

Fourth Report of Implementation Phase

Information Context for Biodiversity Conservation

Project No. 5052



Submitted to



by

Union of International Associations
World Conservation Monitoring Centre
Nordic Center for Innovation
AIDEnvironment

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1 Introduction

This is the fourth Progress Report for the Implementation Phase of the project called *Information Context for Biodiversity Conservation*. The project is developing an integrated information package for biodiversity conservation using a variety of software for Internet and CD-ROM delivery; search, translation, visualisation and mapping techniques; user workshops and feedback programmes; product testing and marketing; and long-term project financing and commercialisation.

The project partners are:

- Union of International Associations, Brussels, Belgium (UIA)
- World Conservation Monitoring Centre, Cambridge, UK (WCMC)
- Nordic Innovation Centre, Norwegian School of Management, Oslo, Norway (NSM)
- AIDEnvironment, Amsterdam, Netherlands (AIDE)

The project is co-funded by the European Commission's INFO2000 programme, (Directorate-General XIII). Contract No INFMM5052 – 22895/0.

The project is of 28 months duration, extended by 4 months from the original 24, and commenced 1 January 1998. This document reports the six months of work July to December 1999, inclusive. It is online at <http://www.uia.org/projects/i2000rep4.htm>

Previous progress reports of this project are also available at the above web location. For information on the project achievements during its Definition Phase in 1997, see *FINAL REPORT OF DEFINITION PHASE, Information Context for Biodiversity Conservation*, INFO2000 Project No. 5052, at <http://www.uia.org/projects/i2000rep.htm>.

2 Prolongation of Contract

On 30 September 1999, an application was made for a prolongation of the contract until 31 April 2000. This was ratified by an Addendum to the Contract dated 3 February 2000. The prolongation by four months was necessary because of the delay in completing the final stages in certain of the more complex Work Packages. As a result of the prolongation, the scheduled final delivery dates for several of the Work Packages have been extended.

3 Project Deliverables

This report is intended to satisfy the contract requirements for the deliverables marked “*” and outlined by a heavy border in the following table. The basis of the Table is Form INF4 of the Contract, as amended by formal prolongation of the contract.

Note: shaded Work Packages (WPs) have already been delivered, in whole (dark) or part (light); WPs scheduled, or rescheduled, for delivery later than 30 December 1999 are unshaded.

Unique ID No.	WP No.	Description	Status	Expected Delivery	Revised Date of Delivery	Actual Date of Delivery
5052-1	I	Progress Report No 1	Restricted	31-08-98		30-06-98
5052-2	I	Progress Report No 2	Restricted	30-04-99		28-02-99
	I	Progress Report No 3	Restricted			30-09-99
*	I	Progress Report No 4	Restricted			30-04-00
5052-3	I	Final Report on Implementation Phase	Public		30-06-2000	
5052-4	II(i)	Review of User Needs	Public	31-02-99	28-02-2000	
	II(ii)	Recommendations for design: interactivity on the Internet	Internal	31-01-99		28-02-99
	II(iii)	Recommendations for design: user searches	Internal	31-01-99		28-02-99
	II(iv)	Recommendations for design: language-related issues	Internal	31-01-99		28-02-99
5052-5	II(v)	Draft Report: Product Design and Development Plan	Restricted	30-06-98		30-06-98
5052-6	III(i)	Web module: species of conservation concern	Public	30-11-98	Final delivery 30-06-99	Partial 30-11-98 Full 30-06-99
*5052-7	III(ii)	Web module: national parks and reserves	Public	30-11-98	Final delivery 20-12-99	Partial delivery 30-11-98 Final delivery 20-12-99
5052-8	III(iii)	Web module: implementation of international agreements	Public	30-11-98	Final delivery 28-02-2000	Beta test mode 30-12-98
*5052-9	IV(i)	Web module: conservation issues, actions, treaties and feedback loops	Public	30-11-98	Final delivery 31-12-99	Beta version 31-01-99 Final delivery 31-12-99
	V(i)	Draft Report on integration of information	Internal	30-11-98		30-09-99
5052-10	V(i)	Final Report on integration of information	Public	30-11-99	31-03-2000	
	V(ii)	Draft Report on feedback loops	Internal	31-12-98		30-09-99
5052-11	V(ii)	Final Report on feedback loops	Public	30-11-99	31-03-2000	
	V(iii)	Draft Report on information on habitats	Internal	31-01-99		30-09-99
5052-12	V(iii)	Final Report on information on habitats	Public	30-11-99	31-01-2000	
*5052-13	IV(ii)	Final Report on integration of biographies	Public	30-09-98	29-02-00 (30-06-99)	29-02-00 Beta test mode
5052-14	V(iv)	Final Report on interactive generation of indicators and summaries	Public	30-11-99	31-03-2000	
	V(v)	Draft Report on links to other information services	Internal	30-04-99		30-09-99
5052-15	V(v)	Final Report on links to other information services	Public	30-11-99	31-03-2000	
	VI(I)	Draft Report on multimedia visualization	Internal	29-02-98	Draft 23-04-98	30-06-98
5052-16	VI(I)	Final Report on multimedia visualization	Public	30-06-99	31-03-2000	
*5052-17	VI(ii)	Report on mapping national (country) information	Public	30-06-99	30-11-99	30-11-99
	VI(iii)	Draft Report on virtual reality (VRML) 3-D displays	Internal	29-02-98	Draft 23-04-98	30-06-98
*5052-18	VI(iii)	Final Report on virtual reality (VRML) 3-D displays	Public	30-06-99	29-02-00 (31-10-99)	
5052-19	VII(ii)	Report on upgrading CD-ROM software	Public	31-03-98	Draft 23-04-98	30-06-98
	VIII(I)	Guided tour of product/service using HTML facilities	Public	Renewed periodically		Last revised 15-05-99
*5052-20	VIII(ii)	Report on subsidy and sponsorship options	Public	30-06-99	31-03-00 (30-12-99)	

Unique ID No.	WP No.	Description	Status	Expected Delivery	Revised Date of Delivery	Actual Date of Delivery
5052-1	I	Progress Report No 1	Restricted	31-08-98		30-06-98
*5052-21	VIII(iii)	Report on on-line charging options	Public	30-06-99	31-03-00 (30-10-99)	
	VIII(iv)	Revised draft marketing plan	Internal	30-05-98		25-03-98
	VIII(iv)	Revised draft marketing plan	Restricted	31-12-98		28-02-99
5052-22	VIII(iv)	Marketing and launch plan	Restricted	31-10-99	31-03-2000	

4 Progress on scheduled tasks

4.1 Web Module: National parks and reserves

Deliverable 5052-7

Final delivery date (amended) 20/12/99

Protected areas database: Working with two independent consultants, the WCMC protected areas database has been redeveloped for implementation in a windows environment, using mechanisms that allow the same dataset to also be queried across the Internet using a browser.

During redevelopment consideration has been given to better integration with the maps of protected areas already held within the WCMC Biodiversity Map Library, and with the WCMC Internet Map Server. The capability for integration and linkage now exists, although this will not be fully implemented during the life of the project.

Discussion with an expert group on protected areas and tourism has led to the development of a module within the database on visitation and visitor statistics, which will be implemented and data incorporated over the next two years.

Discussion with an expert group on management effectiveness of protected areas, and collaboration with the WWF/World Bank Forest Alliance is leading to incorporation of more information on the effectiveness of the management of each protected area. Again this information will be compiled and incorporated over the next two years, although some trial datasets are already available.

During the next project period the database will be tested and reviewed, with presentation to several international meetings in the year 2000, starting with a WWF-sponsored meeting on effectiveness of protected areas and protected area networks in Thailand in early May.

This work is also supported by projects being implemented in collaboration with the IUCN World Commission on Protected Areas, the WWF/World Bank Forest Alliance, and FAO (in the context of their Forest Resources Assessment).

World Heritage Information Network: Work has continued on the development of this information tool, and UNESCO have agreed to fund further work during 2000. This will include further outreach to national agencies in those countries with World Heritage sites to try to improve the information available. (<http://www.wcmc.org.uk/whin>)

Protected Areas Virtual Library: The list of URLs on the Protected Areas Virtual Library was thoroughly reviewed and modifications made. The addition of a search facility across these sites is being considered in collaboration with the IUCN World Commission on Protected Areas, who are also currently reviewing their own web site and services. (http://www.wcmc.org.uk/protected_areas/pavl/)

4.2 Web Module: Conservation issues, actions, treaties and feedback loops

Deliverable 5052-9
Delivered in beta test mode
Delivered with feedback loops 04-04-99
Final delivery (amended) 31-12-99

This web module was delivered in beta mode at <http://www.uia.org/data.htm> in early 1999 and has been continuously upgraded on numerous occasions since that time.

Content development has continued throughout this project and is expected to continue to the final date of the project (and beyond). Quantitative progress regarding content has been progressively calculated at approximate three-month intervals and shown online at: “Statistics on Organization Strategies” <http://www.uia.org/strategy/stratcon.htm#stats> and “Statistics on World Problems” <http://www.uia.org/problems/probcom.htm#stats>

The remaining component of content to be delivered relates to work detecting feedback loops of Problems and Strategies, and is now completed and reported here.

In the *Second Progress Report of Implementation Phase* (28/02/98), it was reported that a major step had been made in the online presentation of feedback loops in the data. The reported work enabled the contextual listing of Problems and Strategies cross-referenced to a selected data node (Problem or Strategy entry). The list was provided “on the fly” at the request of the user. This facility provided a rich pattern of information in which loops were indicated if detected in the data.

However since loops are relatively rare, it was anticipated that the technique to detect loops (previously explored in a DOS environment in batch mode) would need to be improved to make it easier for an online user to explore them dynamically. (To this point they could only be refined in a batch mode prior to web upload). It was also hoped to relate loop presentation to a Java graphics application.

The algorithm through which such loops are detected was referred to a mathematician, but with no breakthrough. On the positive side, however, some of the issues around the slowness of detecting loops were lessened with the use of faster computers acquired during this project.

The *Third Report of Implementation Phase* (09/10/99) reported further experiments with feedback loops on the Problems database. Some 15 million chains of Problems were searched to detect those that looped back on themselves within 7 links maximum. Some 6,000 of these were detected and were used as a valuable source to be scanned for potential errors and hyperlink redundancy. The results of this work were successfully integrated into the facilities offered to web users. Loops are now flagged in the hit index and they can now be visualised as an integral feature of the java “spring mapping facility”.

Additionally, the non-web standard editing software was augmented to detect local link redundancies and errors in the cross-relationships of Problems and Strategies. This meant that the daily work of editing was also directly contributing to the refinement of loops.

The final stages of the planned loop detection activity we completed during the final part of 1999. The loop detection program was run in batch mode for Problems in sections “B”, “C”, “D” and “F” in the database. This selection includes all but the most detailed and

more minor Problems. The result was 15,958 feedback loops. Loops that involved Problems from the “E” and “G” sections (the most detailed) were edited to correct the anomalous linkages. The logic behind this is that it is inappropriate for broad and detailed Problems to be *directly* aggravating narrow and minor Problems, and *vice versa*; this connection is best shown through hierarchical relationships where “suites” of problems are so aggravating. The most common remedy was to remake the link higher up the hierarchy of the detailed or minor Problem. This activity reduced the number of loops to 5,873. As a further error elimination exercise, entries involved in more than 80 loops were carefully edited and redundant and anomalous links corrected. This activity reduced the number of loops to 2,675. This list effectively represents “keystone” problems -- problems which are implicated in many negative feedback systems concerning the environment.

Finally the loop detection program was run again for the entire problems database, the loops subjected to the above error tests and 9315 loops uploaded onto website.

A similar procedure run for the Strategies database produced over 2000 loops but of inconsistent quality. No time remained to invest in refinement of these links and the loops were not uploaded.

It is expected that this procedure for working with loops will become the standard for future reiterations as the databases evolve in the future.

4.3 Interim report on integration of bibliographies

Deliverable 5052-13

Partial delivery: 30-11-99

Revised date for final delivery: 29-02-00

As noted in the previous report, several components of this workpackage have been completed prior to this reporting period:

- UIA has continually to develop its bibliographic data file, notably with recent publications by international organisations concerning biodiversity conservation.
- The UIA “References” database of bibliographic references has been made available over the Web.
- WCMC and UIA have had several rounds of discussion about “integrating” their bibliographies.
- WCMC has made a major overhaul of the management of its literature holdings and library reference system. The old cataloguing software has been replaced with new software, which offers many features, including automatic web publishing capabilities, and has been tested in in-house and online mode. This has enabled WCMC to offer access to its library catalogue over the Internet.
(<http://www.wcmc.org.uk/resources/library/library.htm>)

The final step in this Work Package is to make the online integration between UIA and WCMC bibliographic databases. This is activity in progress and we expect there should be completion of this activity by the end of February 2000.

4.4 Report on mapping national (country) information

Deliverable 5052-17
Final delivery 30-11-99

Protected areas database: As reported previously, the new WCMC protected areas database will incorporate the ability to deliver maps “on the fly” locating each of the areas in the database based on the latitude and longitude held in the database.

Protected areas maps: WCMC has continued to digitize maps of protected areas at a nominal scale of one to a million as part of a number of projects (particularly funded by WWF and FAO). These are incorporated into the WCMC Biodiversity Map Library, and in future will be available in a generalised form over the WCMC Internet Map Server.

Internet Map Server: Significant testing and prototyping work has continued to be undertaken on development of the Internet Map Server for information managed by WCMC. Much of the technical work has been done in collaboration with IPIECA, the International Petroleum Industry Environmental Conservation Association, and WCMC is working with IPIECA on marine and coastal information. A prototype site on the Mediterranean region has been well accepted. (<http://ims.wcmc.org.uk/ipieca/index.html>), and previously we have reported on marine turtle mapping (<http://www.wcmc.org.uk/marine/mturtle/>) and the prototype on World Heritage properties (<http://ims.wcmc.org.uk/wh/wh2.html>).

Coral disease database: This database allows you to select and access records in the WCMC Global Coral Disease Database, to map observations of different coral diseases over the WCMC coral reef maps, and to download the selected records. This work has resulted from a collaboration between WCMC and NOAA NMFS. The next stage of the project will expand the Global Coral Disease Database with unpublished records of coral disease. Observations of coral diseases from users are actively encouraged. (<http://www.wcmc.org.uk/marine/coraldis/>)

Forest poverty mapping: The forest and poverty mapping website contains a new internet map server, which has been designed to give users the ability to produce custom-made maps showing forest cover and indicators of poverty and population pressure in South Asian countries. This work is the result of collaboration between WCMC and the United Nations Environment Programme. (<http://www.wcmc.org.uk/forest/poverty/>)

4.5 Final Report on virtual reality (VRML) 3-D displays

Deliverable 5052-18
Original delivery 30-06-99
Final delivery 31-03-2000 (deferred from 31-10-99)

This report is deferred for a second time until March 2000 because of the significant continuing progress being made on the parallel initiative involving development and testing of a Java applet to provide mapping facilities which may affect the way in which any VRML work is completed.

4.6 Interim report on subsidy, sponsorship and online charging options

Deliverables 5052-20 and 21
Final Delivery 31-03-2000 (extended from 30-12-99)

This report is deferred until March 2000 because of significant changes in the organization of information services within one of the partner organizations (WCMC), and the appointment of a staff member with a specific marketing mandate. It is anticipated that this individual will draft the report during the final reporting period.

It was proposed in the *Third Report of Implementation Phase* that final reporting on the Work Packages for “Subsidy and sponsorship options” (WP 5052-20) and for “On-line charging options” (WP 5052-21) be combined as a single report on funding options. As the project has developed, the future sustainable financing of the activity is clearly most linked to it as a web-based product.

5 Outreach and Marketing

The project group has been active in several areas of outreach. Many meetings have taken place with potential partners, providers of specialist services and for the purpose of publicising the project. Whilst not all the activities were part of the INFO2000 project (workpackages and/or budget), the experiences gained and contacts made are directly relevant to the project and can be applied to products and services developed by UIA and WCMC based on the INFO 2000 project. Significant activities are briefly described below.

5.1 Presentation to KPN Research and Training Divisions

Groningen, 1 July 1999

This invited presentation of the project databases and website, especially the multimedia facilities, was designed to suggest new lines of thinking to KPN, notably with respect to their product and service development. The possibility of a joint project with KPN Research was evoked as a means of further developing the multimedia features.

5.2 Presentation to Dutch Ministry of Environment

The Hague, 13 July 1999

This meeting focused on the main environmental problems with an international dimension which are likely to be of relevance to the Netherlands in the first part of the next century. In a general presentation of the Report on International Aspects of Dutch Environmental Policy, Graham Bennett presented our project’s index and display features as a comparison of results using conventional research methods.

5.3 Foundation for the Future “Threats and Opportunities towards the Year 3000”

Seattle, 25-29 September 1999

This meeting of invited futurists, notably including biotechnologists, endeavoured to scope out the “threats” and “opportunities” towards the Year 3000. It included presentations by Jay Forrester on World Dynamics and by Jeremy Glenn on the United Nations University millennium survey of threats (to which UIA had contributed).

5.4 Workshop on Information in the Policy Process

San Francisco, 10 December 1999

This workshop was organized by the Nautilus Institute for Security and Sustainable Development and the World Affairs Council. The presentation provided a context in which the relevance of the kinds of information developed for this Info2000 project could be demonstrated in relation to security and policy dilemmas of the immediate future.

5.5 Theme specific meetings

Various

Staff of WCMC participated in a range of meetings with information contributors and users as part of a process of development of services and ensuring the adequacy and quality of the information provided.

6 Complementary project work

The following list of projects is not exhaustive but illustrative of the types of projects that UIA and WCMC, in particular, are carrying out that are relevant to the aims of the INFO2000 project, and which contribute to its implementation.

6.1 *infoDev* Programme of World Bank

The project proposal for complementary funding had been approved by the World Bank's infoDev (Information for Development) programme. This project is, in effect, an extension of the methodology and data of the INFO2000 into a developing country context. Due to various reasons, such as the Kosovo crisis, the programme fund has not been replenished. We are informed that it is now unlikely that the project will be able to funded.

6.2 AEWA website

WCMC has continued to work with the African-Eurasian Waterbird Agreement on development of their website on the species covered by the Agreement. This website incorporates text, photographs, maps and sounds for a few species at present, but will be developed further over the next few months. It was reviewed at the first Meeting of Parties to the Agreement, which was held in South Africa in November.

(<http://www.wcmc.org.uk/AEWA/home.html>)

6.3 EC Clearing-House Mechanism

The EC Clearing-House Mechanism website mentioned in the previous report will be launched during May 2000. WCMC has collaborated in the development of this website as one of a consortium of organizations that won an EC Call for Tender

6.4 IUCN World Commission on Protected Areas

WCMC has provided support to the IUCN World Commission on Protected Areas in the redevelopment of its website. This work is being led by the US National Oceanographic and Atmospheric Administration, and WCMC is serving on the working group directing and reviewing this work. The commission is a network of protected area professionals, and the website is intended to increase the efficiency of this network at global and regional levels.