



Input to the Feasibility Study on International High Seas Fishing Vessel Information System

15 September 2006

Final

FishServe Innovations New Zealand Ltd
Level 4
Feltex House
156-158 Victoria Street
Wellington
New Zealand

P O Box 24 441
Manners Street
Wellington 6142
New Zealand

T 64 4 460 9557
F 64 4 460 9570

Mark.Jones@FINnz.com

Contents

1	Introduction	4
1.1	Document Purpose.....	4
1.2	Intended Audience	4
1.3	Background – Ministry of Fisheries and FINnz.....	4
1.4	Contact Person	5
1.5	Terms of Reference.....	5
1.6	Acronyms.....	6
1.7	References	6
2	Executive Summary	7
3	FISHVIS Benefits and Risks – Success or Failure.....	8
4	Approach for the Establishment and initial Operation of FISHVIS	10
4.1	Governance.....	10
4.1.1	Establishment of a Steering Group	10
4.1.2	Establishment of the Management Unit (MU)	11
4.1.3	Establishment of the Technical Unit (TU)	12
4.1.4	FISHVIS – The First Three Years.	12
4.1.5	High Level 3 Year Workplan	21
4.2	Design and Development of FISHVIS.....	13
4.2.1	Roles and Responsibility – FISHVIS TU	13
4.2.2	Phase One – Project Initiation	15
4.2.3	Phase Two – Requirements Analysis	16
4.2.4	Phase Three – Development of the FISHVIS	17
4.2.5	Phase Four - Go Live	18
5	FISHVIS Proposed System and Software.....	19
6	FISHVIS Cost Estimate	21
6.1	Assumptions.....	23
7	Appendix One – Feasibility Study Terms of Reference	26
8	Appendix Two – Cost Estimates	28

Revision History

Version no.	Date	Author	Summary of Changes
1.0	20/08/06	Mark Jones	Initial Draft for Review by Steve Stuart.
2.0	26/08/06	Mark Jones	Draft incorporating comments from Steve Stuart.
3.0	30/08/06	Mark Jones	Draft incorporating further comments from Steve Stuart.
Final	15/09/06	Mark Jones	Final Version incorporating final comments from Steve Stuart and Stan Crothers.

1 Introduction

1.1 Document Purpose

The purpose of this document is to provide input to the Feasibility Study to develop a global High Seas Fishing Vessel Information System (FishVIS) being progressed by representatives from the New Zealand's Ministry of Fisheries and Australia's Department of Agriculture, Fishing and Forestry. Specifically this document provides costs estimates and other relevant information on technology, funding and staffing arrangements for the establishment and operation of the FishVIS.

We have tried to avoid repeating what has already been stated in the documents referenced in section 1.7 and have focussed on determining an approach and related influences on the establishment and operation of the FishVIS.

1.2 Intended Audience

The intended audience for this document are the New Zealand and Australian Fisheries Managers charged with the completion of the feasibility study to develop a global High Seas Fishing Vessel Information System.

1.3 Background – Ministry of Fisheries and FINnz

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, Enforcement authorities and other interested parties will enable actions to be undertaken to restrict and expose Illegal, Unregulated and Unreported (IUU) fishing activity.

FishServe Innovations New Zealand Limited has been contracted by the Ministry of Fisheries New Zealand to provide input to the feasibility study on an International High Seas Fishing Vessel Information System. The terms of reference for the feasibility study are included as Appendix One to this document.

FINnz is a Wellington based consultancy firm and is the business development company for Commercial Fisheries Services Limited (FishServe). FishServe has been involved in the design, build and operation of the fisheries registry systems that underpin the statutory administration of New Zealand's quota management system.

FINnz has sourced expertise from within FishServe to assist with the completion of this paper. This has been particularly relevant as FishServe has developed a web-based solution for the capture and dissemination of vessel related information (www.fishserve.co.nz). This solution allows for the collection of vessel data either directly into the solution database by FishServe internal users or via a website for external users. This system also provide reports on vessel data for internal and external users and push updated vessel details through to third parties i.e. Ministry of Fisheries on a nightly basis using a data exchange regime. This experience has provided a sound basis for the estimation of cost for the design and development of the FishVIS.

In addition to our web-based vessel solution, FishServe, similar to the FishVIS Management unit, has had to establish its organisation 'from the ground up'. We understand the importance of establishing strategic direction for the organisation and the influence this has on system design. We have also used this experience to provide a basis for comments and costs associated with the establishment of the Management Unit (MU).

1.4 Contact Person

For further clarification relating to this document, please contact:

Mr Mark Jones, General Manager
Telephone: + 64 4 460 9557
Facsimile: + 64 4 460 9590
Mobile: 0272 444 325
Email: Mark.Jones@FINnz.com

1.5 Terms of Reference

The Ministry of Fisheries has specifically contracted FINnz to undertake the following tasks;

1. A review of the costs to build FishVIS as a public and passive system that draws together information on fishing vessels that is already collected and verified by third parties. This will include reference to:
 - Specifications for FishVIS as documented in Closing the Net, the Final Report of the Task Force on IUU Fishing on the High Seas;
 - Poseidon report 'Benefit Cost Analysis of Integrating the High Seas Fishing Vessel information Scheme with the Equasis Merchant Marine Vessel Database';
 - Poseidon report 'Costings for a Stand Alone High Seas Fishing Vessel Information Scheme';
 - Ministry of Fisheries report 'High level estimate of costs for developing and hosting a FISHVIS in New Zealand';
 - Any other relevant matters.
2. Identifying an appropriate system/software with suitable flexibility to cater for additional functionality and data in the future.
3. Identifying appropriate technical, funding and staffing arrangements for the design, build and delivery of the FishVIS in the short and longer term, including alternatives for an on and off site delivery of some functions.
4. Provide advice as requested towards the final written proposal.
5. Other work as agreed.

1.6 Acronyms

The following Acronyms are used through out this document;

Acronym	Description
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
LRF	Lloyds Register Fairplay
CFR	Community Fleet Register

1.7 References

The following sources were used to complete this document:

Source	Description
Closing the Net - High Seas Task Force	Final report of the Ministerially-led Task Force on IUU Fishing on the High Seas
High Seas Vessel Information Scheme – Alberto Bergonzo	HSVVIS Functional Specifications Report
Final Report – Poseidon Aquatic Resource Management Ltd	Benefit Cost Analysis of Integrating The High Seas Fishing Vessel Scheme with the <i>Equasis</i> Merchant Marine Vessel Database
Draft Report – Poseidon Aquatic Resource Management Ltd	Costings for a stand alone High Seas Fishing Vessel Information Scheme
Ministry of Fisheries - New Zealand	High level estimate of costs for developing and hosting a High Sea’s Fishing Vessel Information System in New Zealand

2 Executive Summary

FishServe Innovations New Zealand Limited has been approached by the Ministry of Fisheries, New Zealand, to provide input to the feasibility study for the establishment and operation of a global high seas fishing vessel website (FishVIS).

The establishment of FishVIS has been proposed by the High Seas Task Force (HSTF) as being one tool to expose and deter Illegal, Unreported and Unregulated (IUU) fishing activity by allowing users to access vessel information from one central site.

The success of FishVIS as a tool to expose and impede IUU activity will largely be dependant on the regular and comprehensive provision of high seas vessel data from data providers. This is seen as the key risk to the success of FishVIS.

Strong and relevant governance arrangements will need to be put in place to provide direction and clarification for the design and development of FishVIS by the Technical Unit (TU) and also for the ongoing operation of FishVIS by the Management Unit (MU). It is recommended that, for a period of three years covering the development and initial operation of FishVIS, a caretaker arrangement be entered into whereby an existing organisation manages and administers the initial life of FishVIS. After this three-year period it may be appropriate to undertake a full evaluation and review of FishVIS to consider its long term future including, funding and further enhancements to the system.

It has been estimated in this paper that the total cost of establishing and operating FishVIS over a three-year period will be \$3,967,500 NZD (€1,955,000). It is expected that FishVIS cannot be run as a commercial operation and as such funding to support the establishment and operation of FishVIS will need to come from Governments, NGO's and other parties with an interest in reducing IUU activity.

3 FishVIS Benefits and Risks – Success or Failure

The fundamental basis for the establishment of FishVIS and the associated MU is the reduction of Illegal, Unreported and Unregulated (IUU) fishing through the realisation of the benefits outlined in Proposal Two of the High Seas Task Force (HSTF) final report 'Closing the net'.

These benefits essentially focus on the collection and dissemination of fishing vessel information with a view to exposing IUU operators and specific vessels to the extent that appropriate authorities/fisheries management organisations to take actions to impede IUU activity.

Realisation of these benefits and the impact they will have on IUU fishing must be the focus for the system design process; that is, the technical, data and other issues faced during the establishment of the FishVIS must always be addressed in the context of these benefits. Loss of purpose or focus will undermine the success of the FishVIS. As such, our approach recognises the need for strong governance structures to manage the establishment of the FishVIS and the MU and TU. Ultimately, all parties need to share the drive to achieve the common goal as defined by the benefits and the reduction of IUU activity.

The identification of the key risks or impediments to the success of the FishVIS is warranted. It is acknowledged that the risks to the success of the FishVIS have been well documented in papers by Poseidon, Alberto Bergonzo and the New Zealand Ministry of Fisheries (refer section 1.7 for references). Whilst a range of risks have been identified in these reports, the biggest risks to the success of FishVIS in our opinion are;

- (1) That the data identified as being collected and viewed from the FishVIS is not of the nature required to address and realise the system benefits i.e. is not sufficient for relevant parties to take actions to impede and expose IUU activity;
- (2) That the information identified is not supplied in either the frequency or by sufficient numbers of organisations (data providers) that currently hold the required vessel information to enable the realisation of the benefits of the FishVIS. To highlight this risk, we note that in the High Seas Task Force – High Seas Vessel Information Scheme report, Alberto Bergonzo reported that in response to a questionnaire sent to 27 organisations only 14 responses were received, and, of those 14 responses only 8 answered the questionnaire; and,
- (3) That the system is not used due to a lack of credibility resulting from inaccurate information and/or suitable promotion.

We have assumed that, for the purposes of this paper that data is of the nature required and will be supplied by sufficient numbers of data providers to realise the benefits of a FishVIS. We have also assumed that information provided will be accurate, thus mitigating any concerns regarding credibility.

This paper does not set out to expressly mitigate these risks – we do note and agree with the recommendation made by Alberto Bergonzo¹ that the system should proceed as if all data was available with the expectation that the dataset will increase as momentum grows for the system profile. It is of note that in order to gain momentum, focus must be maintained on developing a fisheries focussed and controlled FishVIS. Incorporation of a FishVIS into pre-existing non-fisheries focussed or controlled systems would ‘water down’ the profile of the FishVIS which may impede any momentum.

It is of note that the approach to the establishment and operation of the FishVIS outlined in this document takes into account the risks identified above. Essentially, the manifestation of these risks is that money may be invested in a system that provides no useful purpose. The inclusion of a project ‘checkpoint’ after completion of phase 2 (refer section 4.2.3) of our suggested approach will ensure that these risks are assessed as the project progresses and that continued investment in the system and MU is warranted.

¹ High Seas Task Force – High Seas Vessel Information Scheme

4 Approach for the Establishment and initial Operation of FishVIS

The phased approach outlined below provides a recommended guideline for the development of the FishVIS system. We have identified as part of our approach the resources, roles and deliverables required within the TU and MU. Our cost estimates have been based on the approach outlined below. This approach is flexible and can be adjusted to tailor for the inherent nature of the system development by the TU and establishment and operational role of the MU.

4.1 Governance

Regardless of any changes to the approach proposed, appropriate governance structures must be put in place to manage both the establishment and operation of the MU, and also to provide the necessary direction and decision making for the TU as they design and build the FishVIS itself.

4.1.1 Establishment of a Steering Group

A steering group comprised of representatives from members of the HSTF, along with contract resources experienced in system design and organisational establishment, would seem to provide the best type of governance arrangement. However, the logistics of having steering group members in different countries/timezones etc may render this type of arrangement impotent – this especially so as decisions would need to be made in a timely manner particularly during the requirements definition and system design phases of the FishVIS development.

In order to design, build and operate FishVIS it is our recommendation that a 'champion' organisation that is party to the HSTF manages the implementation and initial operation of FishVIS. It is necessary for the progression of the FishVIS that this organisation is able to provide knowledgeable resources that have the capacity and understanding of issues in order to provide timely clarifications and direction to the TU and MU. We would recommend that a person with recognised authority act as one of the FishVIS project sponsors. This person would need to have the authority to make decisions and also be recognised by all parties to the project as the official 'face' of the project. We believe that this will help with the solicitation of detailed requirements from data providers and potential system users.

If one or two closely aligned member states of the HSTF were to take ownership for the establishment and operation of FishVIS, then the steering group could be comprised of with representatives from within the appropriate department(s) of those member states.

Costs of the operation of the steering group over the development period (year 1) of FishVIS have been included in our cost estimates.

4.1.2 Establishment of the Management Unit (MU)

Once established one of the key issues that the steering committee must address is the establishment of the MU and TU. Whilst not essential for the design and development of the FishVIS, it would be beneficial to have some of the MU resources involved in the design and development of the FishVIS prior to that system 'going live'. It may be that the steering group comprises one or more members of the MU. It also may be the case that some of the resources involved in the TU will be the same as those involved in the operational running of the FishVIS as part of the MU.

The table below outlines the roles and responsibilities of the MU

Role	Responsibility
<i>Business Manager</i>	The Business Manager is responsible for the overall performance of the MU. The Business Manager will be responsible for maintaining relationships with the HSTF, stakeholders and other relevant parties.
<i>Technical Manager</i>	The Technical Manager is responsible for the continued application of technology and IT resources to meet the ongoing operational requirements of FishVIS.
<i>Administration Assistant</i>	The Administration Assistant will provide administrative support to the Business and Technical Managers.
<i>Business/System Analyst</i>	This is seen as one resource comprising both business and systems analysis skills. The Business/Systems Analysts will be responsible for the capture and implementation of changing requirements. The Business/Systems Analyst will be the primary contact between the MU and Data providers in respect of the details associated with the importing of vessel details into FishVIS.
<i>Developer</i>	The developer will be responsible for the development/enhancement/correction of system code as and when required.
<i>Infrastructure Analyst</i>	The Infrastructure Analyst will be responsible for ensuring that the IT infrastructure continues to support the ongoing operation of FishVIS. The Infrastructure Analyst will also be responsible for the data backups, disaster recovery and other system maintenance tasks.

4.1.3 Establishment of the Technical Unit (TU)

It is recommended that the TU is comprised of persons from an organisation within the member states referred to above – this may be from within the relevant Fisheries department or from appropriately skilled Fisheries/systems consultants. This will give the steering committee control of the FishVIS establishment process, progress, cost management and provide greater opportunity for face-to-face communication. This will be particularly beneficial in respect of the requirements definition process and for the management of issues and risks.

The initial focus of the TU is the design and build of the FishVIS. The design and build process along with the roles and related responsibilities for the TU are outlined in section 4.2 below.

4.1.4 FishVIS – The First Three Years.

It may be that the establishment and operation of FishVIS by a HSTF member state is a temporary arrangement. A three-year establishment period would allow for the design, build and an initial period of FishVIS operation. This would provide stability over the FishVIS 'go live' period and provide suitable governance for the period in which momentum for the FishVIS is expected to grow. After this establishment period it may be possible to set up either a standalone MU or incorporate the MU into an existing organisation i.e. as part of the Monitoring, Control and Surveillance Network (MCS).

Essentially when considering the final governance arrangements and establishment of the MU particular attention should be given to the following;

- What is the MU's role in the wider context of the HSTF's objectives;
- What are the nature of potential changes to the HSTF objectives and what influence will those changes have on the MU's operations;
- What expectations do 'clients' and stakeholders have in regards to the MU's operations and service delivery;
- What influence will legislation, policy and government standards have on the MU's operations; and,
- What will define MU success and how will success be measured?

4.2 Design and Development of FishVIS

It is important to apply a proven and well-structured methodology to design and develop the FishVIS. FINnz has tailored its own software development life cycle methodology (SDLC) that can be applied to a FishVIS development project. This methodology utilises components of Rational’s unified process but has been shaped based on our experience of what works best in the ‘real world’. Using this methodology provides the benefit of a developing a FishVIS solution that will be focused on meeting business goals sought from a FishVIS – not just a technical solution. This methodology also provides practical and reusable documentation that can be reference not only during the development project, but also once FishVIS is operational.

This methodology ensures the following (amongst other things):

- Consistent and familiar outputs are provided – all persons working on solution development all know and understand the outputs of each stage of the methodology.
- Communication is increased – by using a common consistent modelling tool people are able to share and communicate easier
- ‘The team’ is unified – by providing one common and understood approach to developing a solution

Ultimately, by using a suitable methodology the TU will deliver high quality project outputs, which in turn will ensure the development of a robust and scalable FishVIS.

4.2.1 Roles and Responsibility – FishVIS TU

The table below outlines the type of roles and responsibilities of the TU required for the design and development of the FishVIS. The make up of the technical resources within the MU once the FishVIS is operational is likely to be a subset of the below.

Role	Responsibility
<i>Project Sponsors</i> ²	<p>The Project Sponsors are responsible for the overall delivery of the solution and for managing the relationship between the HSTF, Stakeholders and the TU.</p> <p>Effort Days Estimate³: 20 days</p>
<i>Project Manager</i>	<p>The Project Manager is responsible for orchestrating the detailed work of the project, including extraction and documentation of requirements and other source documentation. The Project Manager is the primary interface between the TU and the Project Sponsors.</p> <p>Effort Days Estimate: 65 days</p>

² Note that the Project Sponsors may not be members of the Technical Unit, but of the Steering Committee.

³ The effort days estimate indicates the number of days required by one or more of the resource type during the course of the project

<i>Technical Manager</i>	<p>The Technical Manager is responsible for the assessment of technology needs and the assessment of solutions including software and infrastructure analysis.</p> <p>Effort Days Estimate: 20 days</p>
<i>Business and Systems Analysts</i>	<p>The Business and Systems Analysts are responsible for requirements definition. And managing the link between business requirements and system functionality. The Business and Systems Analysts will use modelling and documentation tools to capture, analyse and express requirements including the look and feel of user interface and the development of data model and data dictionary.</p> <p>Effort Days Estimate: 195 days</p>
<i>Technical Architect</i>	<p>The Technical Architect is responsible for the design of the system framework and how the system will operate within that framework.</p> <p>Effort Days Estimate: 20 days</p>
<i>Developers</i>	<p>The developers are responsible for the development of system code required to deliver system and business functionality in accordance with requirements. Both application and database developers will be required.</p> <p>Effort Days Estimate: 223 days</p>
<i>Test Analyst</i>	<p>The Test Analyst will be responsible for developing the test strategy and test cases for the testing required to ensure that the FishVIS is fit for the purpose defined in the business and systems requirements.</p> <p>Effort Days Estimate: 110 days</p>
<i>Infrastructure Analyst</i>	<p>The Infrastructure Analyst will assist with infrastructure design and implementation of the FishVIS into a suitable secure infrastructure.</p> <p>Effort Days Estimate: 20 days</p>
<i>Legal Advisor</i>	<p>The Legal Advisor will provide advice to the Technical Unit over interpretation and application of requirements</p> <p>Effort Days Estimate: 15 days</p>

4.2.2 Phase One – Project Initiation

Purpose

The purpose of this phase is to facilitate the commencement of the project and 'get things started on the right foot'. The Steering Group should be established during this phase and roles and responsibilities, including key decision makers should be identified and defined.

Approach Overview

At the beginning of the engagement the steering group, project sponsor(s) and project team should meet to establish the mode of operation for the project. Consideration of issues such as the level of management required/expected, confirmation of the availability of data providers, and the subsequent booking and planning of workshops should occur. The level of documentation, timing of meetings, reporting levels, establishment of communications tools i.e. Skype, and anything else needed to complete the project must be discussed. Project completion timeframes should be confirmed.

Consideration of the forging of positive business relationships should be made at this stage. It may well be warranted for the project sponsors to meet with key stakeholders. Given the likely global location of stakeholders much of this project, particularly during phase 2, will be conducted via electronic communication channels other than face-to-face contact. It would be of significant benefit to meet with the appropriate stakeholder representatives during this phase of the project to not only 'put a face to the name' but to gain an overview of operations and establish a bond that will facilitate the smooth progression of the FishVIS establishment project.

Deliverables

The Phase One deliverables are:

- Project Plan
- Risk Register
- Issues Register
- Change Control Plan
- High Level Requirements

4.2.3 Phase Two – Requirements Analysis

Purpose

The purpose of this phase is to build on the introduction to the project conducted as part of Phase One by extracting and defining the business and subsequent systems requirements in respect of the FishVIS.

Approach Overview

The software development methodology will be used to firstly define the detailed business requirements associated with the FishVIS. Business Analysts will facilitate the documenting of these business requirements in Business Use Cases (BUC's) .

Once BUC's have been completed, System Use Cases (SUC's) will be developed in order to describe what the FishVIS system should do in support of a particular business process i.e. logging on to the FishVIS website. Once complete, the SUC's will allow developers and business analyst staff to agree on the description of what the FishVIS application should do.

Once the BUC's and SUC's are completed a data model can be developed. This model captures the data identified in the SUC's and defines the relationships between data. At this stage the system architecture should be defined.

Once the required data has been identified and the sources of that data known, consideration of how that data will initially populate the FishVIS will be considered. A strategy outlining the approach and timelines associated with the initial acquisition of data from data providers.

During this phase we will conduct workshops with data providers via phone link (Skype or other suitable forum) to extract and document requirements, including data issues, risks, constraints, security, access needs, and optimal responses for the FishVIS.

At the end of this Phase a review of the project risks and confirmation of costs to develop the FishVIS should be undertaken by the Steering Group. The steering group should consider if there are any changes to costs or risks that warrants the cessation of the project.

Deliverables

The Phase Two deliverables are:

- Business Use Cases
- System Use Cases
- Technical Architecture document
- Data Model
- Data Acquisition Strategy (if required)

4.2.4 Phase Three – Development of the FishVIS

Purpose

The purpose of this phase is to produce the FishVIS. The main development and testing effort occurs within this Phase.

Approach Overview

Once all design deliverables have been completed, developers will complete the source code that integrates the business requirements and system requirements with the data model to produce the FishVIS.

As the development team progress development of source code, a test strategy will be developed in order to define the scope of testing based on risk analysis. Contained within the test strategy plan are test cases. These test cases capture the functionality to be tested and the expected outcome(s) in relation to each function tested. The cases also provide for the capture of actual results and whether the test was a success or failure.

As development of the FishVIS progresses testing can occur on iterations of the database released by developers into a test environment. Test analysts will undertake testing, logging defects and forwarding these to developers for correction and release. This process will be repeated until the FishVIS has reached a suitable state of completion.

Also the implementation of the data acquisition strategy will occur at this stage. It is important that as the FishVIS is developed that test of data imports and export protocols be conducted.

As the software development and testing continues, the development of training manuals and the FishVIS deployment plan will be established. Also the establishment and initial testing of the infrastructure required to host the FishVIS will occur at this stage.

Deliverables

The Phase Three deliverables are:

- Vessel Records Database
- Testing Strategy
- Test Cases
- Defect Registers
- Training Manuals
- Deployment Guide

4.2.5 Phase Four - Go Live

Purpose

The purpose of this phase is to integrate the FishVIS into a production environment and day-to-day operation of the FishVIS can commence. Training will be given to the MU and roles and responsibilities for ongoing support are identified.

Approach Overview

At the commencement of this phase the IT infrastructure will be tested. It is critical to ensure the infrastructure that will support any application is established and tested prior to the release of the application. It is of particular importance for any deployment to cover such items as:

- Installation planning – including rollout scripts, setup files, installation instructions etc.
- Distribution planning – covering any logistics for ensuring the application is available to mobile or remote users
- Cut-over planning – where a legacy system exists then appropriate procedures need to be in place to cut over from the old system to the new

Once the infrastructure testing and training is completed, the FishVIS can be installed onto the production environment and 'live' operations can commence. It is at the end of this phase that the MU will be responsible for the operation of the FishVIS.

Deliverables

The Phase Four deliverables are:

- FishVIS in Production
- MU staff trained and managing the operations of the FishVIS

5 FishVIS Proposed System and Software

We would recommend that the FishVIS developed for the HSTF would be based around proven Microsoft technologies. To ensure interoperability with numerous third parties the use of industry standard technologies such as XML and web services would be utilised.

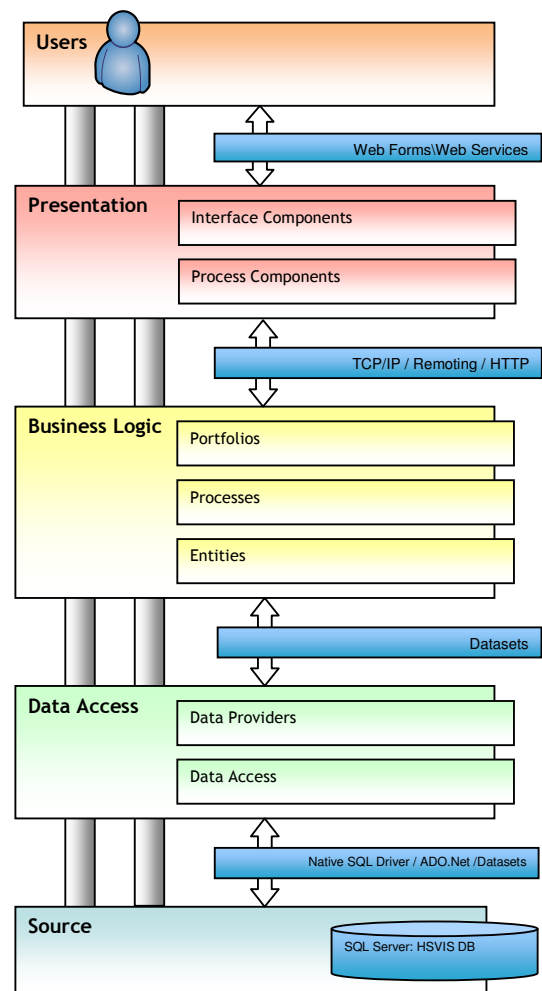
While at this early stage it is premature to make design and implementation decisions with regards to application architectures, software and standards versions it is essential to base all design decisions on the core requirements for the FishVIS.

As there is a need to have a flexible and robust system, an n-tier application utilising a Service Oriented Architecture (SOA) will ensure the reuse of services and the ability to publish these services for use by third parties if required.

Appreciating this need to cater for numerous data providers, FINnz would ensure that the system can receive and translate data sets in a large number of formats and allow for the flexibility to add new formats as and when required. This can be achieved through the extensive use of middleware logic that will be integrated into the application. By building translation logic into the application, data suppliers can retain their existing data formats and the FishVIS system will map that into the appropriate locations within the system.

As depicted in the diagram, we would recommend the implementation of an n-tier architecture with distinct separation of data, business logic and data presentation layers. This ensures better application maintainability and an increased capability to present the same data in numerous formats depending on the requirements or demands of the end user. By doing this in conjunction with the flexibility to receive unlimited data file formats, FishVIS can ensure there are limited barriers to third parties providing data and therefore increasing the potential value of this system.

As previously mentioned, all development will be based on open standards. While technologies will evolve between the release of this document and the final implementation of the application, we would ensure the delivery of an open and secure system through the extensive use of XML 1.1 (Second Edition) for data structures and HTML 4.01 for data presentation. Microsoft ASP.NET 2.0 will be used to develop the web services functionality required for the application. All data will be held and maintained within Microsoft SQL Server 2005 which will easily cater for the current and future data volumes for this application.



A key aspect for this application is the usability for end users and the speed of adoption. An application that is easy to use will see increased use and therefore increased provision of data by users. The success of this application hinges on the provision of timely and accurate information and this application will be developed with this requirement in mind by ensuring any user interface is not only functional but also graphical appealing.

In our costs estimates we have assumed that this application can be integrated into an existing hosting platform thereby leveraging on infrastructure already in place⁴.

Due to the international nature of this application, a 24-7 operation is required. Load balanced web servers running on Microsoft Windows Server and IIS will ensure load is distributed across servers thereby increasing availability and performance of the application.

In summary, to ensure the delivery and an application that meets the demands of numerous, geographically dispersed users and the requirement to accurately and securely manage critical information, we recommend the use of best of breed solutions, proven Microsoft technology and open standards.

⁴ Deployed to meet the high demands of data management for the New Zealand Seafood Industry and New Zealand Ministry of Fisheries, FINnz has a hosting platform that utilises best of breed technology thereby ensuring high availability and security. Through a combination of cluster and blade technology and several layers of firewall security, FINnz is able to have a level of redundancy and security that sees reduced downtime even for such activities as system maintenance.

6 FishVIS Cost Estimate

The cost calculations below have been based on our best estimate given our development experience and based on the functional specification document produced by Alberto Bergonzo and other specifications contained with Poseidon's "costing for a standalone high seas fishing vessel information scheme" document.

These costs have also been based on the approach, resources, deliverables and the use of the technology outlined in sections 4 and 5 of this document. As mentioned earlier in this document, these costs will change if the specifications or requirements change. Costs can be confirmed upon completion of phase two of our design approach.

6.1 FishVIS - High Level 3 Year Objectives

The table below outlines the key objectives for the FishVIS over three years. Our three year costs have been based on the attainment of these objectives.

Year	Task
<i>Year One</i>	<ul style="list-style-type: none"> • Establishment of Steering Group • Establishment of Technical Unit • Design, development and implementation of FishVIS with data from initial data providers (as per section 4.2 below) • Establishment of Management Unit
<i>Year Two</i>	<ul style="list-style-type: none"> • First year of operation of FishVIS by the Management Unit • Promotion of FishVIS to solicit global use and the increased provision of vessel data from data providers
<i>Year Three</i>	<ul style="list-style-type: none"> • Second year of operation of FishVIS • Continued promotion of FishVIS • Investigation and decision made as to future governance arrangements for FishVIS operation

6.2 FishVIS – Estimated Three Year Costs

All costs details are outlined in appendix two, however a summary of our 3 Year costs estimates are listed in the table below;

Year One Costs	NZD	EURO
Establishment of FishVIS	\$900,500	€443,500
Establishment and Operation of Management Unit	\$613,000	€302,000
Contingency	\$227,000	€112,000
Total	\$1,740,500	€857,500
Year Two Costs		
FishVIS – Enhancements	\$50,000	€24,500
Annual Management Unit Costs	\$907,000	€447,000
Contingency	\$143,500	€70,500
Total	\$1,100,500	€542,500
Year Three Costs		
FishVIS – Enhancements	\$50,000	€24,500
Annual Management Unit Costs	\$929,500	€458,000
Contingency	\$147,000	€72,500
Total	\$1,126,500	€555,000
Total Three Year Investment	\$3,967,500	€1,955,000

1. Note that these figures take into account rounding to the nearest \$500 or €500.
2. For budgeting purposes contingency of 15% has been applied to the figures contained in Table One.
3. Have assumed that the costs of the MU operation will increase by 2.5% from year two onwards
4. Have allowed costs of \$50,000 per year for enhancements to the FishVIS.
5. Conversion of New Zealand Dollars to Euro's has been based on a conversion rate of 0.4926. This rate has been supplied by the ANZ National Bank on the 18/08/06 and is subject to change.

6.3 Assumptions

A list of assumptions made during our cost estimation process are listed below. Many of these assumptions have previously identified by the authors of the documents referred to in section 1.6. We would like to draw attention to the following assumptions.

<i>Task Force/Stakeholder/Data Provider Availability</i>	Availability of key resources may be limited by workload and other commitments. Access to relevant resources must be maintained.
<i>Functional Specifications</i>	Costs have been based on the functional design undertaken by Alberto Bergonzo – if functional specs change then costs will change also.
<i>Timings</i>	We have assumed that we can complete the design build and delivery of the application within one year, however this will largely be dictated by the speed in which the requirements phase of the project can be completed.
<i>Data Migration</i>	We have assumed that no data migration effort would be required.
<i>Travel</i>	We realise that travel during the project is likely, however to quantify costs is difficult and as such have not included travel within our cost estimates.
<i>Provision of Information</i>	<p>We have assumed that for costing purposes that data will be provided by data providers in a predefined format – or the data will be keyed by providers through web data entry pages developed and included as part of FishVIS. We do note that <i>Data Volumes, Unique number of data formats, Web access, nature and extent of reporting, Number of system interfaces</i> have the potential to significantly influence costs.</p> <p>It is also worth noting that the ease of which data can be provided may increase the willingness of data providers to supply the data. It may be that in order to get data the FishVIS MU may have accept data in the format that the data providers can easily supply – this may mean additional operational costs associated with data import functions.</p>

<i>Infrastructure</i>	In our costs estimates we have assumed that this application can be integrated into an existing hosting platform thereby leveraging on infrastructure already in place.
<i>Legal Issues</i>	We have assumed that there will be no irresolvable legal issues that inhibit the provision of data from data providers and the presentation of that data to the global public.
<i>Mitigation of identified risks</i>	We have assumed that, for the purposes of this paper that data is of the nature required and will be supplied by sufficient numbers of data providers to realise the benefits of a FishVIS. We have also assumed that information provided will be accurate, thus mitigating any concerns regarding credibility.
<i>Establishment of the Management Unit and Technical Unit</i>	<p>We have assumed that the MU and TU will be established within an existing organisation and will be able to leverage off existing infrastructure including IT, HR, building costs, and other overhead operating expenses. Costs associated with the MU and TU can be expected to increase if the MU and TU are established entirely outside of an existing organisation.</p> <p>We have assumed that the MU resources are full time resources and have calculated our costs accordingly. It may be possible that some cost efficiencies can be gained through establishing the MU in an existing organisation and leveraging of that organisations existing staff capacity.</p>
<i>LRF or CFR</i>	We have assumed that only one database will be required to manage the nuances associated with LRF or CFR as unique identifiers of vessels. The exact nature of the system solution will be defined during the system design process.
<i>Lloyds Register - Fairplay Data Extracts</i>	We have assumed that there will be costs associated with the leasing of data from the Lloyds Register. For cost purposes we have estimated data leasing costs at \$200,000 (NZD), €98520.

<i>24 x 7</i>	We have assumed that support for FishVIS will be provided 24 hours a day, seven days a week.
<i>Procurement</i>	It may be that consultants will be required to contribute to the establishment and operation of FishVIS. We have not included any costs associated with running a tender process to select consultants. These costs could be expected to reach as high as \$20,000 NZD.

7 Appendix One – Feasibility Study Terms of Reference

Feasibility Study to Develop a Global High Seas Fishing Vessel Information System

NO:	DETAILS	RESPONSIBILITY	ACTIONS	BY WHEN
1.	Confirm the purpose and specifications for the FishVIS are appropriate, realistic and meet user needs and requirements.		Basically done as per previous reports although some assumptions and clarification throughout the project may occur	
2.	Agree the time period over which system will be scoped and costed.		Agreed 3 years with a review at that point to determine future of FishVIS	
3.	Review costs to build FishVIS as a public and passive system that draws together information on fishing vessels that is already collected and verified by third parties.	New Zealand	Build on information already obtained. FishServe to be contracted for this work	
4.	Identify and analyse available sources of information on fishing vessels at a global, regional and national level.	New Zealand / Australia	NZ to complete work already commenced for Aust to build on.	
5.	Identify potential system users and the likely benefits and value obtained from use of FishVIS.	New Zealand/ Australia	NZ to survey MCS Network to assess benefits and value. Aust to further this work with NGO's	
6.	Identify an appropriate system/software with suitable flexibility to cater for additional functionality and data in the future.	New Zealand	Part of FishServe contract	
7.	Identify appropriate institutional, funding, staffing and governance engagements for the design, build and delivery of the FishVIS in the short and longer term, including alternatives for on and off site delivery of some functions.	Australia / New Zealand	FishServe to provide information for database / technology support. Aust / NZ to discuss management support and finalise	
8.	Identify where the system will be housed initially and for what timeframe.		Linked to 7 above and 10 below	

9.	Identify and agree major assumptions (including costing assumptions), constraints, risks and potential mitigating strategies.	Australia / New Zealand	All parties to develop list of assumptions etc as project progresses	
10.	Seek interest and cost estimates from existing deliverers of global vessel information systems (such as Equasis and Lloyds) in supplying the Fish VIS system directly to governments at a fee for service (as an alternative to a government agency housing and running the system).	Australia / New Zealand	Develop a proposal based on all information obtained as a result of this feasibility study. Discuss how to engage Equasis and Lloyds	
11.	Develop a comprehensive strategy for communicating the outcomes of the feasibility study and seeking widespread support and funding for implementation.	Australia	Australia to use their Communications people	
12.	Prepare and finalise report	Australia	Australia to lead this work. Expect report to be in order of 15-20 pages.	

Note: Need to make sure the agreed parameters complement the enhanced MCS Network.

8 Appendix Two – Cost Estimates

Year 1 Costs

A. Establishment of the Management Unit

	Cost (NZD)		Cost (EUR)	
Set up Costs				
Recruitment	\$	72,750	€	35,836.65
Company Registration	\$	1,500	€	738.90
Fitout	\$	15,000	€	7,389.00
Data/Telephony Cabling	\$	3,000	€	1,477.80
IT Infrastructure	\$	12,000	€	5,911.20
Server Room Upgrade	\$	2,000	€	985.20
Software Licensing and Maintenance	\$	15,000	€	7,389.00
HR/Payroll	\$	2,000	€	985.20
Financial Fitout	\$	5,000	€	2,463.00
	\$	<u>128,250.00</u>	€	<u>63,175.95</u>

Salary Costs

Bus IT

Business Manager	\$	120,000.00	€	59,112.00
Admin Assistant	\$	50,000.00	€	24,630.00
			€	-
IT				
Business Analyst/Systems Analyst	\$	70,000.00	€	34,482.00
Application Developer	\$	80,000.00	€	39,408.00
Infrastructure Analyst	\$	65,000.00	€	32,019.00
Technical Manager	\$	100,000.00	€	49,260.00
	\$	<u>485,000.00</u>	€	<u>238,911.00</u>

Total MU Costs

\$ 613,250.00 € 302,086.95

B. Design and Build of FishVIS

	Effort Days			
Technical Unit Costs	688	\$ 855,723.73	€	421,529.51
Steering Committee Costs	37	\$ 44,990.53	€	22,162.34
Total Design and Build Costs	724	\$ 900,714.27	€	443,691.85

TOTAL FishVIS YEAR ONE COSTS

\$ 1,513,964.27 € 745,778.80

1. Days equates to effort days not elapsed time
2. Design and build costs based on the phases contained within Section 4 of this document
4. Costs include the purchase of hardware and related software to host the FishVIS
5. Have assumed that development and test environments already exist
6. Have assumed that the Steering Committee will not require full time resources.
7. For the purposes of costing, we have calculated Steering Committee costs based on a proportion of TU time.

Year 2 - Technical and Management Unit Operational Costs

	Cost (NZD)	Cost (EUR)
Bus IT		
General Manager/Director	\$ 120,000.00	€ 59,112.00
Admin Assistant	\$ 50,000.00	€ 24,630.00
IT		
Business Analyst/Systems Analyst	\$ 70,000.00	€ 34,482.00
Application Developer	\$ 80,000.00	€ 39,408.00
Infrastructure Analyst	\$ 65,000.00	€ 32,019.00
IT Manager - Technical Lead	\$ 100,000.00	€ 49,260.00
	<u>\$ 485,000.00</u>	<u>€ 238,911.00</u>
Annual		
Building Lease Costs per annum	\$ 25,000.00	€ 12,315.00
24/7 support	\$ 75,000.00	€ 36,945.00
Maintenance	\$ 25,000.00	€ 12,315.00
printer lease	\$ 7,000.00	€ 3,448.20
Communications	\$ 40,000.00	€ 19,704.00
Travel	\$ 50,000.00	€ 24,630.00
Lloyds Register Fairplay data extract	\$ 200,000.00	€ 98,520.00
	<u>\$ 422,000.00</u>	<u>€ 207,877.20</u>
Total Operating Costs	<u>\$ 907,000.00</u>	<u>€ 446,788.20</u>