FIRMS Technical Working Group Meeting

Second Session

Rome, Italy, 01-04 April, 2008

FINAL REPORT

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OPENING OF SESSION AND THE WELCOME ADDRESS

1. The Second Session of the FIRMS Technical Working Group (TWG) meeting was opened by Mr Richard Grainger, Chief FIES, at 9.15 hrs on Tuesday 01 April, 2008. He welcomed the FIRMS Technical Working Group representatives of the following agencies: IATTC, ICES, ICCAT, CCAMLR, CECAF, GFCM, NAFO. He reminded the meeting of the general mandate of the TWG and recalled that the specific TORs assigned to this second session were to train Partners representatives in the workflow management system, and to validate the fisheries module. He apologized for the need to schedule the meeting in 2008 instead of in 2007 and explained that the FIRMS Secretariat wished to present a reliable working system usable by Partners after the training. The overal expectation was for the TWG2 to be able to conclude that there are no more obstacles to active information contributions by Partners.
2. Participants were introduced and expressed their expectations for the meeting. The list of participants is at Annex 1.

ELECTION OF CHAIRPERSONS

3. Mr Michael Hinton, Mrs Pilar Pallares and Mr David Ramm were nominated and chosen by consensus as co-chairs for the meeting, with Mr Hinton chairing item 5 and 8, Mrs Pallares chairing items 3 and 4, and Mr Ramm chairing items 6 and 7 (see Agenda, Annex 2).

ADOPTION OF THE AGENDA

4. The agenda as presented by the Chair, and supported with an overview of goals and process presented by Mr Marc Taconet, was adopted (Annex 2).

5. Rapporteurs from the participants were appointed for each session, and they were assisted by the FIRMS Secretariat in recording the proceedings.

WORKFLOW MANAGEMENT SYSTEM:

OVERVIEW AND PENDING ISSUES

6. An overview of the Workflow Management System (WMS) was presented by Mr Sylvain Caillot. A summary of the presentation follows:

   The WMS is a comprehensive system implemented by the FIRMS Secretariat to prepare, manage, load and update Marine Resource and Fishery Fact Sheets in an efficient way.

   The WMS includes i) the upstream converter tools (for preparatory steps) used to generate structured XML files based on the FiMES schema from Word or Excel reports, and ii) the Content Management System (CMS) which is composed of three data management modules:

   - The Upload Module to load XML files and related images (the “observations”);
   - The Observation Management Interface (OMI) for managing observations, for creating new observations through the clone or the blank functionalities, and for publishing observations on the Web;
   - The On-Line Editor (OLE) for dynamically modifying the content of the observations through a user-friendly interface.

   Observations are stored within Collections, which are managed individually by Partners, who remain the trustees of the observations available in their collection.

   Before a Partner can start to update observations, preparatory steps are required of the FIRMS Secretariat, in accordance with FIRMS IMP: this includes creation of

(1) a data collection necessary for assigning ownership and structuring quality assurance information, (2) a cover page necessary for the pages' Citation, loading of the Partner inventory (a hierarchical tree of Resources or Fisheries object titles), and (3) loading of each object's Reference observation (essential descriptors, e.g. water-area and species for a Marine resource).

Discussion:

7. There were questions about the ability of Partners to access the information they had posted on FIRMS pages on their websites. It was clarified that FIRMS pages information could be accessed via XML or HTML for download, or that this information could be called and displayed directly on a Partner site. This could be done by direct downloading and coding of the site, or by opening the FIRMS page in a frame. Another option for minimizing work load of Partners would be formatting the webpages based on the FIRMS XML schema on the Partner site, with subsequent access to these pages by the FIRMS site. This capability is in the development stage, whereas the download capability already exists.

   A clarification was requested regarding the meaning of Fact Sheet versus Observation. An Observation is a time bound report on Status and Trends, loaded in the FIRMS system, either published or in the restricted area. The Fact Sheet is, among the various observations existing in the system for a given Marine resource or Fishery object, the observation selected (generally the latest update) as façade for the object: it is the observation displayed when browsing through the inventory, or when clicking on a record of the search result list. The other published observations can be accessed only from the "related observations" link available in the Fact Sheet.

8. User comments/experiences preparing Fact Sheets were provided by a number of the Partners.

   ICES – development has been by using the Word to XML convertor option and it has worked well, with arising issues and problems being addressed by the Secretariat as the method was implemented. Remaining issues in the on-line CMS include confusion in control orders, i.e. edit, approve, and publish.

   ICCAT – development has been by working directly with XML. The needs of ICCAT do not fit well into the application of a single standard worksheet, because the information contained in the executive reports, on which the Fact Sheets are based, does not always follow the same structure. The use of the CMS has

presented some difficulties due to using the system only once per year but has been solved with the assistance of the Secretariat.

NAFO – development has been accomplished by sending Word documents to the Secretariat for automatic conversion to XML and uploading. A comment was made that the conversion process caused a poor quality graphic. It was noted that the quality of graphics would not be degraded if images are supplied in Jpeg or Gif format.

CECAF – clarification on editing/publishing workflows was sought. It was confirmed that configuring of inventory and ownership aspects was the responsibility of the Secretariat, and that internal FAO arrangements allotted to FAO/FIES the responsibility to assist with the update of CECAF Fact Sheets.

IATTC – early in the process of Fact Sheet development, the XML process was attempted. This was found to be very difficult, which was likely in large part due to not having an experienced XML programmer available. This process will be dropped, at least temporarily, at this time in favor of the Word approach to Fact Sheet development.

GFCM – no problems with updating or use were noted, because their website is structured similarly to the FIRMS site. A clarification was sought, and it was confirmed that, content is only approved by designates of Partners.

CCAMLR – it was noted that some sheets had been developed, and more are in the process of being added to the system.

9. General points covered during the discussion included clarifications that:

- if online-editing was used, then it is possible to download the updated XML, or to have an application automatically update the Partner site;
- it is possible to interface FIRMS and Partners websites to keep information matched. There was discussion on issues of finding different information on the Partner versus the FIRMS site (i.e. differing in type or level of details), particularly since some agencies have active data sites, while others only report;
- it was noted that the primary focus of FIRMS is to provide content information to policy makers and that this is frequently not the same target audience as for Partner sites. It was also noted that FIRMS can bring higher visibility to Partner sites, and that as policy FIRMS Fact Sheets systematically link to source documents on Partners websites;

- there is a need to standardize display formats, and improve graphics and to increase stability of the system. It was noted that changes to improve stability are in progress, and as well progress is being made on preparing polar and Pacific-centric maps.

10. At the end of this session, Mr Taconet gave a summary of improvements made to the WMS since TWG1, including thorough testing of inputs by FIRMS Partners. The Word-to-XML convertor tool includes quality control checks which greatly facilitate editors' work; the CMS includes several new functionalities such as the management of multilingual observations, the cloning of existing observations, and a robust on-line help system for users of the CMS. Recent efforts have been directed to improving the reliability and stability of the CMS.

HANDS-ON TRAINING COURSE

11. The FIRMS Secretariat organized a course for hands-on training of participants during the meeting.

Training on the FIRMS Content Management System (CMS)

12. Mr Gentile went step-by-step through the on-line help system, and participants were invited to follow the instructions of the help system and work through a data management cycle using their laptops and their data. Connection problems on the development server used for the training prevented some participants from completing the whole data management cycle. This cycle, including use of the new tools for the clone action and for the creation of blank files, was successfully demonstrated using the internet server.

Training on the Converter tools

13. Mr Caillot described and illustrated the tools which are used to generate compliant XML files based on FiMES schema from input formats such as Excel spreadsheets or Word reports.

    The Excel-to-XML converter is used for the conversion of original inventories developed in Excel to XML. These files constitute the Secretariat sources for the Reference observations.

    More focus was given to the Word-to-XML converter tool in response to participant interest. Opting for this conversion process implies that the Word reports are based on a strict template with recurrent titles that have been mapped with

elements of the FiMES schema. This tool is currently used by NAFO and ICES. In line with the Information Management Policy (IMP), the tool can consider the Partner standards and classifications such as the ones used for Status & Trends present in the Word report.

At the end of the meeting, a practical presentation was made to NAFO and IATTC, in order to show in depth the tools available for structuring Word documents and the global process to obtain a compliant XML file from a Word report.

RESOURCES MODULE: REVIEW OF STATUS, ISSUES, PLAN FOR IMPLEMENTATION OF STANDARD STATE AND TREND DESCRIPTORS AS DECIDED AT FSC4

14. The TWG2 was tasked with providing solutions to implement decisions and recommendations from FSC4, namely for stock status descriptors, reporting year and statistical graphs.

15. Based on Document 2 "*Resources module status and plans for implementation of FSC4 decisions*", Sylvain Caillot introduced each of the issues to be reviewed in this paragraph.

Stock Status Descriptors

16. The FIRMS Secretariat presented the technical implications of the inclusion of Partner's descriptors on the FIMES schema, the FIRMS database, the workflow supporting tools and the search engine.

17. Also the Secretariat presented proposals on ways in which the stock status information will be displayed in the Fact Sheet as well as different options on how to display the information after a search is completed. It was noted that FSC had already agreed to allow Partners to provide or map their own descriptors. The FIRMS terms would be used to search, while the Partners mapped descriptors would be displayed. If there was no mapping, free text could be used but this would not be searchable.

18. Partners were then invited to present their solution to the implementation of FIRMS standard descriptors (see annex 3 for solutions presented).

- NAFO and ICES had already completed a mapping exercise (annex 3a).
- FAO presented how it intends to map its standard monodimensional Exploitation Status Descriptors (ESD) to the FIRMS descriptors (annex 3a). It was noted that

a single FAO term could be mapped to many FIRMS terms regarding either Abundance level or Exploitation rate. FAO's plans are to make use of a 2 dimensional approach by 2011.

- GFCM has included an option on a stock assessment form to have both the FAO monodimensional ESD, and the FIRMS stock descriptors. This is included when the form is filled out by GFCM working groups.
- CCAMLR has not completed a mapping exercise and wondered if there was some benefit to dividing the category "No or low fishing mortality" into two separate categories (i.e. 'No fishing mortality' and 'Low fishing mortality').
- CECAF has many stocks and while there is some information available on both of the two dimensions, CECAF has no standard terminology for these descriptors, but uses the FAO exploitation status.

Based on the two dimension faces graph considered by the Tuna RFMOs to define the tuna stock status, IATTC and ICCAT presented a table and figure with the results of stocks assessments in a quantitative and graphical formats, showing how abundance level and exploitation rate could be mapped to FIRMS standard descriptors. On the basis of this table, ICCAT would be able to manually add the FIRMS descriptors in its Fact Sheets. ICCAT also showed an example on how this graphical representation is used by the SCRS to define stock status. This representation consists of a rectangle subdivided in 4 coloured squares, each representing a condition of fishing mortality and abundance level.

A proposal was made to create a new composite code mapping the graphical presentation of the stock status adopted by Tuna RFMOs to the FIRMS Abundance status and Exploitation rate descriptors. The codes proposed by FIRMS, and the graphical representation, are included in Annex 3b.

19. It was noted that the existing descriptors were defined on the basis of a single stock assessment and it was not clear how the solution proposed by FIRMS would help support sound management advice in the context of multispecies resources or in an Ecosystem Approach, which require another set of descriptors.

20. The question of the historic use of the descriptors was raised, and per FIRMS philosophy the Partners have full control of historical Fact Sheets in the system. The FIRMS website provides direct access to only the latest version of the Fact Sheets provided by the Partners (known as the primary observation). Access to historical

Fact Sheets is only possible when Partners provide access through the primary observation.

21. There were many questions and much discussion about the actual meaning of FIRMS descriptors, in order to ensure that each RFMO understood how to properly map their definitions to these descriptors: in particular how to position a “low”, “intermediate”, or “high” abundance in the FIRMS scheme vs. Partners’ reference points. Each Partner will make transparent its mapping decisions, but guidelines to help with this process would be welcomed.

22. An example of a high level Marine resource Fact Sheet containing Status and Trends for resource sub-components (“entries”) was presented. A search for the descriptor “Low abundance” on such entries would rank it in seach results based on weighted counting of the term “Low abundance” throughout the various “entries”. It was agreed that this would not make sense and that either a range be used for qualifying the status of the high level Marine Resource, or that the sub-components should be created as individual stocks and the descriptors attached to these. It was noted that in the case of FAO or CECAF reports, this might not be practical in certain cases. There however was no time to analyse such a potentially complex issue in more detail, and the group agreed that this issue could be brought with more background to FSC5 for a recommendation on whether the TWG should address the issue in more detail.

23. Practical arrangements have been discussed between the Secretariat and Partners for the update and implementation of standard descriptors in Fact Sheets. These arrangements are reported in Annex 4.

24. For records already stored in the FIRMS database, it was made clear that it is up to the Partner to take care/request the update of the DB regarding FIRMS’ descriptors. Non-updated Observations will de-facto not be searchable (this is not really an issue where new observations supersede old observations; it only becomes important if a Partner wants historical Fact Sheets accessible).

Recommendations to FSC5

The group agreed on the following points:

25. To send to FSC5 the proposal for a composite code mapping the graphical presentation of the stock status adopted by Tuna RFMOs with the FIRMS Abundance status and Exploitation rate descriptors. These FIRMS codes might be

used in ICCAT and IATTC Fact Sheets when no manual assigned descriptors appear (see 27. below).

26. To integrate the two new search fields (abundance level and exploitation rate) in the two FIRMS search pages as proposed by the FIRMS Secretariat.

27. The information which will be displayed in the Fact Sheet's HTML view will be the information provided by the Partner according to Partners' selected terminology. This terminology could be either controlled terms from Partner's classification, FIRMS controlled terms if the Partner has decided to adopt the FIRMS classification, or/and free text.

28. The titles Abundance Level, Exploitation Rate and Exploitation Status will by default remain hidden in the Fact Sheets, and will be displayed only if the Partner provides information. Abundance level and Exploitation rate remain inseparable, meaning that both titles will appear even if only one of the values is provided.

29. The results of the search for Status and Trends summaries will show only the title of the resource, the link to the Fact Sheet, and the collapsed Status and Trends topic content. The Source of information currently displayed will be removed. This will allow the user to easily see what is returned in the search results.

30. The group did not have the means/time to review the complexity of the issue regarding status and trends reporting of multiple sub-components of a resource, and it was recommended that the issue be properly presented to FSC5 for a recommendation on whether the TWG should address the issue in more detail.

31. The FIRMS Secretariat will conduct the technical changes resulting from the inclusion of Partner's descriptors into the system in close coordination with the Partners.

Reference year

32. Upon the proposal made by the Secretariat to handle and display three "types" of years in the Fact Sheets, the TWG felt that users would be confused with three years in the Fact Sheets header, each with a different subtext, and it was noted that the overhead of maintaining them would be high. Furthermore, it would be best to maintain the display of the year as part of the title of the Fact Sheets and in the search results. It was quickly agreed that the year of publication is already handled

as part of the reference to the source information and should not be duplicated at header level.

33. After a long discussion, the TWG agreed that two years, Reference- and Reporting-Year, will be used in and displayed on a Fact Sheets. Definitions of these terms are: *Reference Year: the year for which the status of the target object (e.g. Marine Resource, Fishery...) has been evaluated.*" Reference Year will be mandatory and will be displayed in the title of the Fact Sheets just after the name of the object; *Reporting Year: the year in which the scientific meeting (or equivalent scientific validation process) reviewed the status of the target object (e.g. Marine Resource, Fishery...) of the Fact Sheets.*" Reporting Year will not be mandatory and will be displayed simply as an extension of the Cover page title. Both Reference and Reporting Year will be kept within the page Citation (accessible from the Citation button in the Fact Sheets header) and will be considered valid for Fisheries and Marine resources modules.

34. This arrangement for years was a compromise between the need for including year at title level in a consistent manner throughout all Partner contributions, and the need to respect internal policies, mainly referring to assessment, of some Partners.

Recommendation to FSC5:

35. TWG recommends maintaining the Reference Year, as is currently presented in the Fact Sheet title, as a compulsory component of the page title; and maintaining the Reporting Year as optional, to be presented as an extension of the Cover page title just above the Marine resource title when it is available.

Statistical Graphs

36. An example of the possibility of having statistical graphs included in the Fact Sheets was shown. As per FIRMS principles, it is up to Partners to turn this feature on and off. The default would be off. Partners are able to supply their own graphs in the form of images.

    - The TWG noted that it is important to have consistency between the data displayed and that used in the assessment.
    - FAO (regarding FAO global catch statistics and tuna nominal catch statistics) and IATTC (regarding Tuna catches by stock statistics) noted that the condition of

above bullet point would be matched in their case and could make use of the dynamic graphing.

Dynamic mapping

37. It was noted that the FIRMS Secretariat is continuing to work on the dynamic mapping that will build on a new GIS server and that this project will be continuing for some months. In addition to having the location of a specific Marine resource displayed, it will also be possible to have the "total" species distribution displayed. As per FIRMS principles, it will be up to the Partner to choose the option.

38. The maps embedded in the Fact Sheets were demonstrated using a development server, and it was agreed that this was a very nice feature. The FIRMS Secretariat was commended for their work on this project.

39. There was some discussion about the title of the map to be shown on the title page. The proposal to call it "Geographical coverage of assessment of …" was supported by the TWG.

40. Concern was raised regarding the mapping of EEZ georeferences. This concern is, however, under the control of the concerned Partner, as they choose which georeferencing system to use.

FISHERIES MODULE: STATUS, OUTSTANDING ISSUES AND DESIGN PROPOSALS

41. Based on Meeting Document 3 "*Fisheries module: Design status, outstanding issues and proposals for final design"*, Mr Taconet reminded the meeting that a number of design assets had been progressively accumulated over four previous meetings (period 2002-2007), and that this meeting was essentially tasked to examine proposals on outstanding issues. He presented an overview of the agenda item, stressing the need to agree on a data model facilitating comparison of similar types of fisheries, and he proposed a layout for FIRMS that allowed users to distinguish at glance the main classes of fisheries, while still providing for freedom in the organization and display of body content.

42. Prior to the Secretariat presenting case studies of fisheries Fact Sheets, Mr Campanis (NAFO) gave a presentation on the NAFO perception of the structure and concept of a fisheries module (annex 5). In this presentation, he proposed some

semantic and structural modifications (e.g. Geographic reference instead of Georeporting standpoint, and “Post Harvesting” being included in the “Socio-economic” topic). The presentation was concluded with three open questions to the TWG:

- Does the TWG agree on the importance of the ecosystem approach being a separate module?
- Does the TWG agree on the advantage of splitting the concepts of Management and Enforcement?
- If split, is it necessary to define and describe enforcement according to Monitoring, Control and Surveillance (MCS) terminology and standards?

- It was noted that usually the Partner Organizations are involved in management but not directly in enforcement. Many RFMOs manage fisheries by adopting resolutions that specify actions to be taken by, or limits placed on, participants in the fishery. However the actual enforcement is a function of the States with participants in the fishery, and it is accomplished by adoption of national legislation in line with the resolutions. Except for NAFO, the other Partners present at TWG had no need of splitting the two concepts.
- The question was raised as to how much detail should be expected in inventories: need an inventory be such a comprehensive list of fisheries that it includes in detail even the smallest or least significant level? Likewise, it was asked “How much should or could an inventory deal with data coming from national and local levels, and how would such data be merged and harmonized?” It was emphasized that it is up to the Partners to define clearly the level at which they report. No predefined level of detail exists. The georeporting standpoint (renamed and now the Geographic reference) is essential to clarify and distinguish the reporting level of each fishery. The FIRMS policy is to publish only data validated by the Partner RFMOs.
- Other discussions focused on how the NAFO proposed structure would be able to handle fishing capacity, or multispecies and multigear cases within small scale fisheries .

Fishery Fact Sheet layout

43. About 30 fishery case studies had been prepared by the FIRMS Secretariat from information material supplied by/borrowed from Partners. The principles underlying the layout are described in Sec. 2.4 of Document 3.

44. As Mr Taconet started to present different approach-related-layouts of fishery case studies, the Chairperson reminded and stressed to participants that all Fact Sheets presented during the meeting should be seen as examples and not statements by the FIRMS Secretariat on how a particular fishery or resource should be developed by a Partner.

45. NAFO Fact Sheet was presented using a Jurisdictional approach:

    - The question of the use of the Jurisdiction concept rather than that of Governance was raised. This was not an issue after the complete review of the whole set of Fact Sheets. Concerning jurisdiction and governance, it was also noted that when needed, active links to national data/sites may be used to show how enforcement is accomplished by States.

    - Concerns were raised as to the ability to rearrange the order of different sections, and the FIRMS Secretariat clarified that, although high levels of the schema are strongly structured, the order of chapters can be decided by the Partner and changed according to needs; the only part of the Fact Sheet in which structure is really driven by the selected approach is the virtual “at glance view”.

46. CCAMLR Fact Sheets: two versions were presented, the most recent version was presented by CCAMLR based on a Resource point of view, and a previous version was presented by the FIRMS Secretariat as an example based on a Management unit approach.

    - FIRMS Secretariat noted again that the model is flexible and that main groups can be shown according to a Partner’s preference, and the layout of Fact Sheets will reflect the approach chosen by the Partner to define its fisheries.

    - Noting the “Assessment Summary” section nested in the fishery Fact Sheet, concerns were expressed about how links to related fishery/resource Fact Sheets (including needs to consider/ignore links for specific years) will be handled and about the ability to consistently maintain these links over time. A typical example where such a concern might arise is shown by the NEAFC Fact Sheets that link to the ICES Fact Sheet. The Secretariat clarified that both types of links can be

drawn, and it is up to the Partners to check and eventually update content of their Fact Sheets.

- For the sake of consistency throughout FIRMS, the chairperson also noted that information on stock structure (a biologically-based concept) would more clearly fit in Aquatic Resource Fact Sheets, with links created from Fisheries Fact Sheets.
- CCAMLR noted that the information on 'associated species' and 'fishery interactions' presented in its proposal could be presented under the current Fishery Module topic "Incidental catches".

47. NEAFC Fact Sheet was presented using a Management Unit approach:

- A discussion was had about the process of and reporting of Enforcement policy. The Chairperson noted again that the Jurisdictional Section could be used to draw links to national reporting and information services for matters regarding enforcement. A remark was made regarding countries with small scale artisanal fisheries in continuous evolution and change where difficulties are found in enforcing regulations.
- There was a suggestion to adopt the wording "Management measures" under the element "Management Resolutions", as this would carry the same meaning as the "Management recommendations" terminology currently used.
- There was a discussion on the flexibility of the schema, and the possibility of Partners editing even the highest level headers. The FIRMS Secretariat reminded participants of discussions in previous TWG and FSC meetings, and previous agreement on the importance of establishing a "minimum" standard which will be useful to recognize and to transfer the common understanding of the Fisheries Module.

48. SEAFDEC's Thailand Fact Sheet was presented using a Resource approach.

- It was asked whether the Post harvest use section wouldn't fit better under the Socioeconomic Assessment topic, rather than for it to reside at the same hierarchical level as management.

49. EU's Fact Sheet was presented using a Production System approach.

- There were concerns expressed about definitions of terminology used in the Fact Sheet. The Secretariat noted that the FIRMS IMP includes a glossary in support of the Metadata used in a (any) released module. At this stage of development,

the draft glossary is available in sections and Annex II of Document 3. It was agreed that the FIRMS glossary should follow the FAO glossary standard when possible. Conversely, some definitions agreed on in the TWG may be included in the FAO glossary in the future.

50. GFCM's Operational Unit Fact Sheet was presented using a Production System approach

- The interest of having data on trip duration within a fishery factsheet was questioned, but the group supported the view that specific approaches to fisheries descriptions could consider fishing effort evaluation as a useful indicator.
- It was noted that the operational unit used by GFCM cannot be identified as a "fishery" and that it's important to define the term fishery. The Chairperson and the Secretariat stressed the fact that each Partner decides the approach to follow when defining a fishery and when adopting a reporting level.
- It was confirmed that only Fact Sheets validated by RFBs will be accepted in FIRMS: this rule would also apply to facts or Fact Sheets emanating from States as part of RFMO data management mechanisms. FIRMS can only accept contributions from Partners (see additional discussion in section Workflow Management). It was further stressed that in case of shared ownership on marine resources or fisheries, FIRMS follows the principle that no information about such shared asset will be disseminated until the concerned Partners agree.
- Owing to sensitiveness of political boundaries at sea, there was discussion of issues which may arise when showing maps with an overlapping/intersecting jurisdictional area of a RFMO and the Exclusive Economic Zone (EEZ) of States.

51. It was noted that the process of defining fisheries in CECAF is at a very early stage. This process has started and continues through CECAF Working Groups and its Scientifc Sub-Committee

52. IATTC Fact Sheet was presented using a Fishery Management Unit approach.

- Appreciation was given for showing in this application the use of links to a number of single-stock assessment Fact Sheets from the "Ecosystem assessment" topic. It was suggested that all Partners use appropriate linkages to the Marine Resource Fact Sheets in the Fisheries module.
- It was also suggested to consider the creation of a dedicated Ecosystem module.

Conclusions and recommendations:

53. The layout proposal presented through the Fact Sheet case studies and in Document 3 was endorsed by all participants.

54. Three additional aspects were discussed and agreed:

- Display of fishery maps: work will continue on and there will be available a Polar projection and a Pacific Ocean-centered projection.
- Fishery locator button: there will be creation of a button to show all relationships in FIRMS that refer to one fishery. The button should link to a sort of Site map, giving a graphical overview of the web within which the fishery is defined. Further discussion on the way of displaying this map has been postponed.
- The order of sub-topics in the Management section: it was decided that flexibility should prevail and that order choice should be left to the data owner.

Definitions at the Module level

55. The meeting reviewed Document 3 to respond to "Actions requested from TWG2" highlights.

56. Discussion took place on the first set of definitions related to the "Inventory of fisheries" (document 3 / section 1.3).

- the title should be changed from "Inventory of Fisheries" to "Reporting of the Inventory of Fisheries".
- Thematic approach: there was some discussion on whether each Partner could use only one approach to an inventory of a fishery. It was pointed out that only one approach can apply for any given fishery object, and this is reflected in the title of a fishery, which is strongly influenced by the approach. It was then clarified that different approaches could be found within an organization, though most often approaches tend to be homogeneous within organizations. The important point is that each Partner is free to choose the approach taken to report on fisheries (e.g. the IATTC might create a Fact Sheets on the Eastern Pacific Tuna fishery, the Eastern Pacific Tuna Longline Fishery, and maybe even a third one on the Tuna Longline Fishery in Costa Rica).

- Georeporting standpoint: it was suggested and agreed to change the naming of "Georeporting standpoint" to "*Geographic reference*", which is defined as"*the geographical basis at which fisheries are included in the inventory*".

Fishery Data model and related definitions

57. Required and frequently used descriptors for each Thematic approach: Table 2 (in Document 3 / section 2.3.1) were reviewed, and the following comments and modifications were made:

    - add "Gear Type" in the column "Frequently Used Descriptors" of the Fishery Resource approach.
    - add Enforcement authority descriptors in the "Frequently Used Descriptors" of the Jurisdictional approach.
    - change the name of the "Métier Approach" in FIRMS to "Fishing Activity." It was noted that the EU standardized definition of Métier requires an indication of species in the descriptor. It was suggested and agreed to change the name of the approach Métier to "fishing activity" in order to avoid confusion with the EU standard that would arise with conflicting definitions. The EU "Métier" would fit within the less constraining FIRMS "Fishing activity". Metier could be added to the "Frequently Used Descriptors" .

58. Relationships among fisheries: after reviewing how to read and interpret Table 3 (Document 3, Section 2.3.2), the group agreed to proceed on a trial basis following the proposed mechanism of automatically labelling the element "Related fisheries" according to the [from→to] pair of concerned thematic approaches, provided the data owner has the ability to override the default setting with their own label. It was proposed and agreed to modify the Métier→Métier (now Fishing activity→Fishing activity) relationship from "sub-métier" to "sub-component".

59. Fishery conceptual topic structure: Mr Taconet presented an overview of Table 4 "Fishery conceptual topic structure" and related high level topic definitions (Document 3, Sec. 2.3.3).

    - There was an extensive discussion on whether there was a need to create an Ecosystem module, and remove the dedicated high level topic "Ecosystem assessment" from the fishery Fact Sheet. It was agreed that the high level topic "Ecosystem assessment" is sound as it stands, since it presents the impact of fisheries on the ecosystem. The TWG didn't reach a consensus on the need for a

separate ecosystem module, which in concept would cover a much broader scope than solely fisheries. The TWG did note that the often cited “Ecosystem Approach” to fisheries and resource management is something still evolving within scientific communities, and that many of the principles that would be involved in monitoring and advising on ecosystem status are outside the RFMO membership of FIRMS. Since the development of a module will take resources from other tasks assigned to the Secretariat, it was decided to simply refer the question to FSC5, supported by a rationale which NAFO agreed to provide after the working group for inclusion in an annex to this report (see Annex 6).

- There was a proposal to create a high level topic for “Enforcement” using the MCS structure. The group didn’t feel that deciding this matter was within its competence and agreed to put this proposal forward to FSC5 for consideration, likewise supported by a rationale which NAFO agreed to provide after the meeting for inclusion in an annex to this report (see Annex 6).
- After discussions focused on whether the “Post-harvest” topic would be placed within a ”Socioeconomic Assessment”, the group decided that it was best left as a high level topic.

60. XML based fishery metadata dictionary: expanding on Document 3, Sec.2.3.4, Mr Gentile presented a simplified version of the Fishery XML schema in the form of a Topic tree. Definitions of corresponding Metadata elements (Annex 2) were examined, with the focus placed on new definitions. The group made the following inputs:

    - It was suggested and agreed that in Document 3, Sec. 1.3 the definitions be in a separate section/split from examples and explanations of how to use the elements. The Secretariat will prepare a new version of the FIMES schema separating definitions from usage.
    - It was noted that the data glossary sometimes seems to be quite generic and not self-explanatory and requires improvements.
    - Some Partners found the definition of “horizontal distribution” did not reflect the possible values (e.g. neritic). The group discussed various options for the definition but did not come to a conclusion.
    - New definitions were proposed and approved (in addition to *Reference year*, *Reporting year*, *Geographic reference*, and *Fishery indicator* which are presented elsewhere this report):

- *Legal definition*: *defines a fishery as it is referred to within a national or an international legal framework*

- *Fishing industry activity* (as opposed to *Fishing activity*): *describes all aspects of a human fishing industry, from fishing preparatory steps through landings. Aspects include, e.g., features of the means of production, fishing activity, and fish harvesting.*

- *Related fisheries*: *the list of fisheries with which another fishery is connected by a described link.*

- Other changes were proposed for types of disposition of catch (Captured, incidental catches, etc.). Standardized definitions are found in the FAO Statistics yearbook.

- The word "container" will be removed from the definitions of the schema where not required for clarity.

61. Fishery indicator element: The logic underlying the design of this element was explained (Document 3 / Sec. 2.3.5). The group agreed on the principle of a generic Fishery indicator element, distinct from the Assessment indicator element used in the Marine Resource module for handling biological indicators (such as MSY, Biomass, ...), and developed a working definition:

    - *Fishery indicator*: *handles all types of indicators reflecting human action in a fishery, e.g. those related to type of exploitation, means of production, and management,*.

    - The TWG didn't feel there were sufficient available examples of use of this element or concept at this stage, and they agreed that actual use of the module including this element as defined is necessary to a subsequent evaluation.

62. XML schema option: Mr Taconet briefly introduced the two alternative schema options (Document 3 / section 2.3.6) which FIRMS Secretariat had conceived.

    - The more flexible schema option, used by the Secretariat for structuring the case studies presented to the meeting, was deemed to be the most appropriate. This option enforces fewer rules, hence putting more emphasis on the responsibility of the data owner for controlling consistency of its contributions. However, control rules might be added at a later point, if/where necessary, and implemented as part of the FIRMS Content Management System.

Recommendations and future plans:

63. The group felt that the Fisheries Module is sufficiently developed to recommend its release for public use.

64. Regarding future plans for actual use of the Fishery Module:

    - NAFO and CCAMLR agreed to further develop their contributions to the fishery module. The IATTC will revise its set of Marine Resources and will also publish fishery Fact Sheets.

    - CECAF will present the module at the next Commission meeting (October 2008) so that it may be considered for use. Example CECAF Fishing Resources Information were on the FIRMS website in case of this project implementation.

65. Considering the suggestions to create a new module entitled "Ecosystem module" which would address developments happening within the Ecosystem Approach that may not fit into a strictly Fisheries or Resource perspective, and to create a high-level topic entitled "Enforcement policy" which would allow distinguishing management measures from enforcement measures, the TWG decided to forward the suggestion to the FSC. The group tasked NAFO to develop some rationale to this suggestion (Annex 6).

Workflow management

66. Mr Taconet gave an overview of Workflow for inclusion of a Fishery Fact Sheet (Document 3 / Sec. 3.3). He described the process and related data management consolidations steps required for the inclusion of a fishery in FIRMS. This process consists of three steps: Identification – the Fishery becomes part of a draft list; Validation – the Fishery is cleared by the data owner and possibly published; and Registration – the Fishery passes FIRMS publishing clearance rules and is assigned a unique global identifier.

    - Some discussion was held on the order of the steps (validation before registration, or the reverse) and on access to this information (available to the public from any server after proposed "validation" step; available through FIRMS after the proposed "registration" step). This discussion ended-up in confusion as to whether the process consists of 3 or 4 steps, partly because of different interpretations of terminology being used, and partly because of considering the various processes taking place within FIRMS and/or outside FIRMS. It was noted that national entities do not have ownership in FIRMS for dissemination:

specifically, the FIRMS Partners should validate any national input they desire to put on FIRMS under their ownership, upon which time it can be "published" to the public view by the FIRMS Partner. The term "publishing" is used here to help clarifying description of process.

- As far as the FIRMS mechanism is concerned, the TWG agreed that there is a RFB Partner registration process preceding the RFB publishing (given in the presentation as Validation step) and a global FIRMS registration process before FIRMS publishing by the RFB (given in the presentation as Registration step).

OUTLOOKS ON WORKFLOW (document 5)

67. Mr Taconet presented "*Outlook on workflow: need for dynamic solutions"* (Document 5 / section 1), an overview of the benefits and opportunities that exist in standardizing metadata and protocols for fishery information. He referred particularly to FIRMS-FIMES metadata standards and NeOn's (Networked Ontologies) ontological protocols for the exchange and discovery of information.

68. Mr Gentile presented "*The use of FIMES schema for promoting metadata standards and protocol data exchange"* and Mr Caillot presented "*ISTAM – Improve Scientific and Technological Advice for Fisheries Management"* highlighting the benefits of FIRMS-FIMES metadata structure to other organizations, identifying that other institutions would have the ability to generate XML schemas based on the FIRMS-FIMES model. Furthermore, the FAO Fishery schema allows for the integration of XML namespaces from Partner organizations. This feature was exploited while FIRMS Secretariat has been working with ICCAT to create an XML schema designed to handle the data structure of some of the chapters of the ICCAT manual. The XML schema, based on an ICCAT name space, is one of the most relevant ways to enhance and adhere to a standard structure of data among institutions dealing with fisheries aiming to share a common set of elements with the same semantic and possibly within a similar hierarchical structure.

Ms. Pallares explicitly thanked the FIRMS Secretariat for the assistance provided in this regard.

69. Mr Yves Jaques and Ms Caterina Caracciolo of FAO gave a background presentation (based on Document 5) on ontologies and the Organisation's involvement in the EC-funded NeOn project. Ontologies are webs of concepts, relations and attributes that can be used to express classifications and taxonomies

using standard mark-up languages such as OWL. As part of the project the Fisheries and Aquaculture Department has been producing ontologies of a number of its classification systems. Ontologies may be a good way for FIRMS Partners to manage in a distributed way their shared classifications, by allowing local ontologies to be mapped to global ontologies. In addition, ontologies could greatly improve search capabilities of all related fisheries recorded in the inventory.

Participants explicitly thanked FIRMS for presenting new developments to the group and for supporting the TWG2 meeting. It was noted that the opportunity to view new methodology was appreciated.

Training in the workflow management system is important particulary in the CECAF region for this FIRMS projet implelentation.

FAO will keep FIRMS updated as to the progress of the project.

ADOPTION OF REPORT

70. The group reviewed a first version of the full report on Friday afternoon, and acknowledged that the revised version was not the full fledged adopted final report. The group agreed that the finalization process would take place by email according to the following time line. Each presenter should send a summary of his presentation within one week. Three weeks would be necessary for the dispatch of the report, then 2 weeks for comments. Mr Caillot will liaise with members of the TWG in order to finalise implementation plan regarding the modifications agreed on the Resource module, the result of which is appended in Annex 3 of this report.
71. The report will have to be published before the end of May to leave time to FSC5 members to analize deeply the result obtained and the matter still open for discussion.

ANY OTHER BUSINESS

72. No other business was requested for discussion.
73. On behalf of the group, the chairman warmly thanked the FIRMS Secretariat team members involved in the FIRMS development for the results achieved to date.
74. The meeting was closed at 5.30 pm on Friday 04 April 2008.

ANNEX 1

LIST OF PARTICIPANTS

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Computer Information System Specialist, Ms Caterina CARACCIOLO

ANNEX 2

ANNOTATED AGENDA AND TIMETABLE

Place Meeting room: Lebanon room D-209

Schedule
Morning: 8.45 – 12.30 (coffee break 10.00)
Afternoon 14.00 – 17.30 (coffee break 16.00)

1. Opening of session and Welcome address

2. Election of chairperson(s) and rapporteurs

3. Adoption of Agenda

4. Resources module: review of status, issues, plan for implementation of standard State and Trends descriptors as decided at FSC4 (doc. FIRMS/TWG2/2008/2)
- *status of implementation Re recommendations made in previous FIRMS meetings;*
- *implementation plan for Status and Trends standard descriptors*
- *for multiple reporting years*
- *other issues as noted by Partners, and the Secretariat;*

5. Fisheries module: the objective is to finalize the module, including review and final guidelines for the Fact Sheet layout and the underlying data model and data dictionary (doc. FIRMS/TWG2/2008/3);
- *overview: achievements of previous meetings, including assets agreed upon, recommended directions, and outstanding issues;*
- *fisheries Fact Sheets layout;*
- *fisheries data model and data dictionary;*
- *workflow management for inclusion of fishery*

6. Workflow management system: the objective is ensuring that FIRMS Partners are able to contribute their information through adequate awareness raising and training, taking into account their workflow (doc. FIRMS/TWG2/2008/4, /5, /6);

- *Presentation of processes and tools available for contributing information to FIRMS.*
- *Pending issues as established by Partners and the Secretariat*
- *Groups and individual hands-on training sessions*

7. Outlooks on workflow: the objective is to raise awareness as to how workflow might evolve towards more dynamic information generation needs thanks to application of standards and systems' interoperability solutions (doc. FIRMS/TWG2/2008/7);.

- *Overview of needs for dynamic solutions*
- *use of FIRMS-FIMES Metadata (including on-going developments with ISTAM, ICCAT, GFCM, ...)*
- *Role of the fisheries ontology server*

8. Finalization and adoption of the Report: this report should include:

- *solutions suggested;*
- *recommendations;*
- *issues for decision-making by FSC5.*

ANNEX 3

FIRMS standard stock status descriptors and Partners classifications

3a. Mapping established by Partners between their own classification and FIRMS standard descriptors

Mapping table for NAFO:

Stock abundance status			**Exploitation rate** status		
Code	**FIRMS** descriptors	**NAFO** Criterion	Code	**FIRMS** descriptors	**NAFO** Criterion
A	Pre-exploitation biomass or high abundance	*B >> Bbuf*	1	No or low fishing mortality	*F < Fbuf*
B	Intermediate abundance	*B > Bbuf*	2	Moderate fishing mortality	*Fbuf ≤ F ≤ Flim*
C	Low abundance	*Blim ≤ B ≤ Bbuf*	3	High fishing mortality	*F > Flim*
D	Depleted	*B < Blim*	0	Uncertain/Not assessed	
E	Uncertain/Not assessed				

Mapping table for ICES:

Stock abundance status		**Exploitation rate** status	
FIRMS descriptors	**ICES** descriptors	**FIRMS** descriptors	**ICES** descriptors
Pre-exploitation biomass or high abundance	N/A	No or low fishing mortality	N/A
Intermediate abundance	Full reproductive capacity	Moderate fishing mortality	Harvested sustainably
Low abundance	At risk of suffering reduced reproductive capacity	Moderate fishing mortality	At risk of being harvested unsustainably
Depleted	Suffering reduced reproductive capacity	High fishing mortality	Harvested unsustainably
Uncertain/Not assessed	Undefined	Uncertain/Not assessed	Undefined

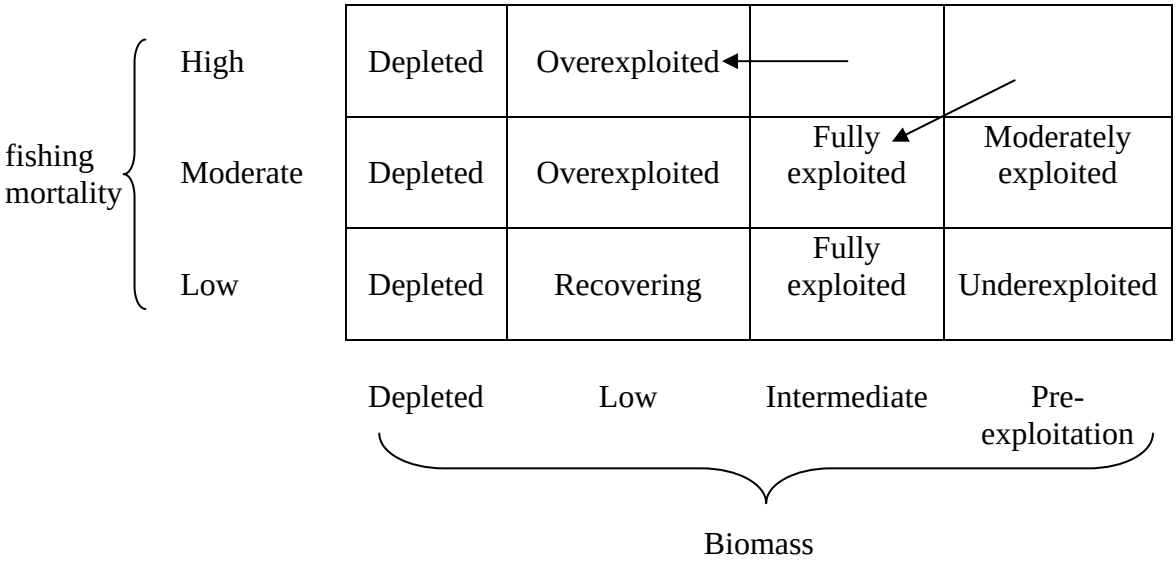
Mapping table for FAO:

It was agreed that, for the short to medium-term at least, the Fisheries Management and Conservation Service (FIMF) will continue to use the descriptors of stock status that are defined in the Appendix similarly as other Partners of FIRMS continue to use their own descriptors of such status. The relationships between these two types of descriptors are

shown in Fig. 1. It was noted that FIMF does not have descriptors of the stock status in the upper part of the box shown in Fig. 1. Stocks with high fishing mortality & (i) pre-exploited & (ii) intermediate biomass levels usually quickly become (i) fully & (ii) overexploited.

A full review of FIMF's present descriptors of stock status & possibly their adjustment is planned before the preparation of "Review of the state of world marine fisheries resources" for 2009 COFI.

Figure 1: The relationship of FIMF's descriptions of stock status (listed inside of the box) and those of FIRMS (listed outside the box on the left-hand side and below that box).



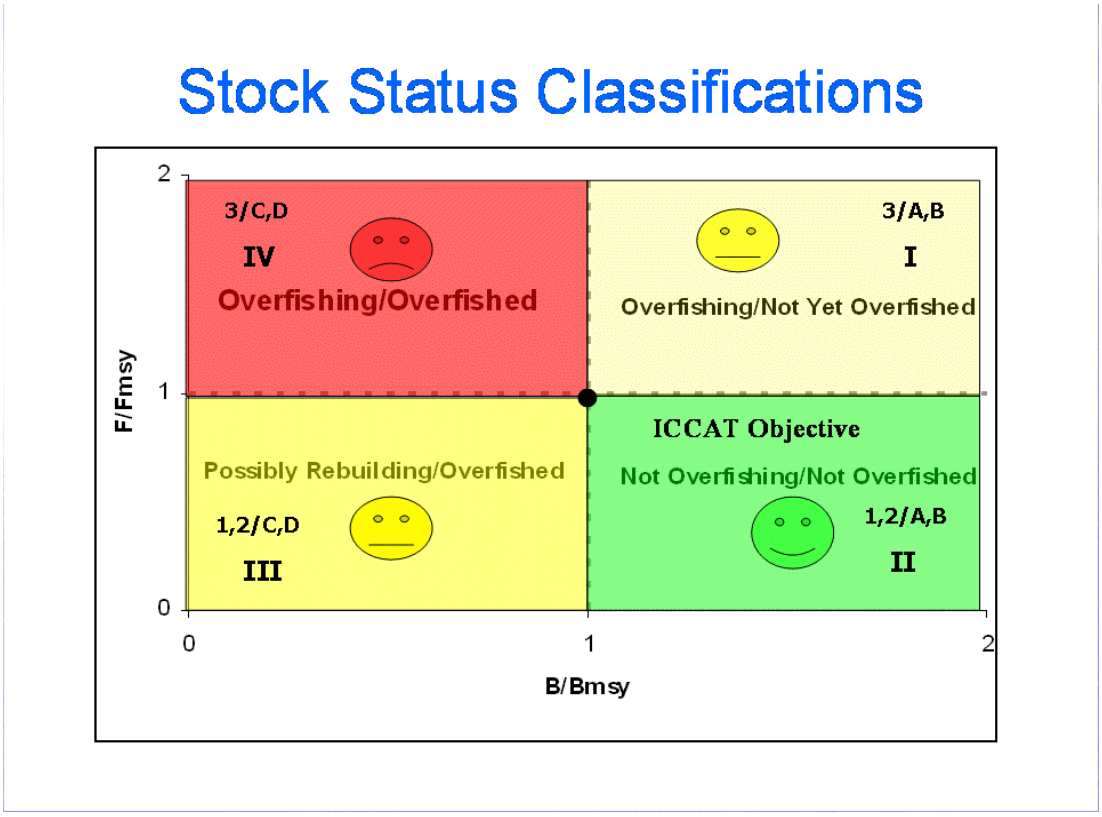
Annex 3b: Proposal to map the FIRMS with numerical codes based on the two dimension faces graph considered by the Tuna RFMOs to define the tuna stock status.

Based on the graphical representation of the stock status defined by the Tuna RFMOs a code has been defined taking into account the FIRMS Stock Abundance and Exploitation rate descriptors.

The four values of the code, represented by roman numbers, correspond to the four squares defined in the graphic representation. Each of the value has a double

correspondence with abundance and exploitation rate descriptors as showed in the following Table and Figure.

Code based on faces graphic	Exploitation rate descriptors	Abundance status descriptors
I (3/A,B)	High fishing mortality	Pre-explotation biomass or high abundance - Intermediatre abundance
II (1,2/A,B)	No or low fishing mortality – Moderate fishing mortality	Pre-explotation biomass or high abundance - Intermediatre abundance
III (1,2/C,D)	No or low fishing mortality – Moderate fishing mortality	Low abundance - Depleted
IV (3/C,D)	High fishing mortality	Low abundance - Depleted



ANNEX 4

TWG2's proposal and plans for implementation of FSC4 decisions: FIRMS Status and Trends standard descriptors, and Reference Year

FIRMS Status & Trends standard descriptors

It is agreed that Partners could use their own system of classification for describing the status of stock. The FIRMS standard descriptors will be used only for search purposes in order to facilitate extraction of data. In order to make this extraction possible, mapping rules should therefore be established between Partners' local and FIRMS standard descriptors concerning Exploitation rate and Abundance level categories.

FIRMS descriptors for Abundance level
-Pre-exploitation biomass or high abundance
-Intermediate abundance
-Low abundance
-Depleted
-Uncertain/Not assessed
-Not provided

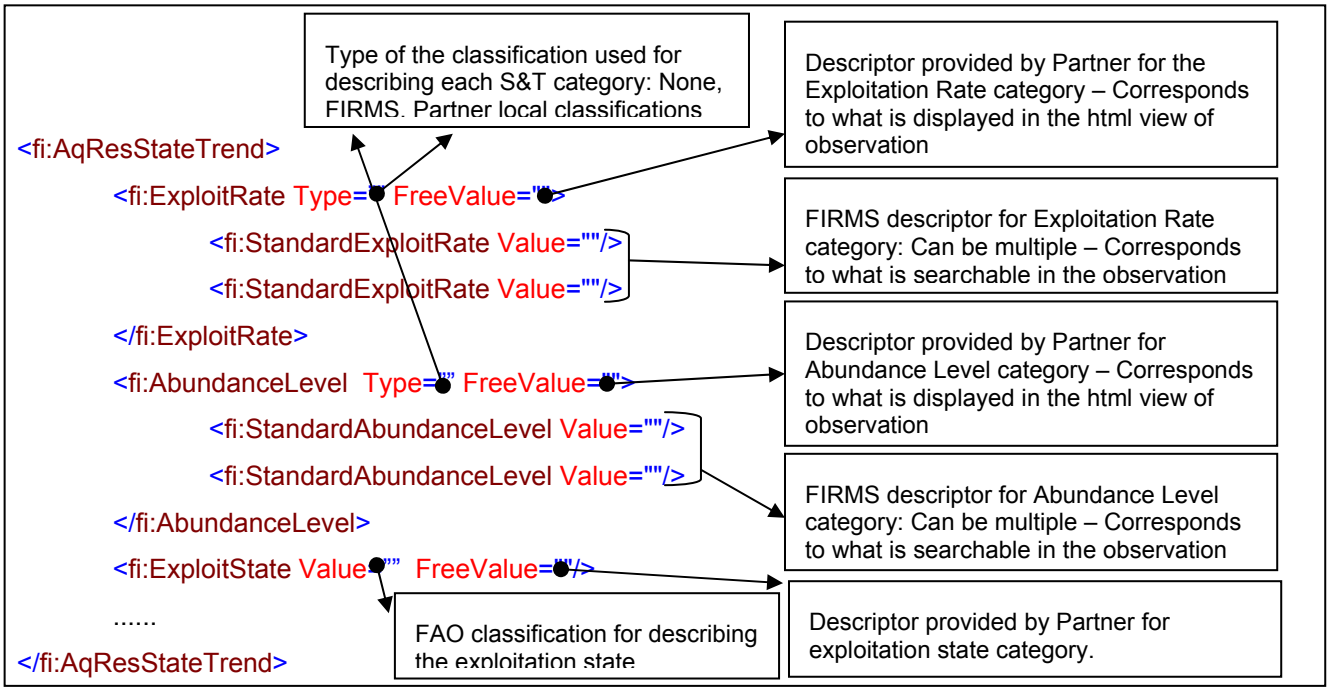
FIRMS descriptors for Exploitation rate
-No or low fishing mortality
-Moderate fishing mortality
-High fishing mortality
-Uncertain/Not assessed
-Not provided

After the TWG2 meeting, mapping rules have been established for NAFO, ICES, ICCAT, GFCM, FAO and other Partners have been asked to provide these mapping rules.

FIMES schema:

The solution is to have both Partners' and FIRMS' descriptors contained within the same XML report file. In other words, rather than in a central database, the mapping is implemented at XML report file level for each observation. In addition to controlled terms, it will be possible to use free text in the "abundance level", "exploitation rate" and "exploitation status" fields. A modification will have to be made on the FIMES Marine resource schema in order to consider Partner's classifications. None of these new elements will be compulsory.

XML elements based of the new FiMES schema proposal (examples provided at the end of this chapter):



This modification takes into account the need for minimizing the impact on the current data.

FIRMS database:

The content of XMLs files already loaded into the FIRMS database will be backward updated with Partner's classifications as well as with FIRMS corresponding terms. Where those terms were edited consistently (in a dedicated tag), FIRMS Secretariat will be able to implement batch processes in order to update the XMLs already present in the FIRMS system. Where such processes cannot be automated, Partners will be responsible for manual editing. Considering this, it is here also reminded that existing observations will be superseded with new observations which will be published afterwards based on these new requirements.

For new XMLs, Partners will be asked to provide systematically their stock status descriptors from their internal classification and the equivalence in the FIRMS classification according to the established mapping. FIRMS secretariat will help in establishing the mapping table between Partner and FIRMS classifications.

Workflow supporting tools: automating the addition of FIRMS terms given Partners' terms in XML reports can be taken care of in upstream converter tools, and FIRMS Secretariat will assist in the upgrading of XML converter tools accordingly. It will imply that Partner descriptors should be specifically marked as such in the original Word documents

Search engine and search results:

FIRMS Secretariat will update the search tools in order to search the FIRMS standard descriptors in Partner's Fact Sheets. The "Exploitation rate" and "Abundance level"

categories with the corresponding FIRMS classifications will be added in the 2 search interfaces.

A Fact Sheet won't be searchable if information is unavailable in both abundance level and exploitation rate categories.

In the case of multiple entries in a single observation providing Status and Trends data, only the main status & trends information at topic level will be searchable. The sub-entries won't be considered.

The results of the search for Status and Trends summaries will only show the title of the resource including the reference year, the link to the Fact Sheet, and the collapsed Status and Trends topic content. The Source of information currently displayed will be removed. This will allow the user to see what is returned in the search result at-a-glance.

Interfaces and observations:

In the Fact Sheet, the information which will be displayed in the HTML view will be the information provided by the Partner according to Partners' selected terminology. It will correspond to the content of the FreeValue attributes for fi:ExploitRate and fi:AbundanceLevel if available. This terminology could be either controlled terms from Partner's classification, FIRMS controlled terms if the Partner has decided to adopt the FIRMS classification, or/and free text.

The titles Abundance level, Exploitation rate and Exploitation status will by default remain hidden in the Fact Sheets, and will be displayed only if the Partner provides information. Abundance level and Exploitation rate remain indivisible meaning that none of the titles will appear in the case that none of the values is documented, but both titles will appear even if only one of the values is provided.

Implementation strategy:

1. Structural changes: FIRMS secretariat will:

- update the FIMES schema according to the new proposal
- convert the existing data in the FIRMS system/database through PL/SQL queries in order to update XML elements with the new schema proposal.

2a. New data inputs: once the above is implemented, any data update has to be made according to the new reporting logic, this also implies:

- that the converter tools (Word to XML and Excel to XML) will be updated in order to take into account the Status and Trends mappings;
- that all FIRMS Partners will be requested to define their mapping rules.

2b. Historical data: In parallel to new data inputs, update of Partners' historical data with Status and Trends mappings will be encouraged. This will imply:

- that where automation is possible and if agreed with Partners, FIRMS Secretariat will update mappings in the database through PL/SQL queries;
- that where automation is not possible, FIRMS Partners will have to update manually their past records.

3. Release of the new search functionality: when a significant portion as determined by the FSC of the Fact Sheets will be searchable according to the new logic
- the search tools and result interfaces will be modified by adding 2 new search fields “Abundance level” and “Exploitation rate”.
- the display rules in Fact Sheets and in Status and Trends summaries will be implemented

Examples of the Status and Trends topic in different Partner XMLs based on the new schema proposal:

ICCAT XML (Mapping based on the stock status classification, description of the rectangle number 3 in annex 3 - III (1,2/C,D)

```
<fi:AqResStateTrend>
    <fi:ExploitRate Type="no value selected">
            <fi:StandardExploitRate Value="No or low fishing mortality”/>
            <fi:StandardExploitRate Value="Moderate fishing mortality"/>
    </fi:ExploitRate>
    <fi:AbundanceLevel Type=”ICCAT” FreeValue="B2002/BMSY = 0.9 range (1-2)”>
            <fi:StandardAbundanceLevel Value="Low abundance"/>
            <fi:StandardAbundanceLevel Value="Depleted"/>
    </fi:AbundanceLevel>
    <fi:ExploitState FreeValue="Possibly rebuilding/Overfished"/>

</fi:AqResStateTrend>
```

In the HTML view of the observation, only the content of FreeValue attribute of fi:AbundanceLevel and of fi:ExploitState will be displayed.

ICES XML: (Based on FIRMS/ICES classification mapping)

```
<fi:AqResStateTrend>
    <fi:ExploitRate Type=" ICES" FreeValue=" At risk of being harvested unsustainably">
            <fi:StandardExploitRate Value=" Moderate fishing mortality"/>
    </fi:ExploitRate>
    <fi:AbundanceLevel Type="ICES" FreeValue="Full reproductive capacity">
            <fi:StandardAbundanceLevel Value=" Intermediate abundance"/>
    </fi:AbundanceLevel>

</fi:AqResStateTrend>
```

In the HTML view of the observation, only the content of the FreeValue attributes of fi:AbundanceLevel and fi:ExploitRate will be displayed

Partner XML using FIRMS and FAO classifications

```
<fi:AqResStateTrend>
    <fi:ExploitRate Type="FIRMS" FreeValue=" No or low fishing mortality, Moderate fishing
mortality">
            <fi:StandardExploitRate Value="No or low fishing mortality"/>
            <fi:StandardExploitRate Value="Moderate fishing mortality"/>
    </fi:ExploitRate>
    <fi:AbundanceLevel Type=" FIRMS" FreeValue=" Low abundance">
            <fi:StandardAbundanceLevel Value="Low abundance"/>
    </fi:AbundanceLevel>
    <fi:ExploitState Value="Moderately exploited"/>

</fi:AqResStateTrend>
```

In the HTML view of the observation, the content of the Value attribute of fi:ExploitState and the content of the FreeValue attributes of fi:ExploitRate and fi:AbundanceLevel will be displayed.

The content of fi:StandardExploitRate and fi:StandardAbundanceLevel elements containing FIRMS descriptors won't be shown in the HTML view of the observations. They will be used only for search purpose.

Reference Year

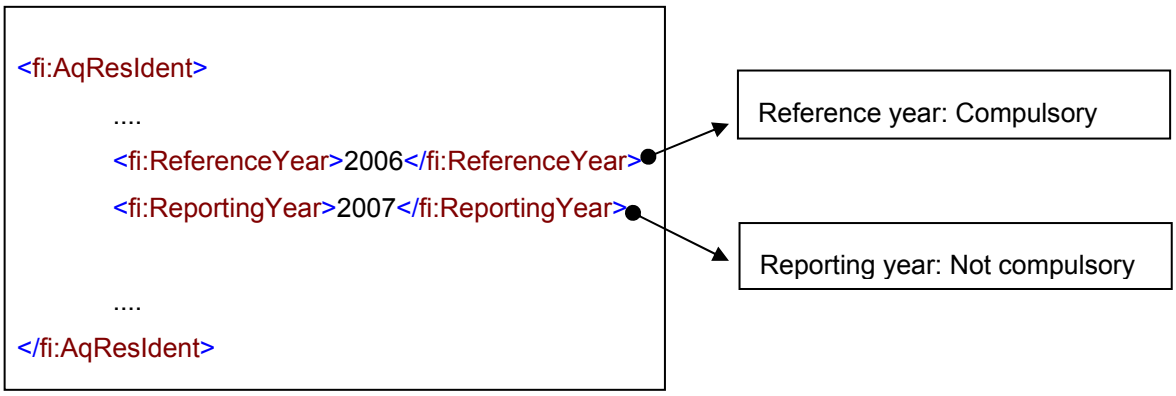
2 years will be considered in the observations:

- The reference year: "the year for which the status of the target object (e.g. Marine Resource, Fishery...) has been evaluated". The reference year will be mandatory.
- The reporting year: "the year in which the scientific meeting (or equivalent scientific validation process) reviewed the status of the target object (e.g. Marine Resource, Fishery...) pertaining to the Fact Sheet". The reporting year will not be mandatory.

FiMES schema

For the time being, in each observation, only one element is dedicated for storing the year information which is called: fi:ReportingYear. In addition to that element will be added a new one called fi:ReferenceYear for storing the reference year. Considering that this last year is compulsory, we will have to provide information in it systematically.

XML elements based of the new FiMES schema proposal:



Data model

The Reference year will be the identifying year for an observation. This implies that for all technical matters implying temporal identifier such as observations presented within the Content Management System, the clone functionality, search purposes or synoptic views, the “Reference year” will be systematically used for dating purpose.

FIRMS database

Different options are available for updating the content of the existing observations:

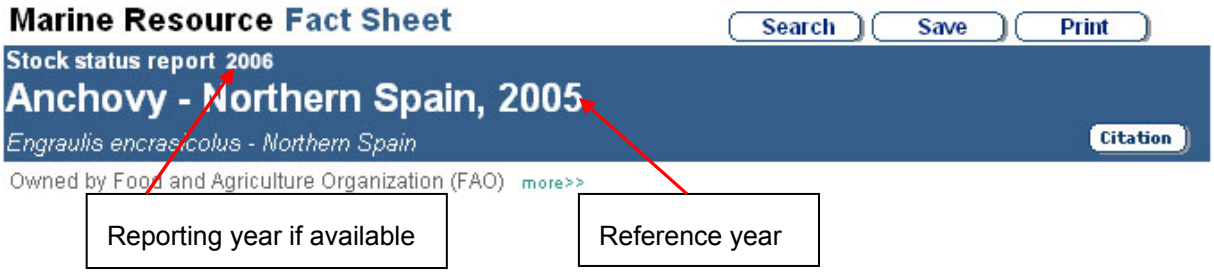
- Copying directly the content of the current fi:ReportingYear element within this new fi:ReferenceYear element through batch scripts
- Obtaining the Reference year by doing calculations based on the current reporting year through more complex batch scripts (e.g.: Reference year=Reporting year-1)
- Editing manually each observation in order to add the reference year and update eventually the reporting year based on the agreed definitions.

We have to consider that the modifications made on the FiMES schema will impact all the existing observations and would require, for all the observations, to provide at least information for the fi:ReferenceYear element which is the mandatory element.

FIRMS interface

The Reference year will be presented as part of the observation title and the reporting year, if available, will be displayed above with the cover page title.

Example of HTML view of an observation:



Implementation:

1. Structural changes: this will be the initial action lead by the Secretariat (one week during which no update will be allowed)

- The FIMES schema will be updated to take into account the new proposal

- The convertor tools will be updated

- In order to have an initial value for the new fi :ReferenceYear element, the FIRMS Secretariat will create this new compulsory element in the database by copying in it (through a batch process) the content of Reporting year.

- The impacted components of the FIRMS interface will be modified

2. Release of the new interface: immediately after, layout will be modified as described above taking into account the modifications at database level. As a result, the application will display same years as in previous version, while in different fields

3. New data inputs

Once this is completed, all new updates from Partners will take into account the new proposal

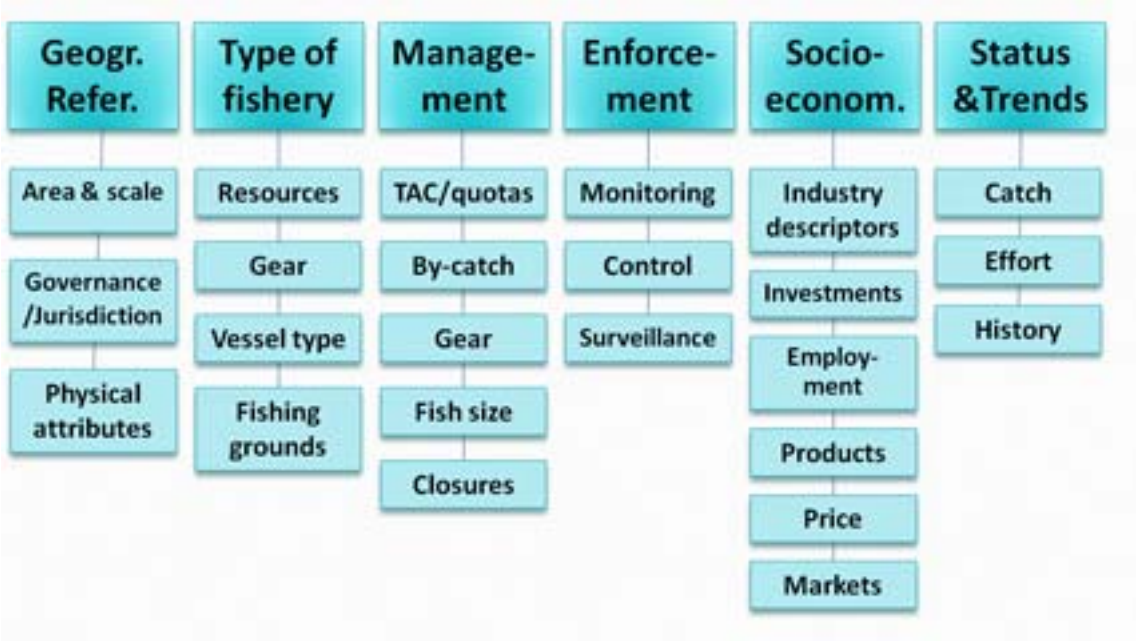
4. Update of historical data

- Partners will indicate their requirements for updating Reference year value (containing ex-Reporting year value) and Reporting year (if they wish to handle Reporting year).

- FIRMS Secretariat or Partners themselves will update progressively as per plan agreed upon between Secretariat and Partner.

ANNEX 5

NAFO proposal of Topic structure for the FIRMS fisheries module



ANNEX 6

NAFO rational behind the proposals for:
Ecosystem as a Separate Module
Enforcement Policy as a Topic

Ecosystem as a Separate Module

Ecosystem Assessment is a scientific concept that assesses the marine environment. The FAO glossary defines assessment as “A process that connects knowledge and action regarding a problem. Review and analysis of information derived from research for the purpose of informing the decision-making process. It may not require new research and involves assembling, organizing, summarizing, interpreting and reconciling existing knowledge, and communicating it to the policy-maker or other actors concerned by the problem“. Many of the UN instruments focus on using fisheries management based on best available science and knowledge. They encourage international and bilateral cooperation (Code of Conduct). The Technical Guidelines for the EAF also point out the need for broader datasets and encourages participation of all stakeholders. A specific module focused on ecosystem information could enhance these goals while encouraging the compilation of ecological knowledge. It is upon this information that managers base their decisions when managing fisheries throughout the world. Key components could include information on non-commercial species, ecological attributes such as physical and chemical properties, and economic or socio-economic information. Other topics may be added over time.

Enforcement Policy as a High level Topic

The concept of “Management”, as articulated by FAO’s Code of Conduct for Responsible Fisheries (paragraph 7.6), refers to information on vessel authorization, gear requirements and closed areas etc. Defining “Enforcement Policy” as a separate topic to “Management” would allow the reader to clearly distinguish between actual regulation and the enforcement of regulation. The contents of the enforcement topic should make provision for the presentation of policy, and preclude the status of compliance, for a given fishery. Enforcement measures, as defined by the standard of Monitoring, Control and Surveillance (MCS), refers to the actual activities or tools employed to ensure compliance of management regulation and should be considered as the sub-topics for the “Enforcement Policy” topic. The MCS sub-topics would refer to measurement of fishing effort (e.g. VMS), regulatory conditions (e.g. Vessel Registry), and compliance methods for regulatory control (e.g. At-sea Inspection). The FAO Glossary refers to MCS as: “activities undertaken by the fishery enforcement system to ensure compliance with fishery regulations”.