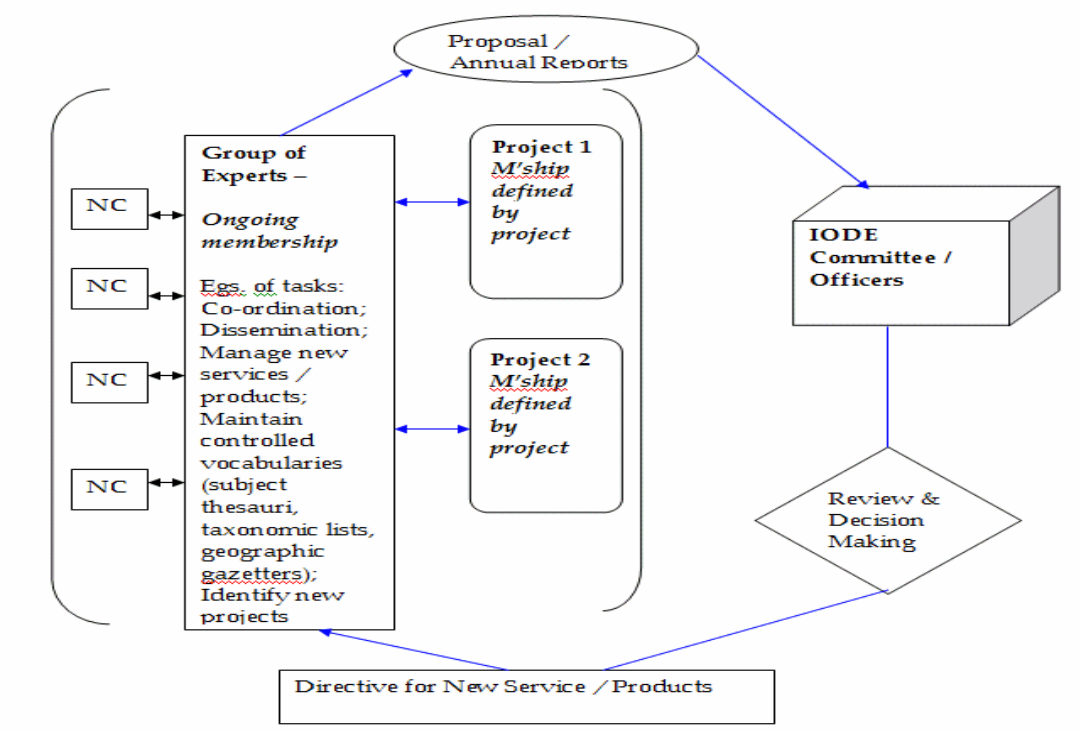

Figure 1

It is noted that IODE-XIX also revised the Terms of Reference of the IODE Group of Experts on Biological and Chemical Data Management and Exchange Practices (GE-BICH) through Recommendation IODE-XIX.3.

1.3 IODE REVISED STRUCTURAL DIAGRAM

Figure 2 (below) shows the IODE management structure (as from IODE-XIX, 2007).

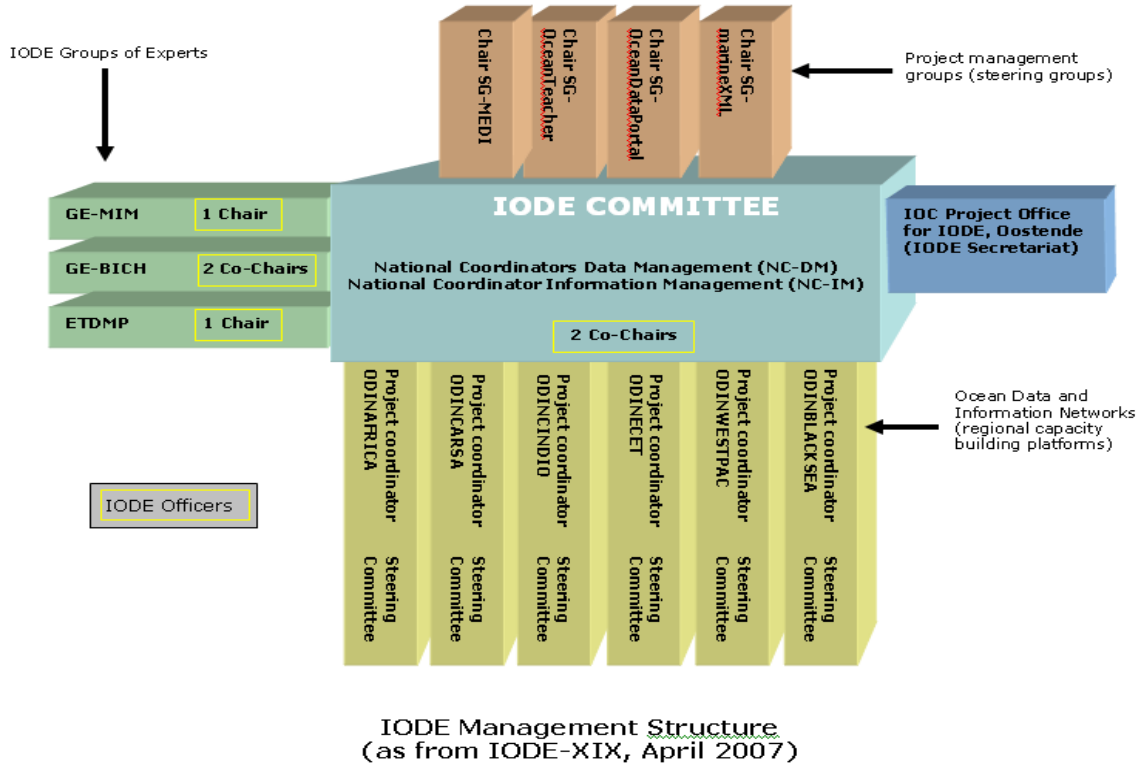

Figure 2

- It is noted that Steering groups are associated with Projects and are established when projects are established. Project steering groups have a Chair. ODINs are also projects but they are headed by a Project Coordinator and are managed by a Steering Committee. Groups of Experts are headed by a Chair or, in the case of GE-BICH, by 2 Co-Chairs.
- It is noted further that nearly all IODE Secretariat functions are now carried out through the IOC Project Office for IODE in Ostend, Belgium rather than partially in Ostend and Paris. This allows for consolidation of available human resources, thereby increasing efficiency.
- The new arrangement of 2 Co-Chairs will enable a more effective management of the Programme whereby each Co-Chair focuses on areas in line with his/her expertise.
- The new arrangement with IODE national coordinators for oceanographic data management and IODE national coordinators for marine information management will provide for a more balanced IODE programme enabling more substantial input by the marine information management (ocean library) community.

1.4 INTERACTIONS WITH OTHER PROGRAMMES AND ORGANIZATIONS

The need for closer and more active interaction with other programmes and organizations has been stressed repeatedly during past IODE Committee Sessions. This is now facilitated through the above-mentioned Recommendation IODE-XVIII.1 which added "*(v) to support international scientific and operational marine programmes of IOC and WMO and their sponsor organizations with advice and data management services*" to the objectives of IODE. During the IODE-XVIII-IODE-XIX inter-sessional period the IODE Chair invited several IOC ocean science and observation programmes to identify their data management requirements so as to enable the IODE programme and IODE data centre community to respond to this need, thereby applying an end-to-end model that links ocean observations, data/information management and product/service delivery (see Figure 3).

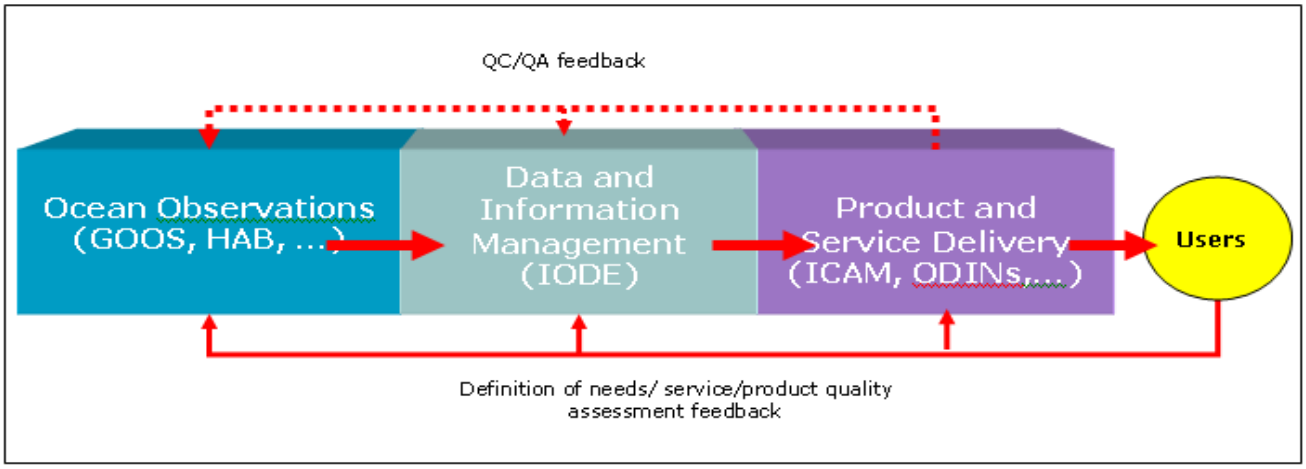

Figure 3: End-to-end model

It is expected that this model will be implemented through the recommended Joint Sessions of the IODE Officers and GOOS Scientific and Steering Committee (GSSC) (and JCOMM Management Committee) starting in March/April 2008. Through these joint meetings it is expected that the GSSC and JCOMM MAN will be able to provide guidance and assign tasks to IODE to respond to data and information management requirements of GOOS (and JCOMM). Similar arrangements may be considered for interaction with ocean science programmes.

The proposed interaction model between IODE and GOOS is as displayed in Figure 4 (recommended by IODE-XIX). This indicates that the GSSC can express its needs to the IODE Committee through the Officers. The IODE Committee, through its various subsidiary bodies (Groups of Experts, Steering Groups) and projects will then implement the necessary activities to respond to these needs. Similarly the JCOMM (and its subsidiary bodies) will receive tasks from the GSSC. In addition JCOMM will interact and cooperate with IODE through the ETDMP (as well as other IODE and JCOMM subsidiary bodies as necessary). At a higher level the IODE Committee receives instructions from the IOC Assembly, as does I-GOOS.

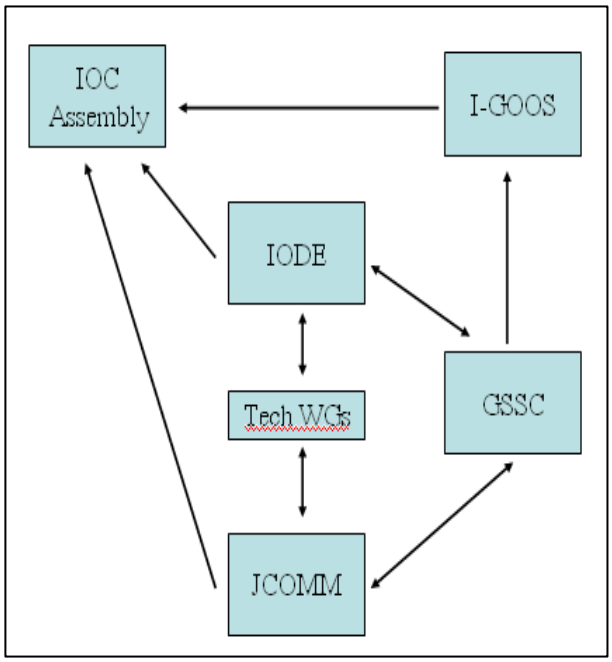

Figure 4

Current interactions with other programmes/organizations:

GROUPS OF EXPERTS

GE-MIM	ASFA, IAMSLIC, EURASLIC
GE-BICH	OBIS, IOC/HAB, CDIAC (emerging), ICES, FAO, TDWG/GBIF, ITIS, MarBEF, EU SeaDataNet, CIESM (emerging), PICES (emerging)
ETDMP (Joint JCOMM/IODE)	JCOMM, WMO (WIS), EU SeaDataNet, ICES, GCMD, (NASA), US DMAC

PROJECTS (Global)

ASFA	FAO
GODAR	UN FCCC, UN IPCC, GEOSS, ICES, WCRP, CLIVAR, ICSU
GTSPP	JCOMM SOT/SOOP, JCOMM ARGO, JCOMM OPA, GODAE,
GOSUD	SAMOS, JCOMM DMPA, JCOMM SOT, JCOMM META-T
marineXML	ICES, EU SeaDataNet, SG-MEDI, US MMI, EU MOTIIVE
MEDI	JCOMM META-T, NASA GCMD, MMI, SeaDataNet, WMO IPET-MI, SG-MarineXML, GE-BICH, GE-MIM
OceanExpert (GE-MIM project)	IODE**/**ODINs, IPY (emerging), GOOS, JCOMM, IAMSLIC, EURASLIC
OceanDocs (GE-MIM project)	IODE/ODINs, IAMSLIC, EURASLIC, UNEP, NEPAD/COSMAR
OceanPortal (GE-MIM project)	**-**
African OceanPortal	ODINAFRICA, NEPAD/COSMAR
Portal Oceánico	ODINCARSA
SeaDataNet (EU)	IODE is partner in SeaDataNet
SIMORC (EU)	IODE is partner in SIMORC
OceanDataPortal (ETDMP project)	WMO (WIS), JCOMM DMPA
OceanTeacher	IOI, JCOMM, IOC/GOOS, SeaDataNet

ODIN projects (regional)

ODINAFRICA	NEPAD/COSMAR, IOC/GOOS, IOC/ICAM, IOC/IOCINCWIO, IOC/IOCEA, IOGOOS, GOOSAFRICA, IOC/IOTWS (tsunami)
ODINCARSA	CPPS, IAMSLIC, IAI, JCOMM, ASFA, IOC/ICAM, IOC/IOCARIBE
ODINCINDIO	ROPME, IOC/IOCINDIO, IOC/IOGOOS
ODINECET	EURASLIC
ODINWESTPAC	GODAR, NEARGOOS, NOWPAP, SEAGOOS
ODINBLACKSEA	SIBEMA, Commission on the Protection of the Black Sea against Pollution, Black Sea Economic Cooperation, BSERP, ASCABOS, EU SeaDataNet, BlackSeaScene, ECOOP, SESAME, ESONET
Pacific Island ODIN (emerging) (lead GE-MIM Chair)	PIMRIS, PEIN, SPC, SOPAC

All IODE activities:	IPY, GEO/GEOSS, SOLAS (emerging)
IOC Project Office for IODE	IOI, DBCP, EU SeaDataNet, ASCABOS, MOTIIV

2. IODE RESPONSE TO DECISIONS BY IOC GOVERNING BODIES DURING THE PERIOD 2005–2006

IOC-XXIII (2005)

IOC-XXIII had:

(i) welcomed the opening of the IOC Project Office for IODE, thanked the Government of Flanders, Belgium for its support to the Office, invited other organizations and programmes to make use of this new facility, and invited Member States to provide seconded staff to the Office and/or IOC/IODE Secretariat;
- ☑ in 2005-2006, 20 events took place at the Project Office
- ☑ in 2007, USA seconded Mr Robert Gelfeld to the Project Office for 3 weeks to assist with IODE-XIX preparations

(ii) welcomed the development of ODIN projects that serve all ocean science and observation programmes of IOC at the regional level;

(iii) invited Member States to consider a distributed national data management architecture;
- ☑ several Member States are implementing distributed system (Russian Federation, Canada, Australia)

(iv) instructed the IODE Chair and IOC Executive Secretary to establish close collaboration with GEOSS;
- ☑ IODE, through JCOMM, is cooperating with GEO/GEOSS through participation in meetings and discussions

(v) stressed the importance of IODE as a core IOC programme that is of crucial importance to all IOC programmes;
- ☐ insufficient resources are being made available to finance the work plan implementation

(vi) reaffirmed the importance of cooperation between IODE and JCOMM in the development of an integrated data management strategy.
- ☑ close collaboration took place during the drafting of the IOC strategic pla for oceanographic data and information exchange to ensure compatibility between the JCOMM and IOC strategies

EC-XXXIX (2006)

EC-XXXIX had:

(i) agreed that GOOS, JCOMM and IODE should play active roles in IPY;
- ☐ insufficient action has been taken in 2005-2006 to ensure close collaboration of IODE and IPY. IODE-XIX proposed concrete steps forward

(ii) noted that GEO-Netcast should be developed … with input from its programmes, including IODE, GOOS and its regional programmes;
- ☐ no action taken

(iii) reaffirmed its view that one of the core objectives of IODE is the secure and long-term archival of ocean data and information and that this function should be re-emphasized;
- ☑ importance of WDC system for IODE has been stressed. Discussions ongoing with ICSU regarding the future role of the WDCs. IODE to participate in WDC meeting (May 2007)

(iv) stressed that IODE is a core programme of the IOC, underpinning all the science and observation programmes;
- ☑ IODE has invited IOC science and observation programmes to identify needs to enable closer collaboration and for IODE to respond to these needs (end-to-end model)

(v) welcomed the participation of IODE in regional (e.g., SeaDataNet) and global (e.g., GEO/GEOSS) initiatives that promote the development of global ocean data systems. It urged IODE to further establish close collaboration with regional and scientific organizations (and projects);

- ☑ especially through the ODINs IODE has established close collaboration with regional initiatives, programmes and organizations. The ODIN strategy is proving to be an effective mechanism to establish and maintain such relations.

(vi) instructed the Executive Secretary to ensure that all IOC programmes fully utilize the IODE expertise and systems for their data and information management requirements and thus avoid setting up their own systems;

- ☑ the IODE Chair contacted several IOC science and observation programmes. Initial outcome includes HAB and Ocean Carbon.

(vii) expressed its strong appreciation for the success of the ODIN systems and called on Member States to provide financial and other resources to maintain and further develop ODIN systems;

- ☐ funding of ODIN networks (except ODINAFRICA) has been difficult with little financial contributions to IOC

(viii) expressed its gratitude to the Government of Flanders for its continued and increased support for the Project Office;

(ix) expressed its concern about the diminishing funds allocated to IODE in the budget resolution adopted by the IOC Assembly at its 23rd Session, as well as the impact of this on the stability of the position of the Head of the IOC Project Office for IODE in Ostend, Belgium; stressed the need for securing a realistic and sustained funding base for the IODE Programme and, while acknowledging that funding from the UNESCO Regular Programme was unlikely to increase substantially in the near future, it invited consideration of innovative funding approaches which should be based on: establishing agreements with IOC and other programmes, projects and organizations that promote convergence in data and information management activities, funding of IODE regional capacity-building activities from regional funding sources; and increased financial and/or in-kind extra-budgetary contributions by Member States;

- ☑ through its active training programme the IOC Project Office for IODE has been able to gain visibility and appreciation amongst the international community. This has resulted in invitations to participate in projects as partner which has resulted in additional extra-budgetary funding.

(x) expressed its strong support for the visionary development of a global data system and portal “Data ATM” (OceanDataPortal).

- ☑ OceanDataPortal project has been formally established by IODE-XIX.

3. THE IODE PROGRAMME AND THE IOC’S PERFORMANCE MANAGEMENT SYSTEM

As from the 2006-2007 biennium results-based management techniques have been applied by the Secretariat to plan and assess activities. It is recalled that it was decided by the IOC Governing bodies to restructure the IOC, moving from 5 Major Lines of Action to 3, as from 2006. These are:

- **MLA-1: Addressing scientific uncertainties for the management of the marine environment and climate change** : HAB, GCRMN, GIPME,ICAM, …
- **MLA-2: Developing operational capabilities for the management and sustainable development of the open and coastal ocean** : GOOS, IODE, Ocean Mapping, tsunami
- **MLA-3: Building capacity of Member States in marine science for the coastal ocean**

Under this new structure, IODE was an ACTION with the following activities:

- Activity 1: Globally accessible **portal** to distributed ocean data and information sources: development of technological framework and exchange standards (mXML, MEDI,...)
- Activity 2: Development and updating of **national** oceanographic data and information management **capacity** in Member States: regional ODIN network pilot projects
- Activity 3:Global accessible **clearing-house** service for oceanographic factual and intellectual information
- Activity 4: Programme strategy, **management**, inter-agency liaison and outreach

Progress is being reported on through SISTER. Below we show the progress between 1/1/2006 and 31/12/2006. Below we reproduce progress reporting as included in SISTER.

ACTIVITY 1 Expected Result	**Globally accessible portal to distributed ocean data and information sources: development of technological framework and exchange standards (mXML, MEDI,...)**		
Justification/identification of needs: The rapid development of web-based data and information services by a wide variety of national institutions (data centres, universities, research facilities) makes that data users are now faced with a data/information discivery problem that cannot be addressed by search engines (eg Google). Emerging technologies like distributed databases, xml etc will enable to resolve this problem.			
	Performance Indicator(s)	**Means of Verification (data source) (Optional)**	**Programmed Benchmark (where available baseline data so permit)**
1	methods and standards agreed upon for different data types	standards published	publications available
2	distributed data sources servers and portal established and appropriate technologies developed and disseminated	portal site; reporting by data servers	site statistics; reports
Date	**Overall progress assessment (progress in achieving the expected result with reference to performance indicator(s) and associated programmed benchmark(s))**		
30/06/2006	PI1: Online Survey carried out to catalogue quality control procedures used by IODE national oceanographic data centres (31 responses received) - report to be made available for IODE-XIX (March 2007) PI2: The portal system was installed at the IOC Project Office for IODE and at the Russian NODC. During the period January-June 2006 the user interface was tested and further developed in accordance with user feedback. Portal URL: http://e2edm.vliz.be/iserv/		
31/12/2006	PI1: the following standards and best practices manuals are planned for 2006-2007: (i) manual on hydrometeorological time series data quality control (in cooperation with EU SIMORC project): planned for July 2007 (ii) manual on quality control of vertical profile data: planned for March 2007 (in cooperation with SeaDataNet project) (iii) review of chemical data quality control manuals and procedures (to be included in OceanTeacher) (iv) IOC data management strategy (to be prepared by March 2007 for submission to IODE-XIX) PI2: June-December 2006: new user interface installed; data source servers installed in Russia, Ostend (VLIZ), UK (BODC), France (IFREMER/SISMER). Portal statistics: approx. 200 visits/month. Indicator 1: 4 data sources installed by end 2006(planned 5 by end 2006) Indicator 2: portal established by June 2006 (planned established by end 2006) Indicator 3: 200 visits/month by end 2006 (no target defined by end 2006)		
Date	**Challenges/Lessons learned (including overall contribution to expected result(s))**		
30/06/2006	**Challenges and success factors**: Agreement needs to be reached within the SeaDataNet consortium and then by the IODE Community.		
31/12/2006	Cooperation and coordination with other organizations has caused a delay in deliverables. identification of portal data source providers has been a bit more difficult than expected as the host institutions need to be convinced of the importance of joining a global network, rather than focusing only on serving national clients.		

ACTIVITY 2 Expected Result	Additional data and information centres established

Justification/identification of needs: The need for science-based coastal zone management has generated a need for quality controlled and quality assured oceanographic data. Accordingly member states are requesting IOC for assistance with the development of national capacity in this area. The IODE's capacity building programme uses the Ocean Data and Information Network strategy (ODIN). This strategy provides equipment operational support and training in a regional context and using an end-to-end approach that links ocean observations, data/information management and product development/dissemination.

	Performance Indicator(s)	Means of Verification (data source) (Optional)	Programmed Benchmark (where available baseline data so permit)
1	data/information management facilities established	number of NODCs established	baseline: 65 target: 100 by end 2007
2	national capacity enhanced	products and services delivered by data and information centres	baseline: undefined target: products and services reported

Date	Overall progress assessment (progress in achieving the expected result with reference to performance indicator(s) and associated programmed benchmark(s))
30/06/2006	• Introductions on IODE NODCs were included in training courses for Central Indian Ocean region. • It is expected that a number of the concerned countries will establish an NODC during 2006. 28/6/06: establishment NODC for Kazakhstan
31/12/2006	• Kuwait and Oman expressed interest to establish NODC. Discussions continue on formalities. • 33 Member States identified IODE National Coordinators for Marine Information Management thereby expanding the IODE network with a corresponding number of IODE Marine Information Centres. • Through the 17 IODE training courses held in 2006, national capacity was enhanced and it is expected that additional IOC Member States will establish IODE NODCs or IODE national oceanographic libraries in 2007. • Products and services: 25 African Member States established web sites to advertise their oceanographic data and information services. All ODIN projects established or renewed their web sites (ODINAFRICA, ODINCARSA, ODINCINDIO, ODINECET). • Africa (ODINAFRICA) is about to publish the African Marine Atlas (2007). • A new ODIN is planned for the WESTPAC region. A preparatory meeting towards the establishment of ODINWESTPAC was held in Tokyo in November/December 2006. It was decided to prepare a Pilot Project proposal for submission to IODE-XIX. Similarly a proposal is being prepated for ODINECET (ODIN network for European Countries in Economic Transition)

Date	Challenges/Lessons learned (including overall contribution to expected result(s))
30/06/2006	**Challenges and success factors**: Competition between various national institutions can hamper agreement on establishment of NODCs.
31/12/2006	The need for national consultation on the hosting of the NODC or national oceanographic library delayed the formal establishment of these facilities.

ACTIVITY 3 Expected Result	OceanExpert directory upgraded and OceanPortal system updated

Justification/identification of needs: It is still observed that national decision makers have a limited and incomplete image of national ocean research and management capability, especially in developing countries. This often also translates in limited access by IOC and other organizations to national expertise in such countries. Similarly scientific results of researchers in developing countries are insufficiently accessible to the global ocean research community: researchers still have difficulties publishing in international journals, and "grey" literature is often impossible to disover or access. These problems further exacerbate the "digital divide". The development of IODE products OceanExpert and ODINPub infobases aim to resolve this problem**.**

	Performance Indicator(s)	Means of Verification (data source) (Optional)	Programmed Benchmark (where available baseline data so permit)
1	OceanExpert system upgraded	web site established	visit statistics
2	OceanPortal system updated	site updated	visit statistics

Date	Overall progress assessment (progress in achieving the expected result with reference to performance indicator(s) and associated programmed benchmark(s))
30/06/2006	The IODE clearing house services include (i) OceanPortal (a directory of ocean-related websites); (ii) OceanExpert (a directory of marine professionals and institutions)and (iii) OceanDocs (electronic full-text repository of ocean related publications) Early 2006 the servers were migrated to the IOC Project Office for IODE (Ostend, Belgium) and management of the services taken over by that Office.
31/12/2006	• OceanPortal: nearly 5000 ocean-related websites - received 125000 visits in 2006)

	• OceanExpert: nearly 12500 marine professionals and nearly 5000 institutions - received over 900,000 visits in 2006 • OceanDocs: over 1000 publications entered in 2006 for African repository - no statisctics available yet - additional e-repository installed for Caribbean and South America
Date	**Challenges/Lessons learned (including overall contribution to expected result(s))**
30/06/2006	**Challenges and success factors**: The visibility and community awareness of the system will determine its value and long-term sustainability. To a large extent the quality of information in the system will determine the appreciation and use by the target communities.
31/12/2006	The OceanExpert system has seen a dramatic increase in visits in 2006. This was partially due to its inclusion in Google (searching experts by name in Google now often results in a link to the relevant OceanExpert record). The use of OceanExpert as the people database for the GOOS, IODE and JCOMM web sites should further increase the visibility and community awareness of OceanExpert in 2007.Similarly the use of OceanExpert for the "IODE training alumnni" system should further icrease the number of visits. Quality control of the database content and removal of inactive records will be a priority during the first semester of 2007.

ACTIVITY 4 Expected Result	**IOC data management strategy developed**		
Justification/identification of needs: This activity is required to assure interagency cooperation on ocean related matters as well as to provide the necessary human resources to implement capacity building activities at the IOC Project Office for IODE, Ostend.			
	Performance Indicator(s)	**Means of Verification (data source) (Optional)**	**Programmed Benchmark (where available baseline data so permit)**
1	strategy developed	publication	

Date	**Overall progress assessment (progress in achieving the expected result with reference to performance indicator(s) and associated programmed benchmark(s))**
30/06/2006	• Presentation on IOC data management strategy was given by IODE Chair during 39th Session of IOC Executive Council. Concept of Data ATM defined and actions identified. The EC expressed strong support for IODE as horizontal programme in IOC, supporting data and information requirements of all IOC activities. • Strategy to be further finalized taking into consideration JCOMM data management strategy.
31/12/2006	• October 2006: JCOMM data management coordination group discusses JCOMM data management strategy. • December 2006: Chair IODE is drafting the strategy document, taking into consideration JCOMM data management strategy, and will circulate it to the IODE Officers in January 2007. It will be formally submitted to IODE-XIX in March 2007
Date	**Challenges/Lessons learned (including overall contribution to expected result(s))**
30/06/2006	**Challenges and success factors**: Some IOC programmes/activities developed their own data management arrangements. Negotiation will be needed to connect these with, or integrate within IODE.

4. IMPLEMENTATION STATUS OF IODE-XVIII RESOLUTIONS AND RECOMMENDATIONS

The IODE-XVIII Session resulted in an Action Sheet including 75 items. At IODE-XIX it was reported that out of these 75 items, all but 4 had been implemented during the 2005-2007 inter-sessional period. Details are provided in the IODE-XIX Summary Report (IOC/IODE-XIX/3). In terms of implementation of Resolutions and Recommendations adopted by IODE-XVIII the following can be reported (Table 1)

Resolution IODE-XVIII.1	(Abolishing of) IODE regional coordinators	- Done
Resolution IODE-XVIII.2	(Abolishing of) IODE RNODCs	- RNODCs abolished but practical aspects to be addressed by inter-sessional working group established by IODE-XIX – reporting at 2008 IODE Officers meeting

Resolution IODE-XVIII.3	IODE Group of Experts (development of strategy for the future)	- Done – Formalized in Recommendation IODE-XIX.2
Resolution IODE-XVIII.4	Establishment of an inter-sessional working group on quality control of ocean profile data	- Little action by the group. IODE-XIX decided to continue the group and re-define membership – reporting at 2008 IODE Officers meeting + QC summit meeting planned October 2007
Recommendation IODE-XVIII.1	The IODE Objectives	- Adopted by IOC-XXIII
Recommendation IODE-XVIII.2	Revision of the Terms of Reference of the IODE GE-BICH	- Closer relations established with other programmes
Recommendation IODE-XVIII.3	Marine Environmental Data Inventory (MEDI)	- marine metadata profile (ISO 19115) prepared - no metadata authoring tool developed but investigating existing tools - MEDI system included in IODE training
Recommendation IODE-XVIII.4	ODINCINDIO	- project implemented started (training courses organized); liaison with IOGOOS
Recommendation IODE-XVIII.5	ODINCARSA	- project implementation continued - close coordination with GOOS
Recommendation IODE-XVIII.6	The IODE Project Office	- limited additional support received from Member States (USA) in addition to host country
Recommendation IODE-XVIII.7	Establishment of the IODE XML steering group	- marineXML web site hosted by project office - close collaboration with SeaDataNet - mailing list established in October 2006
Recommendation IODE-XVIII.8	Programme and Budget 2005-2007	2006: requested RP US$ 110,000, received US$ 62,700 Requested EB US$ 692,000, Received US$ 618,977 2007: requested RP US$ 111,000, Received US$ 55,000 Requested EB US$ 569,800 Received US$ 473,323

Table 1

5. MAIN PROGRAMME SUCCESSES AND MILESTONES DURING THE PERIOD APRIL 2005–MARCH 2007

ESTABLISHMENT OF THE IOC PROJECT OFFICE FOR IODE

Without a doubt the establishment of the IOC Project Office for IODE in Oostende, Belgium with substantial support from the Government of Flanders (Belgium) and City of Ostend has been the most important success and milestone. With the opening of the IOC Project Office for IODE on 25

April 2005, the IODE programme entered a new era of capacity building and ocean data/information services.

The main objectives of the Project Office are:

(i) to establish a creative environment facilitating the further development and maintenance of IODE and partner data and information management projects, services and products with emphasis on improving the efficiency and effectiveness of the data and product/service stream between the stage of sampling and the user; and

(ii) to assist in strengthening the capacity of Member States to manage oceanographic data and information and to provide ocean data and information products and services required by users.

Activities of the Project Office between April 2005 and March 2007 have focused on the following:

- recruitment of 3 local staff for the project office (funded by the Government of Flanders);
- procurement and installation of office equipment, conference and computer infrastructure;
- startup of IT services (web servers, mailing list systems,…)
- startup of web-based information service development (JCOMM/IODE ETDMP E2EDM site; ODINAFRICA/IOTWS Sea Level Data Facility Demonstration)
- IT support to IODE projects (e.g. ODIN web sites, OceanDocs, OceanExpert, OceanPortal,…)
- Organization and hosting of IODE training courses
- Organization and hosting of IODE meetings
- Development of promotional materials related to IODE (poster panel, brochures, posters,…)

During the period April 2005 – March 2007 we can report the following numbers related to activities hosted by the Project Office:

• Number of training courses organized:	29
• Number of trainees:	270
• Number of countries experts from which were trained:	79
• Number of the medium and long term expert visits:	33
• Overall number of experts and trainees visited the Project office:	439
• Overall number of countries experts from which visited Project office:	87
• Number of IOC/IODE related meetings and workshops hosted by the Project office:	20
• Number of external meetings hosted by the Project office:	53
• Number of EU Projects in which the Project Office is involved:	4
• Number of the Web sites hosted:	55

We add that the Office received several high level visits (Mrs Fientje Moerman, Vice-Minister-President of the Flemish Government, in April 2006, and HRH Prince Laurent of Belgium in September 2006.

The full list of events held at the Project Office is included as Annex I to this report.

Globally accessible portal to distributed ocean data and information sources

Going back to its roots but bearing in mind today's (changed) demands of users as well as available technology, IODE is now embarking on the development of the OceanDataPortal (formerly known as Data-ATM). The objective of the Ocean Data Portal is to facilitate and promote the exchange and dissemination marine data and services. The Ocean Data Portal will provide seamless access to collections and inventories of marine data from the NODCs in the IODE network and will allow for the discovery, evaluation (through visualisation and metadata review) and access to data via web services. The system architecture will use Web-oriented information technologies to access non-homogeneous and geographically distributed marine data and information.

In 2006 the foundations of the Ocean Data Portal were put in place through the JCOMM/IODE ETDMP end-to-end data management prototype (E2EDM) which was established at the IOC Project Office for IODE (http://www.oceandataportal.net). The technologies developed for this pilot activity will be further developed and harmonized with similar national and regional systems. As such ODP will not duplicate or compete with existing or emerging national or regional systems, but will aim at interoperability between the systems and to build a federating structure linking this increasing number of distributed data systems.

Metadata will be a key component of the Ocean Data Portal. All data and information services will have a metadata record and the integrity of the Portal will be based on the quality of the metadata. The Ocean Data Portal will include a metadata catalogue to provide a registry of existing data and services available from the data providers and will provide discovery metadata to enable a user to assess the suitability of datasets. The Steering Group for MEDI (SG-MEDI) will provide leadership in defining the metadata requirements for the Ocean Data Portal and work closely with the proposed development project. During the intersessional period (2005-7) SG-MEDI decided to use international standards (ISO 19115/19139) to support the documentation and discovery of marine datasets. SG-MEDI is working with other metadata initiatives, including JCOMM META-T, the Marine Metadata Interoperability project and NASA's Global Change Mater Directory, to ensure metadata interoperability across the marine domain.

Regarding marine information management (publications) the OceanDocs (http://www.oceandocs.net) project was developed as s result of the successful ODINPubAfrica electronic repository (e-repository) project implemented under ODINAFRICA. OceanDocs aims at developing OAI (Open Archives Initiative) compliant repositories providing access to full-text publications created by scientists affiliated to oceanographic and marine institutes. Several ODINs have requested assistance to develop national and regional e-repositories.

Ocean Data and Information Networks (ODIN): creating cross-cutting capacity building platforms at the regional level

The importance of ODINs as capacity building mechanisms at the regional level has been widely recognized, at the national, regional and international level. Based upon the success of the ODINAFRICA network covering 25 African Member States, between 2005 and 2007 other ODINs have been established or further developed in the Caribbean and South America (ODINCARSA) and Indian Ocean (ODINCINDIO) region. We add that at IODE-XIX several other regions have requested ODINs as well: WESTPAC region (ODINWESTPAC), European countries in economic transition (ODINECET), Black Sea (ODINBLACKSEA). Increasingly the ODINs also function as facilitators of inter-programmme cooperation (e.g. between IODE and IOTWS, between IODE and GOOS, between IODE and ICAM) thereby putting in place the end-to-end model described in Figure 3.

The African Marine Atlas

The African Marine Atlas developed by the Ocean Data and Information Network for Africa (ODINAFRICA) was officially launched on 23 February 2007 at the IOC Project Office for IODE in Ostend, Belgium.

The African Marine Atlas (http://www.africanmarineatlas.net) , provides substantial maps, images, data and information to coastal resource managers, planners and decision-makers from various administrative institutions and specialized agencies in Africa. The Atlas will be of immense benefit to national institutions and a variety of users such as environmentalists, local administrators, park managers, scientific community, fishing cooperatives, tourists, hotel keepers, teachers, NGOs, the general public, and any other interested persons. It has over 800 downloadable data products derived from the fields of marine geo-sphere, hydrosphere, atmosphere, biosphere, geopolitical and the human socio-economic dimensions. The Atlas indicates areas of intense use along the coastline requiring careful management and provides potential foresight on likely consequences of specific decisions. Further, the Atlas indicates gaps in knowledge and information base, where additional efforts may be directed. The Atlas will also act in other ways as a guide to recreational opportunities and tourist attractions. In developing the Atlas, the main objective was to collate available geospatial datasets and information on the marine environment and to summarize it into an African Marine Atlas suite.

The Atlas was realized after nine months of intensive work by a team of 16 marine scientists and GIS experts from NODC's in Benin, Ghana, Kenya, Mauritania, Mauritius, Mozambique, Namibia, Senegal, Seychelles, South Africa, and Tanzania. International ocean data experts provided key inputs in data analysis. It is based on an extensive survey of coastal and marine data needs undertaken in early 2006 in all the countries participating in ODINAFRICA.

Primary partners in this project were the United Nations Environment Programme (UNEP), and the African Coelacanth Ecosystem Programme (ACEP). UNEP will develop a clearinghouse and information system on coastal and marine resources of Eastern Africa from the regional atlas. The Atlas has brought great benefits to participating national institutions and Africa as a whole, by encouraging scientists to work together, learn new techniques, and build teams that will continue to regularly update the Atlas with national and local scale data sets.

6. PRIORITIZATION OF IODE-XIX WORK PLAN BASED UPON EXPECTED FINANCIAL RESOURCES

IODE FINANCIAL RESOURCES

The IODE-XIX Session noted that support for IODE from the UNESCO Regular Programme has decreased steadily as from 2005. On the other hand revenue from extra-budgetary sources has increased (mainly Government of Flanders, European Union and United States of America) as shown in Table 2.

	2001	2002	2003	2004	2005	2006	2007
RP IOC programme	72,166	110,000	107,400	121,400	81,272	62,700	55,000
RP CCT (considered as EB)	0	118,200	48,600	79,500	60,500	43,500	43,500
IOC TF (EB)	0	13,791	16,000	46,625	77,716	132,277	39,223
FUST (EB)	577,429	590,505	867,900	804,809	1,345,591	443,200	390,600
IODE Project Office Ostend	0	0	0	0	625,000	650,000	672,000
	649,595	**832,496**	**1,039,900**	**1,052,334**	**2,190,079**	**1,331,677**	**1,200,323**

Table 2

Figure 5 clearly shows the evolution of IODE funding between 2001 and 2007. The UNESCO Regular Programme contribution (IOC) to the IODE budget has decreased from 11% in 2001 to 4.5% in 2007. Note that TF revenue for 2007 is an incomplete estimate (dated March 2007).

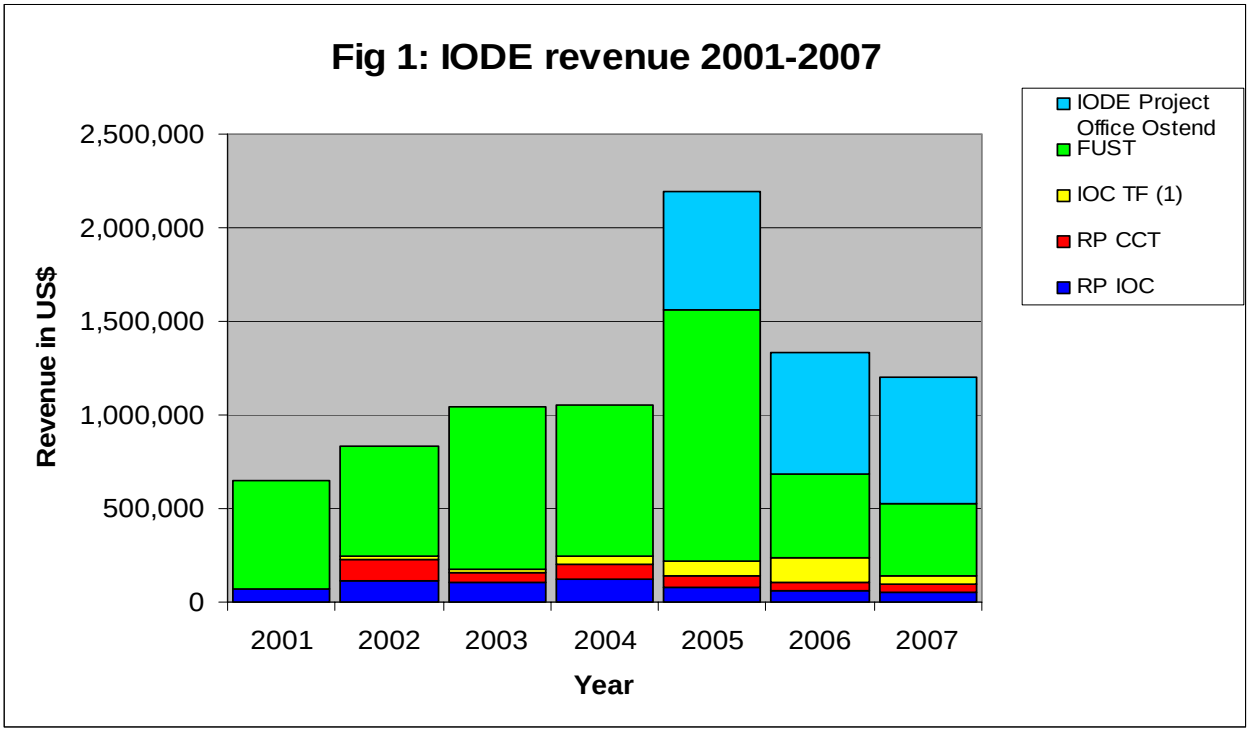

Figure 5

PRIORITIZATION

In view of the uncertain funding originating from the UNESCO regular programme for the 2008-2009 biennium, as well as the increasing demands from Member States for an expanded IODE substance and geographic scope, the Committee instructed the Officers (para 575 of the IODE-XIX Summary Report) to prepare a table indicating:

(i) activities that are of strategic importance (as relevant to the strategic plan) but will need to be shut down due to shortage of funds;

(ii) activities that are of strategic importance but will be covered by the UNESCO regular programme (and indicating whether these funds suffice for effective implementation); and

(iii) activities that are of strategic importance and are covered by extra-budgetary contributions.

The Committee instructed the Co-Chairs to bring the table to the attention of the 24th Session of the IOC Assembly requesting Member States to consider funding activities that are of strategic importance but cannot be covered by the UNESCO Regular Programme (and are currently not covered by expected Extra-Budgetary funding). This is shown in Table 3.

Activities of Strategic Importance to IODE		% funded by RP	% funded by EB	% funding shortfall	US$ funding shortfall
IODE Governance	IODE Officers meeting (2007)	0%	0%	**100%**	20,000
	IODE Officers meeting (2008)	50%	50%	0%	
	IODE-XX (2009)	0%	50%	**50%**	40,000
	Meeting intersessional WG RNODCs	0%	0%	**100%**	10,000
	Cooperation with HAB	0%	0%	**100%**	45,000
	Travel secretariat/ officers	100%	0%	0%	
Data Management	Meeting: GE-BICH-IV meeting (2008)	100%	0%	0%	
	Meeting: IODE/JCOMM ETDMP-II meeting (2008)	0%	100%	0%	
	Event: GE-BICH event – OBI07 co-organization	50%	0%	**50%**	5,000
	Event: IMDIS 2008 event - co organization	100%	0%	0%	
	Workplan implementation: GE-BICH workplan	25%	75%	0%	
	Workplan implementation: IODE/JCOMM ETDMP workplan	67%	14%	18%	7,500
	Workplan implementation:Intersessional WG QC/QA meeting and report/manual	100%	0%	0%	
	Workplan implementation: WDC service and product web page	0%	0%	**100%**	1,000
	Project: GTSPP	0%	0%	**100%**	10,000
	Project: GOSUD	0%	0%	**100%**	10,000
	Project: marine XML	0%	0%	**100%**	5,000
	Project: MEDI	0%	0%	**100%**	10,000
	Project: Ocean Data Portal	0%	100%	0%	
Information Management	Meeting: GE-MIM-IX (2007); GE-MIM-X (2009)	44%	28%	28%	10,000
	Project: ASFA	63%	0%	37%	3,000
	Project: OceanExpert	100%	0%	0%	
	Project: OceanDocs	0%	100%	0%	
	Project: IODE OceanPortal	100%	0%	0%	
ODIN Projects	ODINAFRICA	0%	100%	0%	
	ODINCARSA	42%	0%	**58%**	19,000
	ODINCINDIO	93%	0%	7%	1,000
	ODINECET	94%	0%	6%	800
	ODINWESTPAC pilot	40%	60%	0%	
	ODINBLACKSEA	100%	0%	0%	
	African Ocean Portal	43%	0%	**57%**	13,000
	Portal Oceanico	42%	0%	**58%**	14,000
IODE project office	Project Office operational expenses	0%	100%	0%	
TOTAL (US$ shortfall 2007-2009)					**224,300**

Table 3

In **Table 4** activities are listed that are considered of strategic importance but that will need to be shut down as from the second semester of 2007 onwards due to shortage of funds. The amounts required to maintain these activities (at basic level) are also provided.

		US$ funding shortfall
IODE Governance	IODE Officers meeting (2007)	20,000
	IODE-XX (2009)	40,000
	Meeting intersessional WG RNODCs	10,000
	Cooperation with HAB	45,000
Data Management	Event: GE-BICH event – OBI07 co-organization	5,000
	Workplan implementation: WDC service and product web page	1,000
	Project: GTSPP	10,000
	Project: GOSUD	10,000
	Project: marine XML	5,000
	Project: MEDI	10,000
ODIN Projects	ODINCARSA	19,000
	African Ocean Portal	13,000
	Portal Oceanico	14,000
TOTAL		**202,000**

Table 4

ANNEX I

IOC/IODE Related Events hosted by the IOC project Office for IODE between April 2005 and March 2007

Training workshops 2005

1. ODINAFRICA Basic Oceanographic Data Management Workshop, 11–29 April 2005 (Regions: Africa)
2. ODINAFRICA Marine Biodiversity Data Management training course, 18–22 April 2005 (Regions: Africa)
3. ODINAFRICA Marine Information Management training course, 15 August–3 September 2005 (Regions: Africa)
4. IODE/JCOMM Combined Modelling and Data Management Training Workshop (Jamboree), Sep 02-10, 2005 (Regions: Africa, South America and Caribbean, Asia (Indian Ocean))
5. ODINCINDIO Ocean Data Management training course, 10–22 October 2005 (Regions: Asia (Indian Ocean))
6. ODINCARSA Basic Oceanographic Data Management Training Workshop, 7–19 November 2005 (Regions: South America and Caribbean, Africa)
7. ODINCARSA Marine Information Management Training Workshop, 9–19 November 2005 (Regions: South America and Caribbean)
8. ODINCARSA Oceanographic Data Management Training Workshop (advanced), 21–26 November 2005 (Regions: South America and Caribbean, Africa)
9. ODINAFRICA Web service development training, 5–9 December 2005 (Regions: Africa)
10. Training course on development of electronic repositories on marine related publications from Africa (ODINPubAfrica), 5–9 December 2005 (Regions: Africa)

Training workshops 2006

1. ODINCINDIO Marine Information Management Training, 13–24 February 2006 (Regions: Indian Ocean Region (Asia), Africa)
2. MarBEF/IODE/VLIZ Training Course on Marine Biodiversity Data Management, 6–11 March 2006 (Regions: Africa, Europe, Asia (Indian Ocean), South America)
3. First ODINAFRICA Workshop for Marine Biodiversity Data Compilation, 13–22 March 2006 (Regions: Africa)
4. Marine Information Management training for the ECET (European Countries in Economic Transition) countries, 13–24 March 2006 (Regions: Eastern Europe)
5. UNESCO/IOC/GTZ/ESRI/VLIZ Coastal Planning training course on Territorial Planning in Coastal Zones to cope with tsunamis and other marine hazards, 2-12 May, 2006 (Regions: Africa, Indian Ocean (Asia))
6. Ocean Data Management training course for the Indian Ocean Countries, 8–19 May 2006 (Regions: Indian Ocean (Asia), Europe)
7. ODINAFRICA Atlas Data Mining workshop, 6–16 June 2006 (Regions: Africa)
8. International Training Course on Tsunami Numerical Modelling: Course I - Tsunami Sources and Tsunami Propagation, 6–16 June 2006 (Regions: Africa, Europe, Asia (Indian Ocean), Asia (Pacific Ocean), Australia)
9. ODINAFRICA Atlas Coordination and Planning workshop, 19–23 June 2006 (Regions: Africa)
10. Joint IODE/IOI (International Ocean Institute) Training Course on the GIS and Remote Sensing Data, 18–23 September 2006 (Regions: Asia (Indian Ocean), South America and Caribbean, Africa, Europe)
11. ODINAFRICA Advanced Data Management workshop, Dates: 25–29 September 2006 (Regions: Africa)
12. ODINAFRICA Atlas Progress workshop, 2–4 October 2006 (Regions: Africa)

13. Second ODINAFRICA Web Improvement workshop, 2–6 October 2006 (Regions: Africa)

14. Combined Modelling and Data Management Training Workshop (Jamboree-II), 8–14 October 2006 (Regions: Africa, Eastern Europe, South America, Asia (Indian Ocean), Asia (Pacific Ocean))
15. ODINAFRICA Workshop for Marine Biodiversity Data Compilation, 6–17 November 2006 (Regions: Africa)
16. GLOSS/ODINAFRICA Training Course on Sea Level Observation and Interpretation, 6–17 November 2006 (Regions: Africa, Eastern Europe)
17. OceanTeacher KEWLNextGen Editors training, 20–24 November 2006 (Regions: Europe, Australia, USA)
18. Third ODINAFRICA Marine Atlas Assembly workshop, 27 November–1 December 2006 (Regions: Africa)
19. IOC/ICAM ISSTOCAM Training Workshop on Web Map Server , 4–15 December 2006 (Regions: South America)

Other IOC/IODE Related Workshops and Meetings

1. ECET Union List of Serials meeting, 27–28 October 2005
2. IOC Meeting on MLA2, 7–8 November 2005
3. SIMORC Project CG/AB meeting, 20 December 2005
4. ODINAFRICA Secretariat Meeting, 31 January–3 February 2006
5. IODE Officers Meeting , 6–7 February 2006
6. OceanTeacher Steering Group, 8–10 February 2006
7. IODE/HAB cooperation meeting , 27–28 February 2006
8. ASCABOS Project WP3 meeting, 27 February–1 March 2006
9. ODIN ECET planning meeting, 25 March 2006
10. Sea Level Metadata Web Service Meeting, 28–29 March 2006
11. ODINAFRICA Sea Level Data Meeting, 29-30 Mar 2006
12. ODINAFRICA Project Seminar, 24–26 April 2006
13. ODINAFRICA Project Management Meeting, 27–28 April 2006
14. GEBICH - III Meeting, 27–28 November 2006
15. IODE-UNEP workshop, 30 Nov 2006
16. ODINAFRICA AMA workshop, 12–23 February 2007

Intergovernmental Oceanographic Commission (IOC)
United Nations Educational, Scientific and Cultural Organization
1, rue Miollis
75 732 Paris Cedex 15, France
Tel.: +33 1 45 68 10 10
Fax: +33 1 45 68 58 12
http://ioc.unesco.org