Global Record

HLR4 Central Source: Detailed Requirements

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Table of Contents

Document Version History

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0.3	9 June 2010	Dan Martin	Updates after review by Shaun Driscoll (FAO GR Project manager)

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1 Introduction

1.1 Document purpose

The purpose of this detailed requirements document is to further define the expectations of the GR in respect to the high level requirement for the GR being the central source of the required data. The detailed requirements identified identify the functionality that is required to support this HLR and a clear indication of what must be developed as part of the GR.

The requirements for the Central Source area are based on the current understanding of the data available. Additional investigation is required to assess all expected data sources to ensure compatibility with as many of these sources as possible. This area is solely relating to the receiving of information. Specific actions based on the datasets received are outlined in the detailed requirements focusing on those data areas.

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 HLR4: Central Source

This HLR relates to the ability of the Global Record to receive and maintain data from many differing data sources or contributing organisations. While the Vessel information will be sourced from a single provider (IHS-Fairplay system or an alternatively approved UVI provider) where data standards are enforced, much of the Authority, Activity, PSM and IUU data is expected to be of varying degrees of completeness, differing formats and data types and contain different values for a standard fields (e.g. not all Flag values will be the ISO 3 letter standard).

These requirements attempts to provide the Global Record with the necessary tools, methods and processes which will be needed to manage this information. It is important that where possible data is to be standardised to allow better searching and reporting functions. However, as the data that will actually be received has yet to be confirmed some of these may be subject to review or additional requirements may be necessary.

As is expected that the GR will receive differing amounts of data for each of the activity, authorisation and IUU datasets required, for example, an Authorisation dataset from one contributor may contain a large amount of vessel data whereas the same dataset from another contributor may have very little or none. The GR will be expected to manage these datasets and provide this information back to users in a meaningful way while still maintaining the overall integrity of the data held in the GR.

The Review Mechanism requirements provide further details on how these records may be managed to ensure the GR will be able to connect incomplete records with other records within the database and maintain other aspects of data integrity.

The requirements have not specified a minimum amount of information for any dataset. This will need to be completed with more input from contributors.

Note: The understanding of the data available was based on what was easily accessible from a number of RFMO's websites which record Authorisations and some which also contain IUU records. Additional information resources were provided by the FAO regarding the data to be collected and provided under the PSM agreement. These requirements have been developed to the best of our understanding at the point in time of writing.

2.1 Detailed Requirements

Requirement No.:	**4.1.0 Communication**
Requirement:	The system will be required to communicate to external parties and data sources to import and export data for use within the GR. The system will need to provide an externally published interface to allow communication to 3rd party applications and services. The external interface should use mainstream technology to increase interoperability.
Business Rules:	○ The system must communicate securely to all external parties. ○ The system must only communicate with authenticated external parties. ○ The system must be able to communicate in 'real-time'

Rationale:	To maximise the interoperability and efficiency of the GR, external data sources with the capability may opt to communicate with the system via an automated method. This is currently achieved by using web services or the more advanced WCF service architecture.
Business Value:	High
Related Req's:	
Assumptions:	External parties' systems are WCF web service compatible.

Requirement No.:	**4.2.0 Import**
Requirement:	The system is required to accept data from a range of disparate data sources and in multiple data formats. Which may include (but is not limited to) o CSV (comma separated values) o XLS (Microsoft Excel) o XLSX (Microsoft Excel – Open XML format) o XML All original imported data will be stored securely for repudiation purposes.
Business Rules:	o Original copies of imported data must be stored securely and in a manner to prevent intentional modification. o Imported data should be isolated in a sand boxed environment from all other data until it has been validated to ensure data integrity. o Data import should be simplified for users to encourage usage of the GR, and should enable them to upload data to the system without having to purchase additional software.
Rationale:	Users of the GR are likely to use many different operating systems, programs etc. to craft the data to import into the system. The system needs to accept most formats currently in use today.
Business Value:	High
Related Req's:	
Assumptions:	

Requirement No.:	4.3.0 Export
Requirement:	The system is required to export data from the GR as a number of different formats. Which may include (but is not limited to) o CSV o HTML o XLS o XLSX o DOC o DOCX o RTF o XML These exports may be in the form of reports, bulk data exchanges or interactions with external parties using the GR external communication interface. The system will be required to export real time data. Where applicable the user should be able to easily download the exported data and save it to their local computer.
Business Rules:	The exportable data / report formats need to allow for users to view / edit the exported data without having to purchase additional software. The GR is not required to reformat fields to meet the users requirements, this is to be done by the user
Rationale:	Users will need the ability to extract data from the GR for their own activities. This task should be simplified for users to encourage usage of the GR.
Business Value:	High
Related Req's:	
Assumptions:	

Requirement No.:	4.4.0 Validation
Requirement:	The system will be required to validate all data submitted to the GR. The data should be validated in isolation from the principal data. The data submitted should be validated against a strict rule set to ensure o The data values are of the correct data type or if not, can be converted to the correct data type. o The data values do not exceed the allowed length. o The structure of the data is in a recognisable format to allow import into the principal data. o The data does not contain any abnormalities or malicious content. o The data conforms to any additional predefined rule sets (e.g. minimum data requirements). Due to the potential for malicious users to attack the system through methods made available by using certain data formats, the data validation process should occur on an isolated sandboxed server that is not externally web facing. The process should be optimised for speed and should employ a multi-stage process to identify files that are guaranteed to fail validation without running the entire process.

Business Rules:	○ The average time to complete the file validation process for one file should be no longer than 1 minute. ○ Validation and error handling rules are to be confirmed Further business rules to be developed once the final datasets are defined
Rationale:	All data submitted to the GR is a potential liability from both a quality and security perspective. Validating all data submitted will ensure the data conforms to all data standards and contains no malicious content that could compromise the system.
Business Value:	Critical
Related Req's:	4.5, 4.6
Assumptions:	All predefined rule sets and types of required rule types are supplied. E.g. all Flags, Countries are converted to the ISO 3 letter standards Vessel Types, Methods are converted to the FAO approved list There are no inter-related rule definitions between rows or columns. Once the datasets are confirmed for each of the key areas, validation rules can be developed and the appropriate error handling introduced Some errors can be managed by the GR management unit internally and will require some level of manual intervention however this should not lead to major changes being made to the data

Requirement No.:	**4.5.0 Supported Formats**
Requirement:	The nature of the GR and its' user base requires the system to support a number of data formats, both proprietary and open source. The system must provide support for most of the common supported formats used worldwide. With the potential creation or modification to current and/or future data formats the system should be designed to allow for additional data formats to be added to facilitate communication with the GR.
Business Rules:	
Rationale:	With the increase in popularity for open source software, many users are opting away from proprietary software packages such as Microsoft Office. The GR must provide support for its entire user base and the file formats they use. The support for non proprietary file formats is crucial to ensure maximum uptake from the potential user base and those users who do not run Microsoft Windows operating systems.
Business Value:	High
Related Req's:	
Assumptions:	

Requirement No.:	4.6.0 Data Specifications
Requirement:	Due to the potential associated data complexity, the GR will need to publish a set of data standards for each format it supports. The system is also required to recognise the file type submitted automatically to prevent users from determining which data reader provider should be used and potentially indicating an incorrect data format. The system should also provide the ability to accept, validate and store data which conforms to previous data specification versions.
Business Rules:	
Rationale:	Users will need to craft the data they wish to submit into a specific format to enable the GR to perform its' validation functions. To reduce the number of validation constraint errors, comprehensive data standards should be published for users to reference during data construction.
Business Value:	High
Related Req's:	
Assumptions:	That there are no current data standards defining the data structures in use for each particular format the GR is required to support. The specifications should be as broad as possible to allow for the many different expected data sources

Requirement No.:	4.7.0 Data Storage
Requirement:	The GRs' value being centred around users' being able to search the registers' data requires the data within the system to be o Stored securely. o Stored in an efficient logical manner. o Full text searchable. The system should also provide the ability to store additional reference files and/or material to complement the main data stored within the GR. They may include (but is not limited to) o Images The technology used to facilitate the storage of the GR data should follow industry standards and use proven methods.
Business Rules:	o All data access should be facilitated through stored procedures. o There will be no use of dynamically created SQL statements.
Rationale:	A logical data model increases flexibility and maintainability.
Business Value:	Critical
Related Req's:	
Assumptions:	

Requirement No.:	4.8.0 Performance
Requirement:	The GR will be accessible to the world wide community and may encounter periods of high demand. The system should be tuned for data performance during periods of high demand without users experiencing a significant increase in response times from the GR.
Business Rules:	The system should aim to o Perform a basic search query within 1 second. o Perform an advanced search query within 2 seconds.
Rationale:	A high performing system will increase the usage and uptake from the potential user base. A system that is able to cope with all requests during periods of high demand will prevent frustration with the current user base.
Business Value:	High
Related Req's:	
Assumptions:	

Requirement No.:	4.9.0 Flexibility
Requirement:	The GR is likely to be required to facilitate the storage and searching for data not currently in scope. The system should be designed to allow modification to the data model for the principal data. The process to add/modify a data field should be made generic and applied to all discrete tables of principal data. The principal data model should be normalised to further increase flexibility through granularity.
Business Rules:	
Rationale:	The capability to easily define additional data storage fields within the system will provide flexibility to the GR to enable growth as additional data is required to be stored.
Business Value:	High
Related Req's:	
Assumptions:	

Requirement No.:	4.10.0 Concurrency
Requirement:	The system will have multiple data sources from which to collate and comprise the GR. The system will operate in a disconnected environment; data will not be retrieved in real time from data sources. The system must handle the maintenance of the principal data, ensuring the most up-to-date information is displayed. The system must ensure complete historical records are available to provide a time series view of the information for a particular entity within the GR.
Business Rules:	○ Data should never be deleted. ○ Any modifications (updates) to data should only be allowed by the source of the data and/or users with appropriate privileges.
Rationale:	The GR system is essentially an archive of entity data, therefore all information that is submitted to the GR must remain stored within the system to provide a complete record for any entity to which data is submitted.
Business Value:	High
Related Req's:	
Assumptions:	

Requirement No.:	4.11.0 Notifications
Requirement:	The GR will be designed to import data from multiple sources; this data may be provided through a bulk transfer or manual entry. The system is required to provide the ability to notify users of the GR when a significant event occurs, which may include (but is not limited to) ○ Data submitted ○ Data validated ○ Data validation errors ○ Data concurrency issues
Business Rules:	
Rationale:	The ability to automate most of the common notifications produced by the system will greatly reduce the labour required by GR staff and/or administrators.
Business Value:	High
Related Req's:	
Assumptions:	Some errors can be managed by the GR management unit internally and will require some level of manual intervention however this should not lead to major changes being made to the data Other errors may result in the record or the entire dataset being rejected. It is preferable to reject records rather than the entire dataset.

Requirement No.:	4.12.0 Privacy / Legal Concerns
Requirement:	The GR will have users from multiple organisations, countries etc. The GR will need to manage any potential privacy concerns that may arise due to conflicting interests. The system will also need to address any privacy concerns that may exist due to the nature of the data stored and accessible from within the GR.
Business Rules:	Rules determining what data can be provided to what users will need to be confirmed on a data contributor basis. It is assumed that there will be rules for public users and rules for non-public users only. Should any rules allow only members from state x to view data form state y then the complexity increases greatly and a decision made on whether the GR is the correct medium for storing such data Please refer to the User detailed requirements for specific user types and access rights
Rationale:	To ensure the GR is used by the entire potential user base, the system must adhere to all privacy and legal concerns that might arise. Government agencies and some corporate organisations may require compliance before using the GR.
Business Value:	
Related Req's:	
Assumptions:	A legal standard / direction will need to be established, perhaps as part of the terms of agreement when registering for the GR to enable the system to mitigate all concerns.

Requirement No.:	4.13.0 Support manual intervention
Requirement:	The GR will need to support manual intervention to either force data or update any records which may have errors in the data upload process This applies to all datasets and should allow a record to be rejected without the entire dataset being rejected. Any records which pass validation are automatically loaded into the GR.
Business Rules:	Authorised GR users only Allow a user to update a record that has not yet been loaded into the live GR tables Allow a user to force the application to load a record in certain circumstances e.g. When in error for a duplicate vessel, the system will load the Authority, Activity, PSM and IUU information without creating the vessel
Rationale:	
Business Value:	High
Related Req's:	1.1.0, 4.13.0, 4.14.0
Assumptions:	Additional rules will be determined once a better understanding of the data is available