

**ONEFISH BY SIFAR: A FUNDAMENTAL ADVANCE IN DEVOLVED  
MANAGEMENT INFORMATION SYSTEMS FOR THE FISHERIES AND  
AQUATIC RESEARCH COMMUNITY**

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**ABSTRACT:** oneFish is a new Internet-based knowledge management system being developed by the Support unit for International Fisheries and Aquatic Research (SIFAR) and the United Nations Food and Agriculture Organization (UN/FAO) 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, with a view to launching the system in the Autumn, 2000. oneFish aims to draw together a broad cross section of stakeholders within the fisheries and aquatic research community. The design of oneFish has been demand-led, and the management of oneFish will be decentralised. The primary aim of oneFish is to raise the profile of fisheries and aquatic research and reinforce its impact on responsible fisheries development. An overview of oneFish is presented. Background and development to date is described, along with additional attributes and functionality proposed for the future.

**KEYWORDS:** oneFish; Fisheries research; Fisheries development; Fisheries information; Information systems; Internet; Participation; Responsible research; Responsible fisheries

## Overview

oneFish is a new Internet-based knowledge management system for the fisheries and aquatic research and development community 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.

oneFish is a free, open-access, participatory information system. Management is decentralised, devolved to subject specialist *topic editors* who will assist in the administration of specific subject areas by editing, adding and uploading the information submitted to them.

## SIFAR

The Fisheries Development Donors Consultation (FDDC), jointly convened by the World Bank, the African Development Bank, the United Nations Development Programme (UNDP), the Commission for European Communities (CEC) and the United Nations Food and Agriculture Organization (UN/FAO) in 1986 commissioned a major study of international fisheries research needs. This purpose of this was to identify and prioritise research-related problems which constrained the effectiveness of donor support to fisheries development. The resultant *Study of International Fisheries Research* (SIFR Study) was published in 1992. (World Bank *et al* 1992) The SIFR Study recommended a *Strategy for International Fisheries Research* aimed at enhancing international cooperation in fisheries research. This strategy would “*promote research in all aspects of fisheries, aquaculture and the aquatic environment, plus the channelling of donor funds to assist needy countries, as well as the setting-up of a fisheries research facilitating unit*”. As a result the SIFR Secretariat was established at IDRC, Canada in 1992 in order to put the SIFR Strategy into operation, and the Secretariat was mandated in particular with “*matching research priorities of developing countries with the interests of donors*”. (IDRC 1998)

In 1995 an evaluation of the IDRC SIFR Secretariat recommended the establishment of a research support unit based at FAO Headquarters in Rome, and this led to the setting up of SIFAR - the Support unit for International Fisheries and Aquatic Research, as a project alongside the FAO Fisheries Department, in March 1998. SIFAR was given three objectives: *to increase research relevance; to improve the effectiveness of research policies; and to improve networking and communication between researchers, donors and policy makers.* The development of the oneFish Community Directory is a direct output of the latter objective, and by involving the whole fisheries research and development community, it will also be the supporting communication and networking facility that will continue to progress the first two objectives.

oneFish development is currently being sponsored by the United Kingdom Department for International Development (UK/DFID), Norway, Icelandic International Development Agency (ICEIDA), Canadian International Development Agency (CIDA), (Canadian) International Development Research Centre (IDRC), World Bank, United Nations Development Programme (UNDP), and UN/FAO.

### **Participatory Approach to Networking**

The concept of oneFish is based on existing popular Web directories and portals, like Yahoo! and Netscape. Whilst oneFish draws on the philosophy of these large Internet directories inasmuch as it is a powerful, open and participatory information system, in contrast, oneFish offers some unique innovations. Firstly the *thematic focus* of oneFish will contribute significantly to ensuring quality of content and relevance to user needs. Secondly, oneFish introduces the concept of information stored as *knowledge objects*, any information in any format that can be linked, uploaded or referenced in oneFish. oneFish organizes knowledge into broad subject areas, *topics*, and fosters the development of *topic trees* by the user community in allowing them to define *subtopics* and then:

- Add and upload any type of *knowledge object*, 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.

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.

### **Subject Focus**

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 overall promoting '*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 information on more recent fisheries projects which the FAO and other Donors, e.g. the European Union (EU), the United Kingdom's Department for International Development (UK/DFID), and the World Bank are funding. The inclusion of this information will provide a greater visibility to 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.

### **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: *Subject* - formal subject-based approaches to fisheries research and development, as well as more collaborative, people-centred and participatory views; *Geography*; *Ecosystem*; *Species*; and *Stakeholders* (individuals and institutions). Whilst a scientist might prefer the *Ecosystem* or *Species* approach, a researcher in the field might find the *Subject* route more relevant. To find information on a particular individual or organization, then the *Stakeholder 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.

### **Development to Date**

#### *Prototype*

The oneFish prototype version 0.5 was released by the programmers (WAICENT) on 10<sup>th</sup> February 2000. Testing began almost immediately. During this early stage, access was

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 had been strong supporters of oneFish during the early design and development phase. The comments and suggestions received for changes and enhancements to the system were all fed through to both the designer and the WAICENT programmers, and many of these improvements, along with additional functionality have been included in subsequent prototype releases (version 0.75, released May 2000, version 0.95, released August 2000).

### *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 research and preparatory work had taken place to define the traditional fisheries and aquatic subject groups and hierarchies to be included as oneFish *topics*, through 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 its own area 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.

### *FIPIS*

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 organizations 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 the relational database (Oracle 8) 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. This complex task was undertaken by Ian Pettman, working in close collaboration with WAICENT programmers.

All of the original 5460 project records were successfully imported into oneFish, providing a substantial amount of data upon which we 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 organizations (e.g. World Bank, EU, DFID etc.) in order to cover the years since 1995 and to facilitate regular updates from these organizations.

### *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 input form: *add book*; *add document*; *add contact [individual]*; *add contact [institution]*; *add multimedia*; *add project*; or *add website*. Each *add form* has been designed to provide users 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 *add form*, along with any linked file, is submitted to the appropriate *topic editor* for acceptance and uploading.

### *Other Features*

oneFish allows news items and events to be submitted at any level, thus providing attractive, topic specific 'headline' pages. Users searching on a specific topic will not only be able to locate quickly a diverse range of relevant information, but will also be able to submit free-text notes, and participate in discussions, debates and polls related to that topic. Any group, association, network or other organization can create a *virtual office* in oneFish. A *virtual office* is a customised topic tree tailored to the specific needs, activities and specialisations of that organization. *Virtual offices* allow individuals and organizations to manage their knowledge (e.g. projects, contacts, publications) and share it, sometimes selectively, with others with similar interests.

## **Management**

The management of oneFish will be decentralised, devolving as much responsibility as possible to its participants. Whilst the Chief Editor has been responsible for developing the top-level Topics, and will continue to manage many of these topics, volunteer topic editors will be encouraged to take responsibility for the content and quality of specific topics and/or topic trees. Individual topic editors 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 elevate *knowledge objects* within their topic area by marking 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 1.0, is due for release during Autumn 2000 and it will include 90% of the original intended functionality. Further versions planned for release during 2001 will include an advanced searching facility and access to a specialised thesaurus as a tool for both indexing and searching.

Work is currently in progress setting up agreements and routines for the regular contribution and updating of project information from Donors in oneFish, thus providing the fisheries and research community with an online successor to FIPIS, and from the release of version 1.0 individuals and organizations around the world involved in fisheries and aquatic research and development will 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, a CD-Rom output is planned for Spring 2001, along with email contributions and dissemination, 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.

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20 September 2000