

# Implementing Change in Fisheries Management: Principles and Case Study

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## Abstract

New Zealand has recently implemented major changes to its Fisheries management regimes including strengthening the quota based property right, devolving the delivery of quota registry services to the industry and developing new computer systems to support industry and government requirements. The success of these changes is due to a number of key factors including a property right based quota system, a single strong industry body representing the interests of fishers, an existing cost recovery process providing incentives for greater transparency and efficiency, co-operation between the government Fisheries Agency and the Industry, devolved but regulated delivery of registry services, and a third party able to facilitate the working of all parties together. A third party business integrator helped bring the Fisheries Agency and the Industry together to develop a joint programme with agreed joint funding to meet the requirements of new legislation. This occurred under a strong governance structure with government and industry as equal partners. A comprehensive plan was developed that required all parties to work together to common goals, namely the development of the processes and systems required to deliver the registry services required by the new Fisheries Act and the establishment of the devolved organisation to deliver these services. This plan operated from March 2000 through successful implementation of the Act and its associated processes and systems on 1 October 2001. The critical path for implementation was the development of new computer systems. The key ingredients for success here were a pragmatic approach to requirements, careful planning, a stable team and use of offshore resources.

**Key words:** Fisheries management, governance, devolution, computer systems

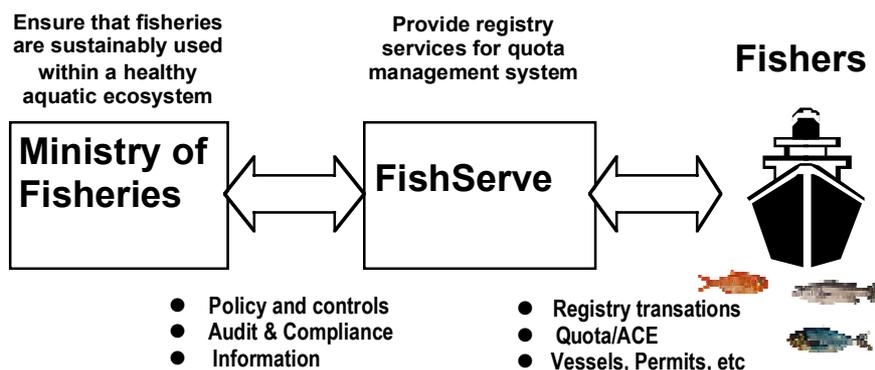
## 1. INTRODUCTION

On 1 October 2001, New Zealand went live with new legislation, new business processes, and new IT systems for the management of its fishing quota. This was the culmination of many years of effort both in government and in industry. A major part of the implementation effort took place from February 2000, through and beyond October 2001 during which time, governance was established, a project team built, business processes defined and new IT systems developed. This was a large and complex project with total team size peaking at over 60; it was delivered on time and on budget.

This paper describes the pre-February 2000 state of the initiative, what was done to get the programme underway, provides a brief discussion of the key events of the programme, and finishes by describing the ingredients that made the initiative a success.

### 1. PRE-FEBRUARY 2000 SITUATION

In February 2000, few believed that the new quota environment specified by the legislation could be implemented by the target date of 1 October 2001. The legislative foundation for the change – the Fisheries Act 1996 – has been passed but was awaiting enactment once the regulatory, business and systems were in place to support it. This new Act would inaugurate a new quota registry environment as well as providing for devolution of quota registry management to the industry. The existing quota registry services were being delivered on a contracted basis by FishServe, a privately owned organisation. FishServe used the existing quota management system software to deliver these services. While this delivery framework would remain in place, many of these services would be devolved completely when the 1996 Act was enacted.



### The model for delivery of quota registry services in New Zealand

There was significant pressure on the Ministry to enact the 1996 Act on 1 October 2001. The most pressing requirement was the addition of new species to the existing quota regime to satisfy the Crown's obligation to Maori under the Treaty of Waitangi. The existing systems managing the then quota regime were old, dating back to the 80's, and significant effort was required to enable new species to be added into quota management. It was also completely impractical to modify these systems to support the new legislative regime.

The Industry had a strong desire to see the Act implemented as soon as possible. The Industry was funding the quota management regime by way of levies paid to the Ministry of Fisheries which then contracted the required services to manage the registry. Devolution would enable it to directly manage and fund the devolved parts of the quota registry thereby gaining greater transparency regarding the money paid and services delivered, as well as having control over how effectively the money was spent. This would result in lower costs as well as the ability to more equitably charge the industry for these services. Devolution would also enable the Industry to better protect their quota property right.

On the understanding that devolution would occur, the industry had already started developing the new software required to deliver the new quota services. This was to be one of the foundation stones in gaining costing control over the processes and systems that would ultimately deliver the registry services to the industry. However, at the beginning of 2000, it was clear that while progress was being made, an implementation date of October 2001 was unachievable and projected costs were continuing to rise. There were systemic problems that would need to be solved before a successful project could continue. These problems included:

- mutual suspicion between the Industry and the Ministry of Fisheries preventing effective co-operation;
- lack of dedicated resource with quota knowledge involved with the project contributing to an inability to develop solid requirements on which to base any systems development; and
- a view of the project as a software development project as opposed to an integrated programme to deliver on policy, business and software.

By February 2000, both the Ministry and the Industry believed that the process to prepare for implementation of 1996 Act was not working effectively and that if this continued the 1 October 2001 date would not be achieved.

## 2. WHAT WAS DONE TO GET THINGS MOVING

In early 2000 the Industry body – SeaFIC – started working with a consortium established by Deloitte Touche Tohmatsu that included Deloitte Consulting, Bruce Shallard & Associates, and an Indian software development company called HCL. This consortium worked with SeaFIC and the Ministry to develop and deliver an integrated programme to achieve the 1 October 2001 target, involving both government and industry.

The first step was to agree on the key prerequisites for success. These were:

- that the complete chain of legislation, policy, business process and IT systems had to be considered as a single integrated whole – i.e. these individual components could not be done in isolation; and
- if the work required to achieve 1 October 2001 was an integrated whole, then SeaFIC and the Ministry had to work closely together if the timetable was to be met.

These pre-requisites were agreed and both parties agreed to establish an integrated programme of work – the New Registry Programme (NRP) – to implement the Act for 1 October 2001.

By April 2000, the integrated programme was established. Its key components were as follows:

- *Integrated Governance* – Both the Ministry and SeaFIC publicly committed to work openly together in partnership to achieve the common goal, namely the 1 October 2001 implementation.
  - A charter was established to enable a joint Steering Committee to operate and oversee the programme.
  - Funding for the programme from both Industry and Government was agreed.
- *Integrated Programme Management led by a “Business Integrator”* – A single consortium was chosen to be “Business Integrator” (Deloitte Touche Tohmatsu, Deloitte Consulting, Shallard and Associates and HCL) to enable the integrated programme to be delivered. This was consistent with the concept of a single programme with no “walls” between parties. The Deloitte consortium started on two two-monthly statements of work and moved to a fixed price contract for most of the programme after a short period of time.
- *Integrated Programme of Work* – Once the concept was agreed, an integrated programme was developed under the control of the joint Steering Committee. The team delivering NRP were almost all located in one specially established programme office. To assist communication, people from different organisations were seated by programme function, not parent organisation, and there were no separate offices. Almost all staff sat in an open plan area to maximise communications.
  - The Ministry took responsibility for the establishment of legislation, government policy, the devolution processes, and the special Ministry IT requirements (e.g. the regular downloads of data from the registry systems into the Ministry data warehouse).
  - The Industry took responsibility for the delivery organisation’s structure, the business processes, and the IT infrastructure.
  - The Deloitte consortium took responsibility for the managing of the programme and the development of the new registry software systems. These systems were designed by staff onsite in Wellington in consultation with analysts employed by FishServe, programming was mostly undertaken offshore in India, and final testing and implementation was carried out back onsite in Wellington.
- *Integrated Programme Structure* – An integrated programme structure was established under the joint Steering Committee.
  - The Project Director was Lesley Campbell, the General Manager of FishServe. Lesley’s knowledge of the industry and her credibility with both industry and government made her the ideal choice for this role.
  - A Deloitte Consulting Senior Manager was appointed as the Programme Manager.
  - Both Ministry and FishServe senior staff were represented in key roles in the programme structure.
- *Integrated working style* – Given the different and often opposing perspectives represented in the Ministry and Industry, the establishment of a integrated working style was critical to making the programme a success. There was a daily focus on avoiding an “us and them” mentality. The Deloitte consortium worked hard at being the “glue” in the process, ensuring that formally and informally, staff were working effectively together.

- *Effective Resourcing* – The resourcing of the project was always going to be difficult. There was a large amount of systems development to be completed in a short period of time, and there was limited knowledge of what the new Act would in practice entail. The following solution was applied:
  - The Ministry provided staff to work on the policy aspects of the programme.
  - A core team of approximately 12 business analysts and 6 systems analysts was established to form the core team to design business processes, develop systems requirements, and design the software. This team was organised into five teams, supported by 3-4 technology focused staff.
  - Lead developers from the Indian software house were brought in to work with the teams during the design stage to ensure effective knowledge transfer back to the developers in India. 80% of all programming was done in India where the team size peaked at 40. The use of the offshore development team was crucial to developing the systems in the time required.
  - FishServe provided 3 staff to do the data migration from the existing QMS to the new systems.
  - FishServe staff worked on the new organisational design, internal financial systems, and the implementation of the new IT systems.

The establishment of the joint New Registry Programme was a major step forward in enabling the 1 October 2001 target to be achieved. Given the major step forward that it was, it is worth considering the key factors that enabled this to occur,

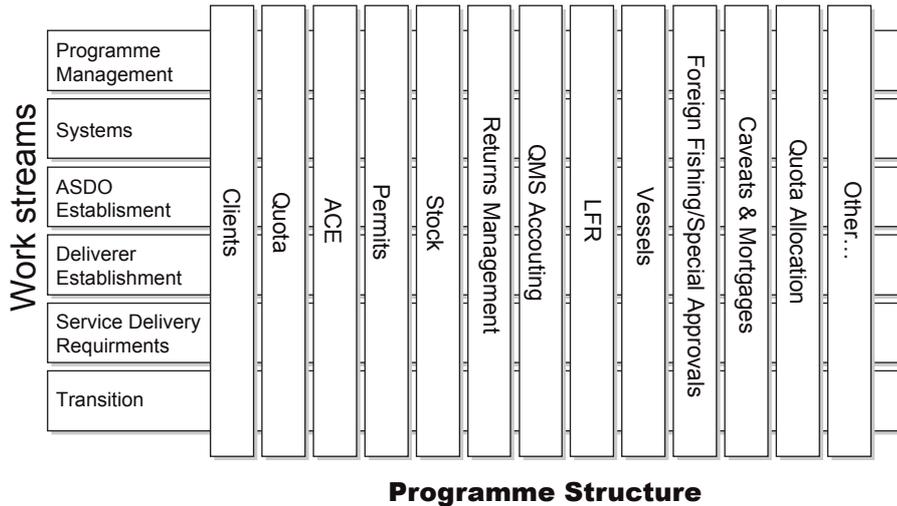
- The fact of a single industry body – SeaFIC – enabled industry to speak with a largely united voice and negotiate to establish a joint programme in a short period of time. The courage of key industry leaders to put their weight behind this approach despite opposition was also a key factor.
- The implementation of devolution provided a “carrot” to the industry to fund and implement the new registry systems itself. It was felt that if the 1 October 2001 date was not met, the government may take devolution off the table.
- There was strong support for the co-operative approach from the key Ministers involved.
- There was strong “on the ground cooperation” between the Industry and Ministry leadership, most especially the Deputy Chief Executive of the Ministry and the CEO of SeaFIC who worked through much of the day to day governance and management issues. The Programme Director also had the respect of both the Ministry and Industry.
- The business integrator – the Deloitte consortium – understood the dynamics of the industry and Ministry and had their confidence.

Most important of all, both the Industry and the Ministry knew they only had one chance to make this work.

### **3. WHAT HAPPENED?**

The Deloitte consortium, FishServe and the Ministry of Fisheries (the Ministry) assembled the project team in early May 2000. The team faced a tight, complex, but achievable project plan, that had been jointly prepared by the Deloitte consortium, FishServe and the Ministry prior to the project commencing. The plan called for the team to deliver a diverse range of processes, systems and organisation structure required support devolved registry and Approved Service Delivery (ASDO) functions. The structure of the plan and the teams was designed to ensure coverage of all facets of the new business that would emerge on 1 October 2001. To do this, the plan was split into 6 work streams (programme management, systems, ASDO and deliverer establishment, service delivery requirements and transition). The deliverables across all of these work streams was divided into 16 logical groupings of functionality or “functional areas”. The relationship between the functional areas and the work streams is shown below.

## Functional Areas



To deliver the business processes and functionality required the programme was split into a number of teams, each team responsible for delivering a specific functional area(s). Each team was comprised of one or more business analysts, a systems analyst and a developer. Overseeing the individual teams was a QA team comprised of senior FishServe and Deloitte staff.

At the start of the project there was a mixture of experience within the team. The QA team had FishServe staff with detailed experience of the legacy environment plus Deloitte consortium staff with systems analysis and design expertise. Within the teams themselves there was a mixture of experience of systems and process design experience. Very few of the FishServe business analysts had prior exposure to the 1984 Fisheries Act and even fewer had any exposure to the 1996 Fisheries Act. The most critical problem faced in the first six months was therefore dealing with a fear of getting it wrong that led to “requirements churn”. Many of the staff on the project had not been involved in a software development before and were not used to signing off on a document unless they were sure it was 100% accurate and complete. Unfortunately this did not fit well with the methodology of the project, which was to develop requirements iteratively, improving the deliverable with each new iteration. The result was the many design documents went through too many iterations of review and amendment, some going through more than 20 versions!

After six months of operation progress was slowing – the number of unresolved issues was growing and it was increasingly obvious that programme structural changes would be required to free up key staff from administration to actually do the work, as well as providing more centralised control of issues. The programme structure was adjusted so that the project teams reported to a single functional manager rather than to a business manager and a technical manager as they had done previously. This centralised both issue management and progress tracking against the plan into one place. It also improved communications regarding deadlines and made tracking progress significantly easier.

Issue resolution continued to slow confirmation of requirements. Uncertainty and fear as to how these issues would affect final compliance with the legislation as well as “issue ping-pong” between the Ministry and FishServe contributed to these delays. However, the centralisation of issue management in the person of the functional manager helped drive an increasingly practical approach to resolution of these issues, as did the impending approach of 1 October 2001!

The development of the software systems to deliver the registry services was the critical path item. To enable the software to be developed rapidly once requirements and designs were developed, use was made of an offshore development factory in India. Developers from this development factory were onsite in New Zealand during the initial design phases and these developers returned to India to become the team leaders there and lead the development of the programming code. The late delivery of the requirements for the systems and therefore the design squeezed the time available for the actual programming code to be developed. However, the software development factory was able to compress timeframes by adding more resources to the project and working additional shifts where necessary.

Working with an offshore team was challenging for all concerned but ultimately successful. It is highly unlikely that a New Zealand based team could have mobilised the resources in the way needed to meet the final deadlines.

One casualty of extended requirements and design time was reduced testing time in India and therefore an increased requirement for testing onsite in New Zealand. While this placed an unexpected load on the onshore team it did help FishServe staff to grow in their understanding of what the system actually did. It also helped develop testing skills inside FishServe that would not have otherwise been available after the project went live. As testing progressed, technical staff from FishServe operations became involved in managing the test environment and the release process. This provided a good training ground for those who would eventually support the system day to day.

Through all of this the programme management team continued to drive the project forward. Any issues that were not resolved internally were raised at programme management meetings. Most issues were resolved by deciding on the solution that met the 1 October 2002 deadline. This included some decisions that were inconvenient to some parties in the short term and would not have been made had there not been such a strong joint drive for success.

While three-quarters of the programme effort and expenditure was focused on developing the IT systems required, there were still significant other pieces of work to complete these included:

- The development of the new FishServe organisation and business processes required to deliver the altered services defined under the new legislation.
- The training of the 3000 or so end-user fishers who would be impacted by the new legislation. This involved a road-show around the country for a period of 4 months prior to 1 October to help ensure that all fishers were aware of the upcoming changes.
- Continued communication with the stakeholders – especially the fishing industry – and ensuring that they had the right level of input into the programme and awareness of how the new legislation and systems would impact them.

On 1 October 2001 the team moved the latest version of the systems into production and ran the processes for the 1996 Fisheries Act for the first time. The project team had just specified, designed, developed and tested an application with approximately 1.5 million lines of code and 700+ database tables. Since implementation there have been no major outages and FishServe continue to expand on the services provided to the industry by the application.

#### **Approximate Timeline of Key Events**

<i>Date</i>	<i>Event</i>
Feb 2000	Joint project governance
March 2000	Initial scoping commences
May 2000	Detailed requirements definition and systems design starts
July 2000	Overarching policies and high-level business requirements completed
September 2000	Requirements for all 1 October 2001 systems completed Build starts in Clients
November 2000	Consultation completed on regulation and standards and specifications First built module received from India
December 2000	Detailed transition planning starts
January 2001	Requirements and design for all 1 October 2001 systems completed
April 2001	Implementation of new financial processes and systems
1 June 2001	Establishment of FishServe as ASDO Implementation of Clients systems and processes
1 August 2001	Implementation of special approvals processes
1 September 2001	Implementation of ACE-1, QMS Accounting, Vessels, Permits
1 October 2001	Legislation enacted Implementation of Quota, ACE-2, Caveats, Returns, Quota Allocation-1, EDT, modified processes for LFRs, Foreign Fishing
1 March 2002	Implementation of Quota Allocation-2
June 2002	Implementation of LFRs, Foreign Fishing, Special Approvals, Mortgages

## 4. WHY WAS IT SUCCESSFUL?

It is instructive to consider why the project was a success, when it had every chance to fail. We believe that there were five key reasons:

- Continued Focus on a Simple Goal
- Effective People Management
- Cooperation between Industry and Government
- Modular Approach for Software Development
- Strong Programme Management
- Use of an Offshore Software Development Model

### 4.1. Continued Focus on a Simple Goal

In early 2000, it was felt by many that the immovability of the 1 October 2001 date was a major liability to the success of the implementation. However, as the project progressed it became clear that the continued focus on a simple, non-negotiable goal was a great asset.

- The simple goal ensured that all parties were focused on what was actually important, i.e. implementing the Act.
- As the project progressed, the increasing time pressure focused the team on what was important. There was less and less time wasted in legalistic arguing over scope or requirements.
- The simple goal provided incentives for the different parties involved to give up their own individual desires for the sake of the greater good of the programme.

### 4.2. Effective People Management

It is a truism that an undertaking such as the New Registry Programme is a knowledge project, and therefore heavily reliant of the quality of people and their willingness and ability to work together. However, this is a truism that is often ignored in large projects, where a focus on person days and hourly rates replaces a concern with the actual quality of the work done in those person days and the overall value being produced.

Almost everyone in the sector that could make a valuable contribution was recruited into the project. This included Ministry staff, FishServe staff already working with the existing quota management systems, and independent contractors working across the sector. As far as possible, all these people were integrated into the single programme so that they were aware of the wider goals and felt that they were part of this. Being on the team was stressful, but the high level of challenge, learning, and ultimate accomplishment made it “the place to be”.

### 4.3. Cooperation between Industry and Government

Cooperation between the Ministry and the Industry has always been a fragile undertaking. In the case of the NRP, it actually worked. There were a number of key ingredients involved:

- *The governance structure worked.* Both the top level structure and the “on the ground” structures worked.
- *There was continued support from the industry.* It is easy for a large co-operative undertaking such as the NRP to have detractors. The ongoing support of the wider industry enabled the programme to complete. The programme encouraged this by a strong focus on communications to the industry as well a forum for receiving feedback:
  - monthly newsletters to the industry kept the wider stakeholders informed regarding what was happening;
  - an industry working group of industry representatives met monthly to provide input to and decide on key aspects of design and implementation that would directly affect the industry;

- a nationwide training programme prior to 1 October helped ensure that those who would be impacted understood the requirements of the systems and the act.
- *There was continued support from Government.* The Ministry could see that there was an effective team in place to deliver the new processes and systems and they had confidence in FishServe's ability to deliver the devolved product.

That this co-operation continued to occur is a credit to the quality of people who delivered the required outcomes and the respect that they had from both industry and government stakeholders.

#### **4.4. Modular Approach for Software Development**

The key source for system requirements was the legislation. However, because the legislation was new and not operational, there was no working system in existence we could model our requirements on. It was a true "green fields" environment.

The solution to these problems was to divide the system into 15 modules and deliver the requirements and software in successive "waves" with a maximum of 5 teams working concurrently. By the time the last "wave" of modules was complete, the number of defects needing resolution on the first software build had dropped dramatically. If building the software had not started until all requirements had been completed and signed off, the project would literally never have completed the requirements!

A single "big bang" cutover was avoided. Systems started being implemented up to 2 months prior to 1 October. This allowed bedding down time for the initial systems, as well as contingency for the inevitable slippage that occurred. The key dates occurring after 1 October were also identified so that we knew the last possible time that each key facet of functionality was required (e.g. the first ACE balancing did not have to occur until 15 November). This enabled us to spread delivery of software and provided additional contingency for the inevitable slippage that occurs in a software project.

#### **4.5. Strong Programme Management**

As much of the work required was being conducted in a single programme, strong overall programme management was always going to be a key enabler for successful delivery.

After the initial scoping stage was complete, SeaFIC negotiated a fixed price contract for the software development. As this was 60-70% of the total budget for the project, this provided:

- significant coverage for cost escalation risk; and
- a large incentive for the prime contractor – Deloitte Consulting – to ensure that a result was delivered.

Strong budget control was therefore exercised across the whole programme. This showed itself in the monthly cycle of monitoring and reporting of all programme related costs, as well as predicting where the final cost position of the project would be. This forward looking approach focused on what was need to complete the project and whether this would exceed the total budget, as opposed to often misleading conclusions as to whether the whole programme was "on budget" to date.

One of the major areas of early slippage in the project occurred a result of the requirements analysis effort being under-estimated. The time critical nature of the final deliverables and the early delay helped drive a more pragmatic approach to producing what was required:

- There was an acceptance that a 100% solution was of no use if it did not achieve the 1 October 2001 date. Early compromises therefore had to be sought if "paralysis by analysis" was not to occur.
- Because this was a knowledge project, the quality of staff was critical and staff issues needed to be solved quickly.

There was also strong risk management throughout the latter part of the programme. Key milestones were monitored against the legislative requirements, and mitigations and contingencies for these risks managed on a week by week basis.

#### **4.6. Use of an Offshore Software Development Model**

The use of programmers based in India to perform the bulk of the programming was a controversial decision. However, it is unlikely that the systems could have been delivered in the required timeframes for the required cost if the development has been done locally. The Indian software factory was able to deploy large teams of programmers against the problem and ensure that timely delivery occurred.