

Chapter V

The Selection of the IT Platform: Enterprise System Implementation in the NZ Health Board

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EXECUTIVE SUMMARY

The Health Board¹ is one of the largest public health care providers in New Zealand (NZ). In early 1999, a supply chain optimization review recommended an enterprise system (ES) implementation to provide better control and reporting of organizational finances. The focus of this case is the IT platform decision made in conjunction with the ES implementation process. This decision was thoroughly considered by all Health Board stakeholders and the final choice was made in alignment with the Board's strategic IT policy. Nevertheless, initial testing two months prior to go-live revealed major performance problems with the new system. The case documents the events that led up to the selection of the original IT platform and the challenges the project team faced in deciding what to do when the platform did not meet contractual specifications.

ORGANIZATIONAL BACKGROUND

The Health Board is a non-profit public organization that is one of New Zealand's (NZ) largest providers of public hospital and health services. The Board has approximately two million patient contacts annually and provides regional services for 30% of NZ's population. The organization is structured around seven business units that include four specialist teaching hospitals and other facilities offering community health services, mental health services, and clinical support services. The Health Board vision focuses on patients' needs. Being a non-profit organization, surplus funds are allocated to supporting patients, research, and education. Table 1 provides the organization's profile.

Health funding in NZ is disseminated through 21 district health boards (DHBs). Each DHB is responsible for improving, promoting, and protecting the health of the population it serves. For their catchment area, each DHB is delegated the responsibility for making decisions on the mix, the level, and the quality of the health services that are publicly funded. They are also responsible for entering into agreements with providers for health service delivery. DHB decisions are made on the basis of local needs, within national guidelines. Funding is based on the size and characteristics of the population of the district each DHB serves; however, a few nationally funded services still exist.

The Health Board is one of three DHBs in the same region that share a vision to promote close cooperation for the provision of health services. The Board is made up of 11 members: seven elected and four appointed. All Board members report directly to the Minister of Health.

Table 1: Organization Profile

Categories	Health Board Profile
Core business	The provision of public hospital and health services
Type of organization	Non-profit organization
Ownership	Public organization
Business units	Four specialist teaching hospitals and facilities offering community health services, mental health services, and clinical support services
Mission statement (1999-2000)	"The Health Board will provide New Zealand's finest comprehensive health service through excellence and innovation in patient care, education, research, and technology" (Health Board Annual Report, 1999-2000).
Customers	Patients (two million patient contacts annually)
Reach	Regional (within NZ)
Organization size	8,500 employees \$600 million budget for the year 2000/2001

SETTING THE STAGE

In 1999, ConsultCo, a big-five consultancy firm, was engaged to assess the strengths and weaknesses of the supply chain management function at the Health Board, with a view to provide recommendations for the improvement of that function. The product of that engagement was a supply chain optimization (SCO) review report. The SCO review identified problems in business operations and suggested a combination of an organizational restructure, business process reengineering (BPR), and ES (ERP) implementation to accomplish the change program.

The core financial modules of Oracle 10.7 ERP system had been implemented in 1997 and were operational at the time the SCO review was conducted. However, that implementation was heavily customized and could not provide for realizing the new strategic vision that aimed to “standardize, consolidate, and integrate services ... and control finances” (Strategic Plan for the Health Board 2002-2007).

In addition to the recommendation of the SCO review, in early 1999 the Health Board was informed that Oracle 10.7 financials was going to be de-supported by Oracle by the end of 2000, leading to the realization that a major application upgrade was urgently needed. As a result, and in partnership with ConsultCo, an ES business case was developed with a view to rectify these problems. The business case included eight key objectives that were linked to the Health Board’s strategic plan. These are summarized in Table 2.

Table 2: ES Project Objectives

Objective	Descriptions
1	To achieve the savings identified in the Health Board strategic business plan
2	To account for savings through an appropriate standard costing mechanism within inventory.
3	To have reporting systems that enable management by exception and the control of rogue expenditure.
4	To implement procurement through a standard requisition process with a catalogue environment.
5	To implement processes for the delegation of authority and risk management of the procurement process.
6	To have a platform in place which: <ul style="list-style-type: none"> - positions the Health Board to enter into external shared services with other local health care providers - facilitates internal interconnectivity, which allows for the consolidation of accounts payable, inventory management, internal logistics, and enables external supply chain connectivity.
7	To implement the “ Health Board Way ” throughout the supply chain process, with a particular focus on standardization of processes, integration of systems, and consolidation of service.
8	To act as a catalyst for the change in business processes and work practices.

Note: Adapted from the Health Board ERP System Business Case (June 2000, p. 25)

Despite the problems the SCO review had identified with the Oracle 10.7 system, there was an agreement that the new implementation would still be an Oracle ES. The Health Board would have had to write-off the huge investment in the Oracle 10.7 application if it chose to change to a different vendor. Therefore, the business case for the new system was written with a focus on an Oracle upgrade and implementation that was financially justifiable.

Organizational restructuring started by the end of 1999, with new job descriptions being written and advertised to fulfill the new organizational design. All new roles had a focus on system implementation experience in preparation for a re-implementation of ERP applications to support the change program. Table 3 presents a chronology of ES implementation events.

The final business case the Board considered in July 2000 compared two upgrade alternatives. These were an upgrade from Oracle 10.7 to either Oracle 11 or Oracle 11i ERP applications. While Oracle 11 was in operation since 1999, Oracle 11i was a new release that was launched in NZ in June 2000. The Health Board chose the upgrade to the Web-enabled Oracle 11i application to avoid the need to undergo a further upgrade a short time later. A profile of the ES implementation project is included in Table 4.

CASE DESCRIPTION

It is October 2000. James Keen, the chief financial officer (CFO) of the Health Board and the business sponsor of the ES project, is faced with a difficult decision. The

Table 3: Main ES Implementation Events (1997-2000)

Date	Event(s)
1997	- Implementation of the heavily customized financial modules of Oracle 10.7 ES.
Early 1999	- Oracle users were informed that the Oracle 10.7 ES would be de-supported by the end of 2000. An upgrade was suggested to address the loss of future support.
Mid-1999	- The newly appointed CFO recruited a BPR Manager to project manage and review both the supply chain and the finance functions in partnership with ConsultCo, a big-five consultancy firm. The output of that partnership was the supply chain optimization (SCO) review.
End of 1999	- The ES business case was developed to resolve the majority of the SCO review recommendations, including a major system upgrade, with the CFO being the ES project sponsor.
March 2000	- In conjunction with the initiation of the ES project, new organizational roles were established, advertised, and filled by March 2000. All new recruits received training on the Oracle 10.7 applications.
March-May 2000	- A request for proposals for implementation consultancy services was issued. Bids were received and evaluated, with the winning bid going to ConsultCo.
June 2000	- The new version of the Internet-enabled Oracle 11i application was released.
July 2000	- The ES business case was submitted to the Board and approved.
August 2000	- The ES implementation project started, including core financials, fixed assets, and procurement modules.

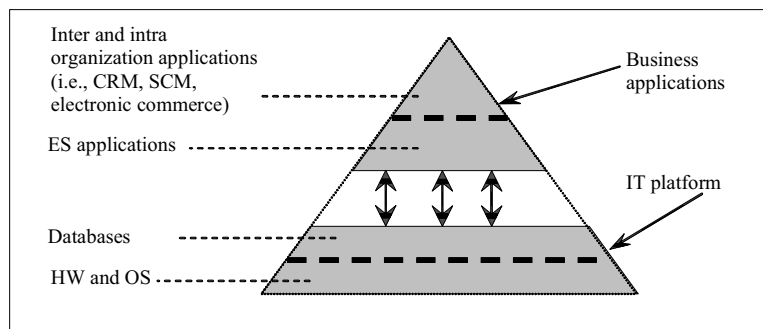
Table 4: ES Project Summary

Categories	Descriptions
ES product name & version	Oracle 11i
ES core modules	Financials (upgrade), fixed assets (new implementation), and procurement (new implementation)
Number of users	8,500 users, including 120 power users
Cost of implementation in dollars	Approximately NZ\$2.3 million that included NZ\$1.7 million for hardware, software, consultancy, and internal costs; plus NZ\$650,000 for operational costs, including backfill and change management.
Number of locations	One instance implementation on multiple sites (seven business units on two geographically distributed sites).
Implementation management/consultancy	Third-party implementer: ConsultCo , a big-five consultancy firm.

implementation of the Oracle 11i ERP system is scheduled to go live in mid-December. However, initial testing shows that there are some key performance problems with the system. In a meeting with the project team earlier that day, James was told that software testing on PCs that use the Windows NT platform showed substantial delays in data processing. Even worse, the tests were carried out using mockup data and the expectation was that these would be fairly manageable by the system.

James remembers that the IT platform issue was one of the issues the ES project team had spent considerable time on during the evaluation phase. The IT platform is the foundation for all business applications; hence it is key to any successful IS implementation. As shown in Figure 1, the base of the IT platform is the hardware (HW) and operating system (OS) layer. Although the components in this base layer are largely commodities and are readily available in the marketplace (Broadbent & Weill, 1997), the

Figure 1: Business Applications & the IT Platform



Note: Adapted from Broadbent and Weill (1997)

hardware and software architecture form the basis for the IT capability and functionality of the firm (Meyers & Oberndorf, 2001).

When purchasing any new, large application the organization must consider a number of criteria for a suitable IT platform. One obvious factor is the vendor's choice of platforms. For example, if a Linux-based version of the application is unavailable, then Linux is not an option. A second factor is the cost of the operating system and the hardware. For example, initial investment in Windows is generally considered to be a high-cost option, while Unix and Linux cost less (NetNation Communications, 2003). However, organizations must also look beyond acquisition costs to total cost of ownership (TCO), which also includes operations and control costs. TCO can be as much as 100% more than hardware acquisition costs (David, Schuff, & Louis, 2002). A third factor is any hardware/software standard configuration policy in place, usually to solve operational problems (McNurlin & Sprague, 2002). Because of existing staff expertise, the need to integrate applications across a uniform platform, or attempts to reduce TCO, an IT department may prefer or require a standard IT platform for all applications. Other factors such as ease-of-use, portability, processing capability, track record, reliability, and scalability also influence the IT platform choice. See Table 5 for a more detailed comparison of the Windows NT and Unix operating systems platforms.

These general factors apply to enterprise systems implementations. TCO is a critically important component in determining the business value of an ERP initiative (Meta Group, 2000). Additionally, a new ES implementation or upgrade requires knowledge and expertise in areas of software functionality, systems configuration and integration and other technical aspects of the IT platform (Ng, 2001). Other factors that are part of an IT platform decision for ES implementation include vendor customer

Table 5: Unix vs. Windows NT

Platform features	Unix	Windows NT
Administrative support	Unix has advanced server and user management administrative functions. For example, Unix has a disk space allocation utility that can control disk space for any user.	A disk storage facility is not available with the NT platform.
Costs	Most Unix applications are free to use.	Most Microsoft's applications are proprietary; therefore companies pay for using them. Furthermore, compared with other hosting platforms, Windows often require more staff resources to maintain. Hence, the Windows total cost of ownership is relatively high.
Interface/Ease of use	Unix is text-based and uses a command line structure.	Windows uses a graphical user interface (GUI) and is the operating system of choice for many new users, with a reputation for ease of use and administration.
Portability	Unix is an open source platform; therefore, there is a wide variety of CGI scripts, PHP scripts, and MySQL applications that will work on nearly any Unix system. However, writing an application with a Shell script or Perl in a Unix environment needs a lot of programming experience. Also, not designed for Windows, many of these scripts will not work on a Windows platform. Unix is portable to numerous hardware platforms. However, different vendors of Unix have released different versions. As a result, an application loses its portability if it is not running on all versions.	The Windows platform is compatible with Microsoft applications, such as FrontPage, Access and MS SQL. It also offers the use of programming environments such as Active Server Pages (ASP), Visual Basic Scripts, MS Index Server and ColdFusion. These server-scripting technologies are now becoming more popular because they are easy to use.
Processing capability	Unix is a multi-user, multitasking operating system that is text-based. As a result it can dedicate the full power of the server to applications. Hence, its powerful multiprocessing capabilities are still unparalleled.	The Windows NT platform is a multi-user and multitasking operating system.
Track record, reliability, and scalability	Unix has been in a state of constant refinement since its inception 30 years ago. The platform has a proven track record of performance, stability, and security. Furthermore, Unix can be used over networks that range in size from small servers to supercomputers.	Windows NT was a relatively new platform. Currently, the Windows 2000 Server is the newer hosting platform that completely replaced Windows NT.

Adapted from Alexander (2004), BroadSpire (2003), and NetNation Communications (2003)

support, lease versus buy options, and the working relationship, good or bad, that the IT vendor has with the organization (Hirt & Swanson, 1999).

Many of these criteria for the IT platform decision were considered by the NZ Health Board ES project team. Vendor1 had proposed an IT platform consisting of Sun computers using the Unix operating system. Vendor2's proposal was to support the ERP application on IBM computers running Windows NT. Michael Field, who has the conjoint role of ERP Project Director and BPR Manager, recalls how the initial IT platform decision was made:

We gave the opportunity to a number of hardware suppliers based on our statistics [that] we'd collected through the business case exercise. ... ConsultCo was helping us write the business case. Also was Oracle. ... We had already collected all of that information informally so we already had a view on what was possible and what wasn't.

Part of our strategy was preferably to go down an NT operating system route. That's why we went down the hardware route that we did because it was an NT operating system...By the time it got to formally go out for RFP for the hardware, we knew what we wanted and how we would evaluate it. ... We wanted to make sure we had the right guarantees. So contract negotiations with those hardware vendors was very much written into warranty — [we had a] strong focus on warranty provisions. ... We again ended choosing objectively a hardware solution, which was based on the NT platform...

Then it was up to the hardware vendor to guarantee that the Oracle software would work on their hardware. That was a large part of the negotiations because we knew we were going into a risky environment and that was the only way that we could seal it because we didn't have a relationship with a prime vendor...We had to make very sure each one of the individual contracts we signed had good warranty clauses in them...

The Board's IT department had favored the Windows NT platform because it was the standard IT platform for the organization. Furthermore, two years earlier, a review of information systems at the Health Board had concluded that business operations were disadvantaged because of an inconsistent approach in managing IT. A standard configuration policy was promoted and this had a strong influence in the selection of the IT platform. Finally, there were significant price savings in adopting the Windows NT platform over the Unix alternative due to lower TCO.

An issue that complicated the evaluation of the IT platform decision was that Oracle 11i had just been released at the time the IT platform was being considered. The proposed Health Board implementation was to be the first implementation of Oracle 11i in NZ. Additionally, the only planned implementation in Australia was in a for-profit business that was relatively smaller than the Health Board. As a result the Board lacked any concrete evidence of how the application would perform under either platform.

Theoretically, the Oracle 11i set of applications could be supported by both platforms, Windows NT or Unix. Andrew Smith, the Accounts Manager for Oracle at the time had explained that "yes, both alternatives were possible," though he recommended the Unix platform. Experience in implementing ERP applications on the Unix platform showed that system performance was often more stable, especially for an implementation

the size of the Health Board. Andrew, whose role was focused on sales and managing the client-Oracle relationship, left both options open for the Health Board project team to decide.

The other party involved in the IT platform decision was ConsultCo, the big-five consultancy firm that was the ES implementation partner. Like many public organizations in NZ, the Health Board was embarking on a big ERP project, but with a considerably low implementation budget for the size of the organization. To support the fast track project, the Health Board contracted with ConsultCo to manage both the evaluation and implementation processes.

In NZ, it is common practice that the client organization determines what the new IT platform should be. Most organizations in NZ are small and medium-sized enterprises (SME), especially when compared to organizations in North America or Europe. As a result, the resources allocated to these implementations are relatively small, even though the systems involved usually have the same amount of sophistication and complexity. As one means of cutting costs, the client organization generally takes more responsibility in implementation decisions. That was the case here — the Health Board was responsible for a large portion of the implementation risk and the IT platform was one of those risks.

After considering the advice offered by the Board's IT department, the Oracle Account Manager, and ConsultCo, the Health Board ES project team selected the Windows NT platform for the implementation of Oracle 11i ERP system. Knowing the risks involved, and to mitigate these risks, they put into the agreement with Vendor2 a condition to ensure that the new system performed according to specification. If performance was not acceptable, the legal agreement allowed for the contract to be terminated. Vendor2 accepted this condition and implementation began.

Coming back into the present, James was very disturbed to learn that the performance tests during the past week had shown unacceptable delays in data processing. He realized that a revisit of the earlier evaluation decision was imminent. James knew that this could represent a major setback to the project. If this problem were to delay the go-live date, even if only by a few months, then the whole project would collapse. Any delay, he thought, would require a huge boost in the implementation cost. Specialized ERP consultants were scarce and the ConsultCo consultants working on the Health Board project were being flown into NZ from the ConsultCo office in Australia every week. To consider extending the project, even for a few weeks, would mean a large increase in costs and the Health Board did not have a large contingency fund to cover this blowout. Furthermore, as part of new government regulations, the Health Board was to start implementing a new chart of accounts in December. Plans for implementing the new chart of accounts were embedded within the new ERP system, so statutory requirements, as well as cost considerations, were at risk.

James, as the business sponsor of this project, knows he needs to move on this issue very quickly. Going over both the earlier considerations of the IT platform decision and the contractual obligations with the hardware vendor, he wondered: Could he recommend that the contract be terminated and go for the alternative path of the Unix platform? Because of the size of the contract, organization policy necessitated that such a decision needed to go to the Board members for approval. Other questions that needed a careful assessment were: What if the hardware vendor decided to go the litigation path? What

if the problems were not caused by the IT platform? What if the Board did not approve the change?

James knows that a decision needs to be made and to be made very quickly. It is one of those times when not making a decision is going to jeopardize the fate of the project anyway. He picks up his phone and schedules an urgent meeting with his project team the next day.

CURRENT CHALLENGES/PROBLEMS FACING THE ORGANIZATION

One of the main problems that affected the choice of both the OS and the hardware platform was the relationship between the release version of the ES application and the IT platform. The Health Board had chosen to implement the new release of Oracle 11i; yet, experience in implementing different combinations of OS and hardware platforms with the new release was very limited. In the following, Michael Field, the ERP Project Director/ BPR Manager), explains the implication this decision had on ES implementation:

One of the important areas in terms of a large ERP implementation is around the maturity of the software and its relationship with the operating system. This had quite a large impact on the issues which we had to manage for our project. For us, one of the biggest things in this particular implementation was the relationship of the application to an operating system. That triggered a whole lot of things for us. What we did on the project might have been different to some other ERP applications because this issue looked like it was going to have an impact on us being able to deliver the whole project on time.

When a lot of people do an implementation they bundle the whole implementation with no risk. They pass the risk onto the party implementer who supplies everything — the hardware, software, and implementation services. In our case we believed we didn't want to do that so we structured the project in a certain way and that was to get a third party to help us do the implementation. We'd buy our software from someone else and we would get the hardware from somewhere else. This in terms of managing a project of this size proved too challenging. But for us, that was the only way we could afford to do this project.

It [selection of the IT platform] had a major impact on the project. So ... [it] went up through to the steering committee, even to the Board. ... Even though we had used all the expertise from Oracle, all the expertise from the IT platform vendor in this case, plus ConsultCo's collective expertise, so-called best around the world, the decision ended up in hindsight not the right one. But at least we made a decision.

Although the initial IT platform decision was made at the project manager level, where Michael (ERP Project Director) and ConsultCo were key decision-makers, when performance deteriorated James (the CFO) stepped in in order to rescue the project. He says:

I didn't get involved in those [IT platform] decisions at all. That was driven out of the IS function working with the consultants. That's where we had major problems all around — around the hardware and the database. A decision had been taken to go down that path. As we got into the project, there were problems.

There are two different explanations to the software performance problems that caused the Board to consider a change in the IT platform decision. The Health Board attributed performance problems to the newly released Oracle 11i. Oracle, the ES vendor, attributed the problems to a combination of unrealistic expectations, limited vendor participation, and an immature implementation experience. A detailed explanation of these two views is provided next.

The Health Board based their conclusion that the Oracle 11i had not been thoroughly tested within an NT environment on their own experience, as well as the experience of others who were implementing Oracle 11i at the same time. Heated discussion in the online forum of the Oracle application user group (Hawaii Ebuzz, 2000; Songini, 2000) and a 2001 report from the Gartner Group (“Oracle calls Gartner Group biased,” 2001) affirmed this explanation that Oracle 11i was not ready to go to the market in its initial release.

The ES vendor Oracle believed that the IT infrastructure problem was exaggerated for three reasons. First, neither the vendor nor any of its representatives were actively involved in the implementation. Therefore, critical issues did not come to their attention until a problem became significant and needed immediate action.

Second, although the implications of implementing a new release had not been clearly explained by Oracle in advance, the Health Board should have had realistic expectations when they chose the new 11i release. One fact most computer professionals are aware of is that new software releases are never bug free until they are validated by users. Therefore, problems inherent in the new software release could have complicated the diagnosis of performance problems.

Third, the ConsultCo implementation team did not have prior experience in implementing the Oracle 11i applications on an NT platform and had refused several suggestions to add an Oracle person to complement their team. The Oracle Accounts Manager best summarizes those three issues in the following statement:

IT were the people that were saying that you must use an NT system in the first place because “that's our standard.” ... They were more worried about the fact that they were trying to have an NT Microsoft type strategy. ... We most assuredly suggested to them and recommended to them many times that they should go down a Unix path and they didn't listen to us there. ... We [Oracle] concluded that [ConsultCo] had little experience with NT — very little experience with NT and with Oracle. Even less, [they] certainly had no experience for putting 11i onto it. They had no experience in putting 11i into a Sun box, which is why I always felt uncomfortable that they weren't taking Oracle people [as sub contractors on to the project].

In summary, the main challenge facing James Keen is how to resolve the IT platform problem within the two months before go-live. James knows that not resolving IT platform implications in a timely manner is likely to result in a failed project. Hence, a decision

needs to be made and actioned quickly. Is it possible to work with Vendor2 to resolve these problems, assuming these were only teething problems? Or need a change of IT platform be actioned as soon as possible with implications of a cost overrun and a legal suit?

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ENDNOTE

- ¹ All organization and personal names have been disguised.