Global Record

Non-Functional requirements

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Version 0.1

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Document Version History

Version No.	Date	Author	Summary of changes
0.1	04/05/2010	Dan Martin	Initial draft after review of existing documents and proposals

Document Information

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1   Introduction

1.1   Document purpose

The purpose of this document is to outline the expectations on how the Global Record is to operate and to describe the technical and operational environment in which this system will exist.

1.2   Intended audience

The audience for this document includes:

- *FAO*
- *Global record stakeholders*

1.3   Background

The need for a Comprehensive Global Record of Fishing Vessels was acknowledged as far back as 2002 in the implementation guidelines for the International Plan of Action to Prevent Deter and Eliminate Illegal, Unreported and Unregulated Fishing (IPOA-IUU) where it was acknowledged that the lack of such a tool produced a situation that undoubtedly creates opportunities for IUU vessels to escape detection. Subsequently, in the Rome Declaration on IUU Fishing, ministers called for the development of a comprehensive global record of fishing vessels within FAO, including refrigerated transport vessels and supply vessels. Following this, Proposal 2 of the Final Report "Closing the Net" produced by the High Seas Task Force (HSTF) promotes the establishment of a global information system on high seas fishing vessels. The purpose of this system is to combat the lack of access to transparent and authoritative information about the ownership, control and movements of fishing vessels. Provision of this information to Fisheries Management Organisations, Port States, Fisheries Enforcement and MCS authorities and other interested parties will enable actions to be undertaken to restrict and expose Illegal, Unregulated and Unreported (IUU) fishing activity.

It is widely recognized that one of the significant barriers to eliminating IUU fishing is a lack of transparency and traceability in the global fishing sector. States implement individual measures without the benefit of any sort of global information picture and there is no single source where useful and relevant information can be collated, stored and displayed. One of the major enablers of IUU fishing is the lack of information about the global fishing fleet or the wide range of information associated with vessel activity. To make matters worse, fishing vessels frequently change flag, ownership, registration, and fishing authorizations, enabling them to act with impunity if they choose.

The Global Record, which is being planned as an integrated global data base, offers a solution as it is intended to fill this information void. It will make available the essential information to enhance the effectiveness of regional and national monitoring, control and surveillance (MCS) tools and in particular, to support vessel inspection and surveillance programs, investigations, traceability initiatives and resource prioritization decisions, through the effective sharing of information–something that is not currently possible. The development of a GR would improve transparency and traceability of vessels, products, owners, operators, flags, authorisations and registration. It would facilitate risk assessment for industry, RFMOs and Governments and improve decision making including on fleet capacity, size and structure, management, safety, pollution, security and statistics and more.

The importance of the GR is underscored by new and growing market demands for ecolabels and other forms of product certification which require product traceability. Market forces and incentives could stimulate compliance by countries to provide information to the GR prior to any mandatory legal requirement being imposed.

The GR would support existing binding and non binding instruments to prevent, deter and eliminate IUU fishing and increase the effectiveness of port state measures and MCS activities.

This document seeks to define at a high level the requirements of the GR that will allow it to meet these goals.

1.4   Definitions and Acronyms

FAO	The Food and Agriculture Organisation of the United Nations
GR	Global Record
UVI	Unique Vessel Identifier
MCS	Monitoring Control and Surveillance
RFMO	Regional Fisheries Management Organisation
UNGA	United Nations General Assembly
FAO	Food and Agriculture Organisation of the UN
NGO	Non-governmental organisation
COFI	Committee on Fisheries
UN	United Nations
FishVIS	High Seas Fishing Vessel Information System
FINnz	FishServe Innovations New Zealand Limited
HSTF	High Seas Task Force
MU	High Seas Fishing Vessel Information System Management Unit
TU	High Seas Fishing Vessel Information System Technical Unit
IUU	Illegal, Unregulated and Unreported Fishing Activity
IHS Fairplay	IHS Fairplay
CFR	Community Fleet Register
EMSA	European Maritime Safety Agency

2 Goals

Thought the many discussion and proposal documents that have been produced for the Global Record initiative a there are a number of recurring idea's and goals that the GR hope to achieve. While not a requirement they are important to the success of the GR and provide an insight into what the FAO and other stakeholders hope to achieve:

1. Provide a tool to prevent, deter and eliminate IUU fishing and related activities, making it more difficult and expensive for vessels and companies acting illegally to do business[1].

2. Enhance transparency in the global fisheries sector by uploading, collating and displaying vessel information and information related to vessel activity;

3. Assist planning and decision-making across the fisheries sector by providing a comprehensive global information picture on fishing vessels and vessel related activity;

4. Encourage greater awareness of flag State responsibility and, where appropriate, accountability for the vessel and/or crew behaviour;

5. Add value to the efforts of port States in managing requests to enter port and in assessing the legitimacy or otherwise of catch being transported, trans-shipped or landed through or at the port;

6. Add value to the efforts of coastal states in managing fisheries access agreements, managing domestic fishing fleet registration and activity, planning and executing MCS activities, and communicating with flag States;

7. Provide an international database incorporating as much of the world fishing fleet as deemed appropriate and necessary to mitigate IUU fishing and other risks;

8. Provide, to the greatest extent possible, open access to all relevant information so that the scope of the user group is maximised and transparency in the global fisheries sector is significantly enhanced;

9. Present information in an entirely neutral for, leaving users to make whatever judgements or assessments they feel appropriate;

10. Enhance the effectiveness of existing MCS tools and other traceability or catch verification measures by providing a comprehensive information overlay against which submitted data and other field observations can be cross-checked and verified;

11. Provide simple, user-friendly access using web-based applications with inbuilt flexibility to cope with future requirements and growth;

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[1] Report of the Expert Consultation On The Development Of A Comprehensive Global Record Of Fishing Vessels

3 Non-Functional requirements

3.1 Accessibility

Impairment Accessibility

The GR may potentially have users who are audibly or visually impaired. In order to facilitate access to the functionality of the GR the system must support the use of:

- o Application screen readers; or
- o High contrast colour schemes; or
- o Brail readers; or
- o Screen resolutions at 800x600 pixels

Language Accessibility

The GR will have a user base spanning many nations, nationalities and languages. The GR will need to incorporate a multi-lingual design to allow for the GR to display a maximum of 6 languages. (Issue 6)

Usability

The GR user base will span all levels of computer and technical literacy. The GR must be simple. It will need to implement an effective user interface to reduce ambiguity, minimise user effort whilst leveraging technologies which enhance end users experiences.

Simple is defined as: A user with limited technical ability can register, log in, perform a vessel search and review this information.

Printability

The GR will need to provide the ability to print and/or save sections of viewable material for future reference. The GR should provide a method which ensures the output format is consistent and is also platform, browser and printer independent.

3.2 Audit and Control

This requirement pertains to the ability to repudiate all actions within the GR. The GR will need to keep accurate records of all data modifications and actions (searches, reports etc.) performed by users and any automated system components. The audit functions performed may include, but are not limited to

- o What was changed
- o When it was changed
- o How it was changed
- o Who changed it
- o Client information (IP, UserAgent, OS)

Action auditing may also include

- o What action they performed within the GR
- o With what parameters
- o When it was changed
- o Client information (IP, UserAgent, OS)

Audit reporting analysis will allow for identification of any potential breach or misuse of the GR.

3.3 Availability

Reliability / Stability

The GR will be accessible to the larger World Wide Web community across multiple time zones, with potentially a large user base. Any outages will affect a portion of the user base. Therefore the ability to

access the GR must not be compromised by
- o Overloading / high usage
- o Inherent issues which cause an unrecoverable error within the application.

Bandwidth Capacity

The hardware and associated infrastructure used to access the GR by the user base will vary significantly.

The GR design will need to be optimised for connections at minimum speeds of 56kbps

The GR may also have additional media libraries which may impact the end user experience on slow internet connections.

The GR design will need to leverage web communication compression technologies to reduce the impact on any data transmissions that occur.

3rd Party Dependencies

Due to the GR requiring high availability, any 3rd party dependencies which may impact the performance of the application will be avoided. Where possible the design should handle any operations in a disconnected manner until the connection can be re-established.

Performance

The nature and potential extensive usage of the GR will require end-to-end process optimisation. Application and hardware tuning should be considered to mitigate any factors affecting the response time of the system.

With processing numerous uploaded files, especially large files the application should leverage multi-threading technology to effectively manage any increase in workload to prevent overloading.

Platform compatibility

The GR user base being spread across all continents means the GR must support a large number of operating systems and a large number of internet browsers.

Any technology used in the application development will need to be evaluated to ensure compatibility with all (or a significant portion) of the user base.

Where there is no viable universal compatible technology, deprecated functional versions may be evaluated to critical functionality within the application.

Portability

The nature of the GR may require users to access the GR using methods other than the web site. E.g. onboard vessels. The ability to provide access using additional methods may be required. The suitability of additional access methods and access devices should be evaluated to determine the feasibility should the need arise in the future.

The website should also be accessible from portable devices such as mobile phones (large screen) and PDA's.

Resilience / Disaster Recovery

The GR should withstand any increase in workload, hardware or infrastructure failure with little or no noticeable performance impact. The most resilient systems are also the ones with redundant components as there are no single points of failure.

To ensure each application component has a redundant backup each application component or tier should be evaluated to ascertain it's viability for a redundant option to be implemented.

To ensure the application is able to cope with a large number of concurrent processes, stress testing should be performed on each application component.

Uptime / Downtime

Due to the GR being used across multiple nations, any interruption to the GR service will cause a denial of service to one or more end user groups. The application deployment configuration will need

to be as such to prevent downtime to the entire GR user base.

The GR should aim at being available 99% of the time over a year. Any scheduled maintenance and back up procedures will need to consider the global nature of the user base but will be left to organisation hosting and maintaining the GR

3.4 Standards

Compliance

Due to the multinational user base of the GR, standards compliance (web, security, accessibility etc.) may potentially conflict. In a case where a conflict or overlap occurs the most comprehensive standard will be used as the standard point of reference for the application.

Privacy

Due to the multinational user base of the GR, privacy issues and concerns may potentially conflict. In a case where a conflict or overlap occurs the most comprehensive privacy policy will be used as the standard point of reference for the application

Security / OWASP

As the GR web application holds sensitive information any security infringements are unacceptable. Due to the application being exposed to the greater World Wide Web and also considering the nature of the stored data this makes the GR a likely target by malicious users and/or organisations.

The OWASP (Open Web Application Security Project) is a world-wide organisation that publishes information regarding the various possible attacks (mainly targeted at web applications). To mitigate all security concerns, the OWASP guidelines should be used as a point of reference when architecting the solution to ensure all potential security risks have been addressed.

Jurisdiction

The GR being a multinational application, with users from multiple countries with various laws covering a range of applicable topics (E-Crime, privacy, liability etc.) may cause jurisdictional issues. For each applicable topic, a point of reference will need to be identified in advance to expedite a resolution.

3.5 Capacity

Efficiency / Effectiveness

The GR may potentially be handling a large number of concurrent operations, requests and data modifications. The application architecture should effectively handle all operations without encountering denial of service errors.

The application architecture should efficiently manage resources in an elegant manner to ensure all resources are recycled at an appropriate time to ensure all resources not being used are available.

Extensibility / Modifiability / Maintainability

The GR should be designed using a flexible model to ensure any further future changes (bug fixes or additional functionality) or code modifications require minimal effort to implement and test.

Interoperability

The GR may be required to interact with external 3rd parties or applications. The architecture of the GR should incorporate the ability to provide an external interface to allow 3rd party interactions.

Quality

Each component of the GR should follow the current proven respective industry standards. This will ensure the application will be at the leading edge of technology and subsequently increase its lifespan.

Robustness

The GR is required to handle any error it encounters gracefully, without complete failure. The GR should be designed to log all application errors that may occur which may include (but is not limited to)

- o Invalid data tolerance
- o Software defects
- o Unexpected operating conditions

To enable easy identification and correction of any defects found.

Scalability

The nature of the GR requires the application be easily scalable, both vertically and horizontally.

The ability to scale the application means the system is also resilient and able to handle any required long term increase in capacity.

Supportability

The GR application will need to be easily supportable. This should be achieved by using common industry standard

- o Methods
- o Languages
- o Tools and software

The GR should not use any proprietary technology or software which would hinder the ability to change any of the executing code.