

## **oneFish BY SIFAR<sup>1</sup>: THE PARTICIPATORY APPROACH TO FISHERIES INFORMATION MANAGEMENT IN THE VIRTUAL ENVIRONMENT**

By

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### **Abstract**

*oneFish is a new Internet-based knowledge management system being developed by SIFAR and the UN/FAO (United Nations Food and Agriculture Organization) Fisheries Department in partnership with the World Agriculture Information Centre (WAICENT). The design team has spent the last year developing a prototype that is now undergoing intensive testing by a small group of fisheries specialists. An updated version of the prototype is due for release in early May, with oneFish Version 1 expected during June 2000. An overview of oneFish is presented. Development to date is described, along with new attributes and functionality in progress, and additional attributes and functionality proposed for the future.*

### **Overview - What is oneFish?**

oneFish is an Internet-based knowledge management system which provides the end user with the facility to:

- Contribute information in many electronic formats to specific subject areas.
- Add references to information that is not in electronic form.
- Link to electronic information that is stored elsewhere.
- Search and retrieve information, files and other linkages.

It also provides the medium through which individuals and special interest groups can:

- Create virtual offices.
- Communicate through discussions forums.
- Add notes and comments to other people's information.
- Submit news items and dates for the calendar.

Subject specialist Topic Editors will assist in the administration of specific subject areas by editing, adding and ranking the information submitted to them.

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<sup>1</sup> The oneFish Community Directory is being implemented by the Support unit for Fisheries and Aquatic Research - SIFAR. SIFAR is funded by a range of donors including: Canada (IDRC and CIDA), Iceland, Norway, the United Kingdom's Department for International Development (DFID), the United Nations Development Programme (UNDP), and the World Bank. SIFAR operates in partnership with the FAO Fisheries Department in Rome.

## Participatory Approach to Networking

The concept of oneFish is based on existing popular Web directories and portals, like Yahoo! and Netscape, and builds on the design philosophy of Internet open content directories by encouraging a participatory approach to information collection, storage and dissemination. It organises knowledge into broad subject areas (Topics), and fosters the development of Topic Trees by the user community by allowing them to define Sub-topics and then:

- Add and upload any type of *Knowledge Object*<sup>2</sup>, e.g. a research paper, report, article or map.
- Add information about a traditional non-electronic *Knowledge Object*, e.g. a book sitting on a library shelf.
- Add a link to a remote *Knowledge Object*, e.g. an online journal or an institutional or thematic website.

Whilst oneFish builds on the design philosophy of Internet open content directories, the overall concept of oneFish is a natural step forward in the development of aquatic information systems. For many years various groups within the fisheries research community have been developing aquatic information systems. The most successful and enduring of these information systems, for example the *Aquatic Sciences and Fisheries Abstracts* (ASFA) database, are those that allow some input, cooperation and participation by those actually involved in fisheries and aquatic research. Fisheries and aquatic bulletin boards and discussion lists are other examples of 'information or communication services' that have grown to be very well used. Once again, this is because they provide avenues via which those working within a specific subject area can communicate, discuss and proffer their ideas and opinions and, primarily, feel that they are influencing the debate.

## Subjects Covered

oneFish is perceived as an inclusive, dynamic information tool, encompassing any subject matter within fisheries, aquaculture and related areas, but with a specific focus on fisheries research and development, and promoting overall '*responsive research for responsible fisheries*'. Because oneFish is a community-building tool, it is anticipated that the subject coverage of oneFish will develop and grow according to the needs and requirements of its users. However, from the outset it will include a wealth of information on past and present fisheries projects imported from the FAO/FIPIS (Fisheries Project Information System) database, and more recent fisheries projects in which the FAO is involved. Soon after, more project information will be added, provided by other major donors and fisheries and aquatic institutions, e.g. the European Union (EU), the United Kingdom's Department for International Development (UK/DFID), and the World Bank. The inclusion of this information will provide a greater visibility of what research and development is being undertaken in the fisheries and aquatic sector, and who is supporting, funding and implementing that research. In addition, oneFish will allow researchers and scientists on active projects to foster awareness of their work and more speedily disseminate the interim results of their research by submitting field notes, working papers and other data, and it will also allow users to establish links between individual projects, project outputs and any related information.

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<sup>2</sup> oneFish is a knowledge management system, and every item of information added to or uploaded into oneFish is referred to as a *Knowledge Object*. This includes any type of information in electronic form, or a record containing metadata about a piece of information that may be located at a remote site, or be in traditional printed format.

## Information Retrieval

To accommodate the many different ways in which individuals perceive knowledge, oneFish offers several innovative approaches to retrieving the information, one of which is the introduction of Worldviews. Worldviews are multiple Topic Trees, each of which leads the user down a unique pathway, but ultimately arriving at the required piece of information. These pathways include: *Theme* - a more formal subject-based approach to fisheries research and development, and *Society* - a more collaborative, people-centred and participatory view. Other *Worldviews* include *Geography*, *Ecosystem*, *Species*, and *People* (and institutions). Whilst a scientist might prefer the *Ecosystem* or *Species* approach, a researcher in the field may find the *Society* route more relevant, and those working in formal institutions might utilise the traditional *Science* pathway the most. To find information on a particular individual or organisation, then the *People* Worldview is the route to take, whilst the *Geography* pathway is a journey through regions, countries and water bodies. In addition to all of these pathways, the search facility will facilitate simple and advanced searching across the whole oneFish domain (Appendix 1).

## oneFish Development to Date

### oneFish prototype

The oneFish prototype was received on 10<sup>th</sup> February 2000. Testing began almost immediately. During this early stage, access has been restricted to members of the oneFish team, a small number of information professionals within the FAO, and fisheries personnel at the University of British Columbia (UBC) Fisheries Centre who have been strong supporters of oneFish during the early design and development phase. The comments and suggestions received to date for changes and enhancements to the system have all been fed through to the designer and the WAICENT programmers, and many of these improvements, along with additional functionality will be seen in an upgraded prototype, due for release in early May.

### oneFish topics

When the prototype was received it was like an empty shell. Whilst the underlying system and framework had been built, the work of entering Topics, constructing Topic Trees, and populating the site had yet to begin. During the preceding few months the Chief Editor had been researching and defining the traditional fisheries and aquatic subject groups and hierarchies to be included as oneFish Topics, in consultation with a wide range of staff in the FAO Fisheries Department and beyond. Each of the Divisions within the Fisheries Department naturally placed an emphasis on their own areas of management and research, and it was the rôle of the Chief Editor to translate all of the suggestions and recommendations into a broad and balanced reflection of the needs and requirements of the fisheries and aquatic community, as well as to develop cataloguing procedures. Whilst we are fairly content with the overall picture, the top-level Topics and their existing Sub-topics are not yet set in concrete; there may still be room for improvement and we will be interested to receive feedback from EURASLIC members in this respect.

### Populating oneFish

One of the primary objectives in the development of oneFish has been to facilitate the regeneration of the FAO Fisheries Project Information System (FIPIS). FIPIS was a DOS based information system created and maintained by the FAO Fisheries Department, and included information on fisheries projects funded by all of the major Donor Agencies. The maintenance and development of FIPIS was carried out by one person in FAO/FI, and as can easily be imagined, became, by 1995, totally unsustainable with the resources available. Yet FIPIS was freely distributed to fisheries organisations and institutes around the world,

and it was an extremely useful tool for identifying and tracking fisheries projects, and related project funding allocations. SIFAR is funded by, and an instrument for, the implementation of tools in support of fisheries research and development, and as such the regeneration of FIPIS was the major motivation behind oneFish.

The first step toward fulfilling this commitment would require the conversion of the 5,460 project records from the original FIPIS system, not only into a format that would facilitate their import into oneFish, but at the same time their automatic cross-referencing to multiple topics relevant to their subject coverage. These records would need to go into a relational database (Oracle8) underlying oneFish, and the database structure would need to reflect both the requirements of the original system and those of the oneFish system.

Many of the FIPIS project records contained a limited amount of information and most contained no keywords at all (which is the facility by which the automatic cross-referencing to topics is planned). Textual reformatting was required, along with the addition of short descriptions and other elements required for project records within oneFish. This major task required the skills of an individual not only with experience of information systems, databases and data conversion, but also with the subject knowledge to enhance and manipulate the source data. Ian Pettman was our man.

It has certainly been a cumbersome task. Because of limited time-scales additional staff were recruited to carry out some of the editing involved, but the majority of the work, which has included the development and construction of the relational database structure, has been carried out by Ian, in close collaboration with Richard Hoad of WAICENT.

All of the original 5460 project records have now been successfully imported into oneFish. This first bulk uploading has provided a substantial amount of data upon which we all can build. The upload was also designed to test the processes involved. With some minor refinements to the system, it will now be possible to repeat this process for project records from each of the major donor organisations (e.g. World Bank, DFID etc.) in order to cover the years since 1995 and to facilitate regular future updates from these organisations.

### **oneFish Knowledge Objects**

In addition to project records, a oneFish *Knowledge Object* might be: an electronic document or file of any description, a website, or metadata about a piece of knowledge. In short, any item of information on any subject matter within fisheries, aquaculture and related areas, that can be uploaded or linked to oneFish. Data can be added using an appropriate Add form, and you can choose from: Add Book; Add Document; Add Map; Add Project; or Add Website. Each Add form has been designed to provide the user with sufficient fields to enter all the information they wish about a specific *Knowledge Object*, and with a minimum number of required fields to ensure correct data identification and quality. The form, along with any linked file, is submitted to the topic editor for acceptance and uploading. In addition to *Knowledge Objects*, oneFish *Media Objects* will include news items, issues and polls on topical issues of current concern, depending on the topic selected. *Media Objects* may be submitted or suggested by registered members, or added by the Topic Editor or Chief Editor.

### **oneFish Editors**

Whilst the Chief Editor has been responsible for developing the top-level Topics, and will continue to oversee the creation of new Sub-topics, volunteer Topic Editors are being encouraged to take responsibility for the content and quality of specific Topic Trees. Each Topic Editor will assess the quality, value, and relevance of each *Knowledge Object* submitted to them. They can edit, add and delete *Knowledge Objects* within their Topic Tree, or forward *Knowledge Objects* to alternative Topic Editors as appropriate. They can also rank *Knowledge Objects* within their topic area and mark them as "Editor's Choice", generate and take part in debates and discussions, and initiate polls on issues of current topical interest.

## Future Development

oneFish version 1, is due for release during June 2000 and it is anticipated that it will include 60% of the intended full functionality. An updated version planned for September 2000 should achieve almost full functionality, with an advanced searching facility and a oneFish Thesaurus as tools for both the indexing and search facilities.

Discussions are taking place with the various Donor Agencies to set up agreements and routines for the regular contribution and updating of their project information in oneFish, thus providing the fisheries and research community with an online successor to FIPIS. From June, individuals and organisations will also be invited to register with oneFish and start contributing their own information.

Whilst access to oneFish will initially be constrained by the ability to access the World Wide Web, funding is currently being sought to facilitate output by CD-Rom, and for email delivery of information in specific Topic Trees. oneFish developers are aiming to commence email output by Autumn 2000, and to produce the first CD-Rom output early in 2001, thus broadening the user base by several thousands of potential users in developing countries.

## Summary

oneFish offers a new, global participatory mechanism for promoting the sharing and exchange of knowledge relevant to fisheries and aquatic research and development. It combines the attributes of an online directory with those of a traditional database, and provides the added facility of communicating with colleagues via oneFish discussion forums. oneFish will enable the boundaries between research, information dissemination, user needs and participation to be merged in one virtual environment. As oneFish develops it will provide the fisheries research community with the largest fully integrated global collection of information on fisheries research and development. oneFish will be a tool for all and as a result it will grow and develop according to the needs and requirements of those stakeholders - a truly responsive approach to the information needs of the fisheries and aquatic research community in this new millennium.

*For more information contact:*

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## **APPENDIX 1 – ONEFISH WORLDVIEWS AND TOP-LEVEL TOPICS – 25 APRIL 2000**

### **Themes**

Aquaculture  
Biology and ecology  
Fishing operations  
Land-water interface  
Oceanography and hydrology  
Pollution and environment  
Product utilisation  
Resource assessment  
Resource management  
Socioeconomics and development

### **Society**

Communication and information  
Culture, ethics and gender  
Education and training  
Institutions and change  
Participation  
Policy and law  
Poverty and livelihoods  
Property and resource rights  
Traditional knowledge

### **Ecosystem**

Coastal lagoons  
Coastal waters  
Deltas and estuaries  
Lakes and inland lagoons  
Mangrove swamps and saltmarshes  
Open oceans  
Ponds  
Reefs  
Reservoirs  
Rice fields  
Rivers and flood plains  
Shelf zones  
Wetlands and marshes

### **Geography**

Africa  
All countries  
America  
Antarctica  
Asia  
Europe  
Inland waters  
Marine areas  
Mediterranean countries

Oceania  
Pacific Islands

**Species**

Amphibians and reptiles  
Aquatic algae and plants  
Aquatic mammals  
Bacteria and fungi  
Crustaceans  
Fishes  
Molluscs  
Other aquatic invertebrates  
Plankton

**People**

Community-based organizations  
Donor organizations  
Government organizations  
Groups, associations and networks  
Individuals  
International organizations  
Media  
National education systems  
National research systems  
Non-governmental organizations  
Private sector  
Regional fisheries organization