201 All IT projects are made up of components. The health of each component affects the health of the whole project. Large projects often run for more than one year, some for three to four years. They are intrinsically more complex than smaller and shorter projects.

202 Components that Ministers and MPs should be particularly aware of are:

- the links between business strategies, IT strategies and the project objectives;
- the need for a sound business case to support the project;
- the phases of a project and the links between phases;
- the party controlling each phase and controlling each area of risk (it will not always be the same party);
- the varying accuracy of project time and cost estimates throughout the project, and the certainty of business benefits being delivered;
- the impact of scope changes during the project lifecycle on project success; and
- the different types of risk associated with IT projects.

Links Between Business Strategy and IT Projects

203 In paragraphs 103-114 we outlined the links between political objectives and the purchase agreement.

204 ***The department's business strategy should document how the outcomes and outputs set out in the purchase agreement will be delivered. From that, the IT Strategy should outline the required system capability and how to achieve it.***

205 At present there is no high-level Government IT Strategy providing a technical standards framework for departments to adopt and use. Clear and agreed business and IT strategies are both necessary to provide focus and direction for projects. In particular, projects which lack sound business goals consistently fail. Technology is not an end in itself.

206 ***A department with current, clear and complete business and IT strategies is more likely to be able to develop clear and complete Requirements Specifications for new systems. It will then be able to develop a coherent business case for a specific IT project.***

DHI's business strategy had been developed in 1997 by the CE himself, just before HISTMOD was approved. The CE was aware of the Select Committee's review and had held off updating the strategy until the new directions were clarified. He had forgotten to warn the Acting CE before leaving.

The business case had linked its objectives to the 1997 business strategy. DHI chose not to develop a separate ISSP believing that the HISTMOD programme business case would cover all aspects of the Department's Information Technology requirements. Consequently, there were no technology standards in place.

Example of good linking between Government political strategy and departmental business strategy for Land Information New Zealand

The Cabinet State Sector Committee in August 1995 authorised establishment of a core department of approximately 1,000 staff to have responsibility for a number of core databases. With automation of processes and digital conversion of data, it was expected that the department would settle at around 700 staff within five years.[7]

In 1996 LINZ stated its vision to be that "We will provide world class land and seabed information services that will ensure the security of New Zealand land rights and interests…"

LINZ's goals included:

- A secure fully automated land titles system available from remote locations with an average turnaround time of 24 hours for issuing titles.
- A fully automated and digitised survey information system accessible from remote locations.[8]

Following an initial feasibility study the first version of the Survey and Titles Automation Programme was born in 1996 and then improved and modified until it was approved by Cabinet in November 1997. It became known as Land*online*.

7 *Department of Survey and Land Information: Report on Scoping Study:* Cabinet State Sector Committee, STA (95) 38.
8 *Land Information, An Introduction*, Land Information New Zealand, 24 June 1996.

The Business Case

207 The business case for large business change IT projects will generally be made having regard to the full programme of projects. The duration of the programme may be quite long – in some cases exceeding five years – and the analysis and justification need to reflect the timing of costs and benefits.

208 ***The business case should identify and reflect all significant costs and benefits. The analysis of costs should include both the direct costs of the project and any indirect costs incurred by the department itself, other departments and agencies of the Crown in adjusting their business operations, or the general public. The analysis of benefits should include any direct efficiencies and cost savings for the department itself, for other departments and agencies of the Crown, and for the general public.*** Such costs and benefits may be either quantifiable in monetary terms or qualitative but unquantifiable.

209 ***As well as reflecting the expected timing of costs and benefits, the analysis in the business case should estimate and reflect uncertainty and risk (see paragraphs 244-253)***. It is unacceptable that a business case should be prepared and approved as if uncertain contingencies and outcomes were in fact certain. Every project carries at least some risk. Those proposing and those approving a project both need to be informed about, and buy into, that risk.

210 Approval is usually given by the Cabinet for the whole business case, with funding drawn down for individual projects.

211 It is likely that only some of the projects within a programme will produce benefits, often those projects coming later in the programme.

212 Projects which update technology without introducing business changes may not appear to offer tangible benefits. These are often referred to as "Infrastructure Projects". However, such a project[9] may be an essential stepping stone to:

- establishing an environment in which modular projects are able to be introduced;
- reducing the total cost of ownership of technology; and
- reducing the business risk, or exposure to IT failure, or loss of data or system availability.[10]

9 For example, MAF Standardisation Project, 1999.
10 Year 2000 compliance projects; business continuity planning projects.

213 ***During project planning it is desirable to manage risk by specifying exit points (or "off-ramps") where the project can be terminated early while still obtaining identifiable and worthwhile benefits (if any).*** These off-ramps to terminating the project (and funding) early may be triggered by:

- significant changes in the environment which affect the project; or
- specific issues or failures to achieve milestones during the project.

214 ***Where possible, criteria for these exit points should be set in advance, included in the business plan, and monitored by the Steering Committee. Rather than extensive change to the project, it may be a lower risk to take any available benefits and terminate it.***

215 ***Organisations that have developed a project culture will also make sure a post-project review is conducted some months after the new system has been implemented.*** The lessons learned are valuable in refining and improving project standards and controls as well as enforcing their value.

216 Lessons can also usefully be shared beyond the organisation running the project. For example, in the United States a number of companies have used such reviews to construct a Project Estimate Repository of Knowledge (PERK) – a database containing detailed software processes and project and resource measurements to help planning for future projects.

217 ***The post-project review should compare actual results with the business benefits promised in the business case.***

218 A good business case includes the following features:

- the business need for the project and its anticipated benefits linked to the department's key priorities;
- a clear description of the business function(s) that the project will support or improve;
- options available to the department, including the "do nothing" option for comparison;
- a risk assessment of each option which takes into account the elements of risk described in paragraphs 262-276, preferably quantified, using a suitable tool such as a Monte Carlo technique[11] [12];

11 Vose, David; *Quantitative Risk Analysis – A Guide to Monte Carlo Simulation Modelling*, John Wiley & Sons, England, 1998.

12 *Some government bodies (e.g. NSW Government) are gradually coming to insist on risk assessments in bids* [business cases] – Grey, Stephen; *Practical Risk Assessment for Project Management*, John Wiley & Sons, England, 1985.

- a cost-benefit analysis of each option providing a net present value or similar investment analysis outcome – the results being described as a range with confidence factors for the highest, lowest and most likely outcomes;
- an analysis of the strengths and weaknesses of each option reflected against the business need, the impact to the department, its customers and (where applicable) other agencies;
- a factual description of the expected qualitative benefits;
- the internal (departmental) and external (supplier) capabilities to deliver the project, including an outline of key project managers' skills and experience;
- an analysis of the impact of implementing the recommended solution on the business, customers and other agencies;
- a clear description of the scope of the project, including –
  - functionality;
  - time scale;
  - where it will be implemented; and
  - technology (mainstream or emerging products);
- governance and monitoring structures and their reporting requirements and intervals – including (where possible) criteria for specifying exit points; and
- for the recommended option –
  - key milestone dates and descriptions of what will be delivered, including provisions for post-project review;
  - key project performance measures that will provide a baseline for project reporting; and
  - key business performance measures that will provide a baseline for departmental reporting of derived benefits once the project is complete.

HISTMOD was to be implemented in two phases – the Web front end first linked to their existing Intranet, and the knowledge base second interfaced to the existing billing system.

The business case was prepared by the IT Manager, a librarian by profession, and she sought help from her brother, an analyst programmer who had recently completed an MBA.

The business case covered four areas:

1: **Business Benefits** savings of $2.5 million a year and gradual increase in outputs of 5% a year. This was the only detail provided.

2: **IT Infrastructure** covering a lot of technical information about the proposed tools to be used, concentrating on the latest Internet and Electronic Commerce designs.

3: **Project Structures** outlining the schedule and budget for all phases of the project.

4: **NPV Analysis** showing that the new system would break even after three years.

IRD, from interview with Tony Lester and Shirley Hepburn, 19 August 1999

IRD's FIRST Programme was structured about 5 years ago to focus on business directions and linked to the IRD strategic business plan.

The Directions Customer Requirements (DCR) business case was approved by the Government, the Treasury and SSC.

It is a multi-module programme, some of which are:

- Consolidating 26 phone and counter sites into 4 call centres (initially) and finally 1 call centre in Wellington. Closing 10 smaller branches.
- Loading IR66Ns (employer's monthly PAYE lodgments) via Internet or other electronic means.
- Eliminating IR12s for all employees.
- Externalising receipt of all cash payments.

Project Phasing and Deliverables

"Modular Projects" and "Phases"

219 A large project will often be broken into chunks or ***"modules"***. When this occurs each module will be a "project" and the collection of modules a "programme". A rule of thumb for success is to break a large project into modules of between six and nine months' duration. Risks increase quickly when the duration of a module exceeds 12 months.

220 Notwithstanding this, converting large projects into modules is ineffective in reducing risks unless the dependencies between modules are minimised or eliminated. ***In short, each module should reflect a self-contained and independently justified contribution to the efficiency of business operations. The successful completion of subsequent modules should not be necessary to realise that contribution.***

221 Each module will:

- be managed as a project in its own right;
- have a defined scope (a subset of the scope of the whole programme); and
- deliver a part of the overall business benefits.

222 Regardless of size, IT projects involve a series of sequential steps. A group of steps is known as a ***"phase"*** and each phase delivers a component that is used for activities in the next phase. Examples of components are the specification, a piece of software, and a training manual.

223 Large Government projects over the last six to seven years have been additionally described as "Business Infrastructure" projects. These projects have fundamentally changed the business processes of the department and at the same time provided a new integrated hardware and operating systems environment for the whole department – usually nationally across all its branches.

224 Examples of business infrastructure projects have been:

- the IRD FIRST system to manage tax compliance;
- the LINZ Land*online* system for registration of titles and survey plan approval; and
- the INCIS system for Police document management and intelligence.

225 There are additional risks surrounding the business infrastructure component of large modular projects. It is the single largest component to implement, usually expensive, and business benefits do not usually flow directly from it.

226 A department not familiar with the massive change triggered by IT is unlikely to have the appropriate standards and disciplines in place, and may also underestimate the potential cultural impact of the project and associated costs.

Normal Project Phases

227 Figure 2 below depicts the common phasing for a project, whether it is the implementation of a purchased package or development of software.

228 ***Each phase builds on the deliverable of the prior phase, and formal project disciplines require that each phase be accepted by the business and signed off before approval is given to proceed further.***

229 In practice, once the specification is signed off and supplier selected, phases are scheduled in part consecutively and in part concurrently. This introduces risk of rework being required but is offset by the potential for quicker implementation.

230 The business requirements are to the fore in the Initiation and Analysis phases, but the technology issues take over in the Design, Build and Implement phases (unless there is strong project management encouraging consideration of the business issues).

Figure 2
Project Phases and Milestones

PHASE	Initiation	Analysis	Design	Build	Implement	Production	Review
MILESTONES	Project and budget approved.	Specification, contract signed off.	Software, hardware designed.	Application, hardware installed.	System tested. Staff trained. Processes ready.	Teething problems resolved.	Lessons for future identified.

"Go-live" date

Importance of the Specification and the Contract

The Specification

231 The specification is the written description of what is required from the new system and what the project team will create. It is primarily intended for the business audience and is the equivalent of the architect's plan for a new building on which a contract to build is made with the builder.

232 Specifications are very hard to develop precisely and completely. Some reasons for this are that:

- The business and/or IT strategy are not well defined and the business requirement, direction and benefits are not clear.
- People find it hard to visualise and communicate clearly what is required and to justify why it is important. People are describing concepts; there is nothing to see or touch.
- It is hard to prioritise requirements and be disciplined about the need for discretionary pieces of functionality.
- The process is iterative and very labour intensive of middle management.
- Because it is intensive and time consuming it is tempting to use people not vital to the department's operation on the Specification team. These people may not have the vision to rise above the detail of "how it is done now" to "how it needs to be done".

233 The deliverables for the rest of the project are based on the specification. Where all or parts of a project are delivered by supplier(s) the specification forms the basis of the contract.

The Contract

234 We noted in paragraphs 131-140 the importance of the contract as the legal description of the relationship between the department and the supplier for the delivery of all or parts of the project.

235 The "courtship" stage of the contract begins with the first request for information or a meeting between department and potential supplier. Building blocks are the formal Request for Information (RFI) and/or the Request for Proposal (RFP) which occur in the Initiation and/or Analysis phases. Detailed negotiations about the structure of the relationship and both

parties' expectations occur before selection. The "legal" stage occurs after selection and this will often identify areas that have not been well thought through. The project may have moved into the Design phase.

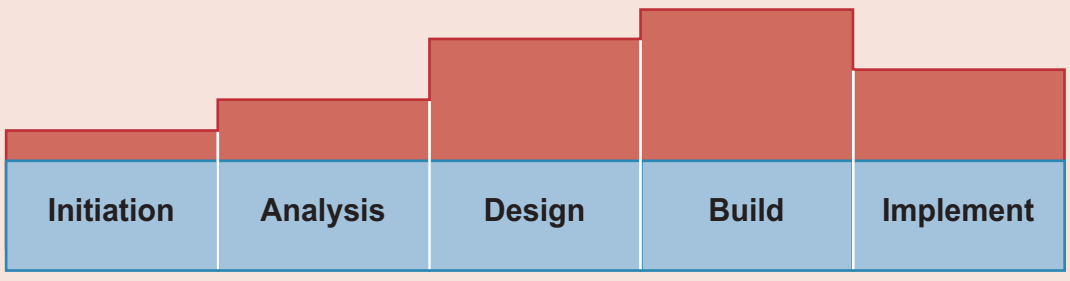
236 Prompt completion of contract negotiations is important, as it is rare to see a project put on hold until the contract is finalised and signed.

237 In the worst case it would be a race to see if the project was completed before the contract to supply was signed, although it would be an excellent test of the relationship!

238 If the contract is not signed during the Design phase at the latest, orders will have been placed for hardware, software licences, network equipment etc.; the project staff count will be growing; and the supplier will have completed many activities without making a commitment to deliver to schedule or quality. Lack of a properly developed and signed contract creates major risks, not only in cost terms, but also for quality and delivery of the project.

239 Figure 3 below depicts the lumpy nature of cost commitment for each phase, while the cumulative effect can also be envisaged.

Figure 3
Project Cost Profile



The Analysis phase ran into trouble, WebBase continued to recommend requirements based on their understanding of relational database functionality and use of the latest Web technology. The IT Manager was concerned that she was not directly involved in the specification workshops but was getting her information from a couple of friends who were. She regularly complained to the Acting CE who did not act on the complaints.

Meanwhile, the Project Manager was trying to negotiate a contract with the WebBase accountant. This also was in trouble as they did not get on and the accountant had not negotiated a contract before and was very suspicious of the Project Manager who had negotiated four contracts in the past.

DHI and WebBase had spent three months on this phase and now had quite different perceptions of the scope and duration of the project.

ASB Bank Limited, from interview with Ralph Norris, 12 August 1999

ASB has stable relationships with major suppliers but all large projects are contestable.

A major project was awarded to a supplier following tender. ASB wrote the contract and agreed and negotiated it with the supplier. The specification was also closely linked to the contract. The project was monitored by an Executive Review Committee made up of senior executives from both ASB and the supplier. This Committee met fortnightly, with operational teams also meeting regularly and reporting through to the Committee. The supplier did not deliver and, as the contract was ironclad and the specifications were clear, ASB terminated the contract and paid nothing further to the supplier.

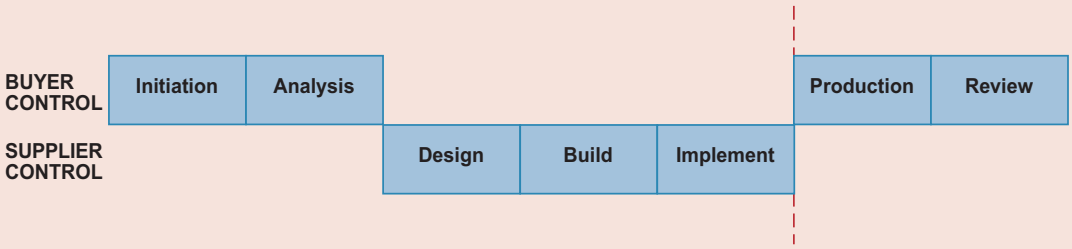
Project Phase Control

240 As the project proceeds, control of each phase swings from the department to the supplier – reflecting the work being done and the level of involvement of each party.

241 The Design, Build and Implement phases are technical, detailed and complex. As shown in Figure 4 on page 52, the department may have little direct control of the effort being expended. However, given the business risk, the department cannot afford wholly to abdicate control to the supplier and must keep itself well-informed.

242 Project phase control is also the area where many requests for changes or specification variations are raised.

Figure 4
Project Phase Control



243 The balance of control reflects the importance of having the business relationship and contracts in place, as the supplier effectively takes control for the longest and most intensive phases of the project.

WebBase convinced the Acting CE/Project Sponsor to begin the Design phase for those modules of the Requirements Specification that were complete, as the project schedule was getting behind. She agreed without checking with the independent QA (not due to visit for another month) or the SSC Monitoring group official. The Project Manager, who had resigned but was still on site at the time, advised her to finish the Specification and complete contract negotiations.

The Acting CE asked the IT Manager to take over as Project Manager until the CE returned in three months' time.

WebBase made good progress on the design of these modules (the Web front-end) as it was their core expertise. The balance of the Analysis phase dragged on quite unsatisfactorily. In the meantime, DHI handed completion of the contract to its lawyers and the contract was eventually signed before completion of the Requirements Specification.

… continued on next page.

During the Build phase, WebBase uncovered a serious defect in the security module of Web tools they were using. They logged it with the development company in Canada but received poor service. No-one else in New Zealand was using this particular product. After four weeks, WebBase obtained approval from DHI to visit Canada to expedite the problem. As this expenditure was outside the budget, the Acting CE was unwilling but could see no other option. She was very aware how dependent they were on WebBase and now conscious that DHI's lawyers had negotiated too hard on the fixed price deal.

The Acting CE was also aware that the IT Manager was not controlling WebBase well, and that the project reporting was now vague, waffling and spasmodic.

After a particularly unsatisfactory Steering Committee meeting where the Acting CE could not get clear answers from WebBase or the IT Manager about the state of the project risks, schedule or budget, she called in the Treasury Vote Manager and SSC IT Monitoring Manager.

LTSA, Drivers Licence Project, from interview with Alan Woodside and Tony West, 21 July 1999

The LTSA deliberately created a project environment that focused on the business requirements rather than the technical aspects. It maintained control throughout using the following mechanisms:

- A risk database and an issues database, jointly managed by LTSA and UNISYS.
- A mixture of permanent staff seconded to the project, contract staff, and the UNISYS team melded in together. It was a rolling team although a small core group remained with the project throughout.
- UNISYS was the prime vendor and managed the subcontractors (assuming that risk).
- Every Steering Committee meeting got many views of the project "world".
- The technology chosen was proven and met the standards set in the IS Strategy that IT must be proven, not right on the leading edge.

Estimation Uncertainty

244 The purpose of the first phase of a project, the Initiation phase, is to describe at a high level:

- the business outcomes required from the project;
- the new business processes, software functionality, data conversion requirements, and hardware platform; and
- an initial view of the project risks.

245 Based on this high-level understanding of what is required to be done, the timescale and budget for the whole project are calculated and incorporated in the business case, and, if the business case is approved, funds are appropriated. The expectations of the Minister and the Chief Executive for the time and cost to complete the project are now locked in.

246 However, estimating IT projects is an exercise in estimating uncertainty about all future project activities and system requirements. When the estimates are done initially (at the beginning of the project timeline) very little is known about the details of complexity that is involved.

247 IT professionals use two techniques to estimate uncertainty:

- mathematical models; and
- expert judgement.

248 Both techniques have strengths and weaknesses, but both need good historical data from similar completed projects to provide a realistic base. However, technology is changing so rapidly that often there is not enough historical data on which to base estimates.

249 Common problems that exacerbate the uncertainty of estimates are:

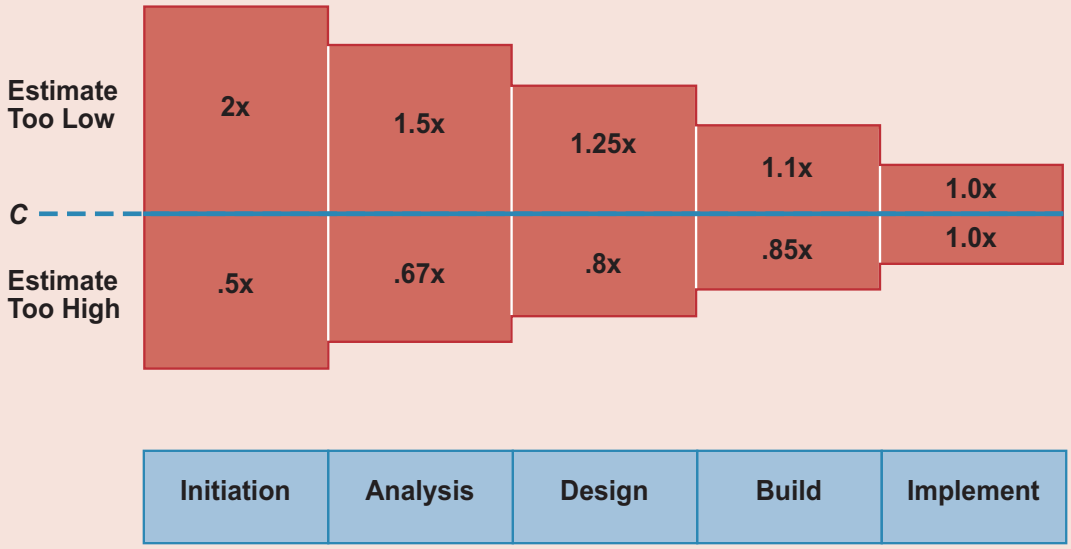
- use of new software tools, languages and changing technology;
- unclear or changing specifications;
- poor project control of the time and resource available;
- departments that do not have a track record of running projects nor a project culture; and
- lack of relevant skills for the technology being used.

250 Assuming that there is no major change to the project scope, the ability of project managers to estimate time and cost to complete the project improves through each stage as more is known about what is being created.

251 Barry W Boehm is an expert in software estimating, and in his book *Software Engineering Economics* he presents factors of uncertainty for each phase. This represents industry experience that the level of uncertainty diminishes as the project progresses through each phase.

252 We have taken some elements of his work and summarised them in Figure 5 below. This shows the difference between the projected and actual cost at each phase of the project. For example, the final actual cost could end up being between half and twice the estimate provided in the Initiation phase, or between two thirds and one and half times the estimate of final cost calculated at the Analysis phase.

Figure 5
Project Cost Estimation Accuracy for Each Phase[13]



13 Adapted from a graph in the article *Software Estimating Technology*, Richard D Stutzke, Science Applications International Corporation, published in the book by Barry W Boehm, *Software Engineering Economics*, Prentice-Hall, 1999.

253 *The best approach to managing expectations is to acknowledge the factors of uncertainty throughout by:*

- *Building in contingency for time and cost based on a range of confidence factors that quantify the risks involved.*
- *Providing Ministers with a business case that highlights the risk profile and the benefit profile through a range of costs and benefits and payback periods.*
- *Re-estimating the time and cost to complete at the beginning of each phase, adjusting the confidence factors based on the current risk profile.*
- *Putting in place reporting mechanisms that enable the Chief Executive and central agencies to monitor progress and draw down contingency when really needed.*
- *Where uncertainties are high, consideration might also be given to seeking approval for funding in stages, with future funding contingent on satisfactory completion of early phases.*

DHI finally signed off the rest of the Requirements Specification and handed it to WebBase for Design. The WebBase CE sought a one-on-one meeting with the Acting CE to advise her that the specification was considerably larger and more complex than WebBase had bid for in the RFP and their understanding of requirements when negotiating the contract.

The WebBase CE also advised the Acting CE that the job now required expertise that WebBase did not have and they would need to subcontract to a specialist resource, probably from overseas. WebBase argued this cost was outside the contract.

The Acting CE, recalling the IT Manager's earlier concerns, believed that WebBase were aware all along about these problems and, breathing a silent sigh of relief that she had already briefed SSC and the Treasury, told him that an independent review was being set up by the central agencies. At this stage WebBase could continue with the Web design but was not to begin any other work.

Land*online*

Programme estimates have moved over time:

- February 1996, $82.7 million
- April 1997, $84 million
- November 1997, $97 million
- June 1999, $144 million (15% probability) to $149 million (50% probability).

It is now in the Build phase for two modules being run concurrently.

The cost increases between 1997 and 1999 were caused by substantial differences between initial estimates and actual quotes for facilities management and data conversion costs, and building in time and cost contingencies.

Impact of Scope Change

254 The scope of a project changes for many reasons.

255 Examples of "external" reasons are:

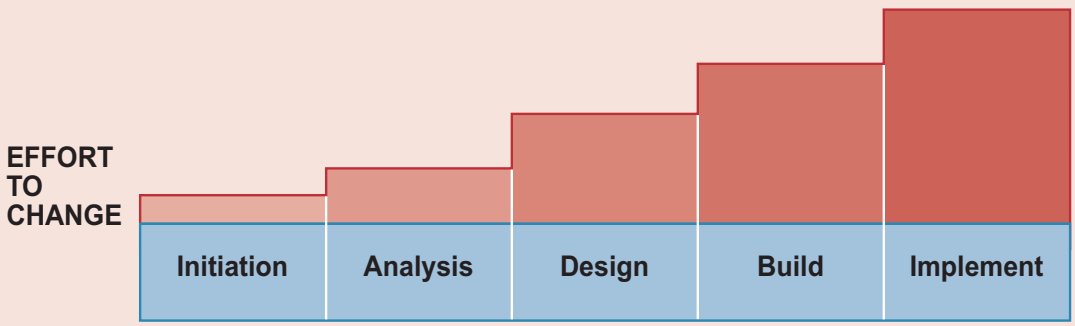
- legislative change;
- departmental restructuring; and
- changes to political direction caused by change of government or political objectives.

256 Examples of "internal" reasons are:

- clarification, and therefore expansion, of business requirements;
- change of technology platform; and
- change of design.

257 Any agreed change to the functionality will have to be incorporated into what is built. Not only will the new requirements need to be analysed, designed etc, but the impact of additional functionality will change aspects of the existing design. As Figure 6 on page 58 shows, the later the additional functionality is introduced the bigger is the impact on the schedule and budget.

Figure 6
Effort Required to Change Project Scope



258 Functionality change can be deliberate or hidden. Deliberate changes are those that are specified, costed and approved through a "Change Control" process. This will usually add to the breadth of the scope of the project, providing more than was originally asked for.

259 Hidden change occurs when the functionality delivered matches what was asked for but its quality is greater than specified. Project Managers may spot this from reports showing the software component was going through multiple iterations of development. This form of "scope creep" will occur in the Design and Build phases, where the department has least control.

260 Determining whether or not potential scope changes are being adequately addressed involves answering the following questions:

- Is there a clear and formal statement of the change request?
- Has the change request been analysed (how big, how much time, what resources)?
- Have all the stakeholders accepted and agreed to the implications of the proposed change?
- Has the project plan been modified to incorporate the proposed change?
- Have the modifications been communicated to all stakeholders?

261 Examples of control mechanisms to assist the Project Manager are:

- agreed design standards incorporated in the Specification supported by the contract;
- periodic independent quality assurance of the design and development outputs;
- good reporting procedures always consistent with the agreed specification and schedule; and
- clear escalation procedures in the contract.

SSC and the Treasury jointly set up a review of all aspects of the project covering its accountability, project management and technical design.

The consultancy chosen had good experience with Web design and knowledge bases. After reviewing the specifications of the two phases they concluded that they were inconsistent and incompatible. About 50% of the Web front end would need to be redesigned to support search engine type access to the knowledge base (the whole reason for the project). Redesign and recoding would add 6 months to the project.

The consultancy was also aware that the Social Services Committee was about to release its report on changes to the Privacy and Copyright Acts. Consequently, it was concerned that there could be major changes needed to the specifications of both modules.

LTSA, Drivers Licence Project, from interview with Alan Woodside and Tony West, 21 July 1999

The Drivers Licence project needed legislative changes before implementation. LTSA worked to a Government requirement to "go live" on 3 May 1999, acknowledging a risk that the necessary rules under the Land Transport Act 1998 would not be ready in time.

The rules were notified in the *Gazette* on 1 April 1999, less than five weeks before the system was due to go live. This was a large responsibility, which the Government managed.

However, as a result of consultation during the course of this final legislation being developed, several policy initiatives were changed, resulting in changes to business rules and system design. Had these been fully included in the "go-live" release, the 3 May deadline would not have been met. LTSA therefore put in place some manual "workarounds" for "go-live" implementation, intending to introduce more permanent modifications in due course.

Project Risk

262 In this last section of understanding projects we draw the themes together and consider projects from the perspective of the types of risk that can beset them.

263 ***The supplier(s) will have its own risk identification and management process. The most successful projects consolidate the supplier and client risk processes, sharing the identification and management of all project risks. Activities related to managing risk may be made the sole responsibility of either party, but both parties should be aware of all risks and the manner in which they are being managed.***

264 Large projects in the public sector are likely to be exposed to many types of risk. Some important types are:

- political risk;
- business risk; and
- technical risk.

Political Risk

265 Political risk is peculiar to public sector projects. The nearest we see in the private sector is either:

- public relations risk, where the company could lose shareholder confidence because of major failure in a project of the company; or
- economic risk, where a fundamental change in the economic climate affecting the viability of the project is not acknowledged by the company.

266 Political risk is external to the department, and is caused by Parliamentarians and/or the press. It is almost impossible for the department to deal with it effectively alone. ***We believe the best management strategy is regular, honest reporting to Ministers so that they are familiar with the project status. In return, the Ministers give early warnings of any political changes that could affect the project.***

267 Examples of situations included as political risk are where:

- legislation is passed affecting the scope of the project without consideration of its impact on the current project plan, with the expectation that the original business case will be maintained;

- public exposure of project problems diverts resources from dealing with the problems to reducing the fallout from the publicity; and
- short-term political imperatives may be in conflict with longer-term business and project objectives, and may trigger changes in project scope, with potential unacknowledged impacts on the project.

Business Risk

268 Business risk covers many risks, typically generated from within the department. Examples are:

- restructuring the department, with direct impact on the project scope and business benefits;
- change of Project Sponsor or Chief Executive, and consequent change in commitment to the project;
- changes in key project staff, with the change of Project Manager the most critical;
- lack of capability of suppliers (more often the smaller suppliers) to resource projects over a long duration; and
- failure to specify requirements clearly or with a focus on the business needs exposes the department to major scope change.

269 ***For each risk there will be separate mechanisms to manage it. However, the over-riding control is to develop and maintain a strong disciplined project culture.***

Technical Risk

270 Technical risk usually occurs when the reality of a system component does not meet the expectation set out during the Design phase. It can occur for many reasons, for example:

- the supplier withdraws support for a major component;
- the system specification was based on the functionality of a component that did not perform as expected (which can apply to hardware, packaged software or the features of the software language being used);
- functionality can be developed as specified but the time or expertise needed was underestimated; and

- resource or expertise for particular technical components cannot be obtained easily.

271 Management strategies are again variable but often involve:

- selecting proven components;
- including a technical substitution clause in the contract; and
- allowing a specific contingency for problems.

Risk of Disclosing Risk

272 One of the more frustrating aspects of risk is the predilection of project team members to understate risks and difficulties in order to protect the status and morale of a project. Those monitoring or reviewing projects are often faced with risk reporting that seems to suggest that "everything's fine", even when other project indicators do not support this position.

273 Risk management or mitigation processes can become "marketing programmes" for a project, and lose all value in the process.

274 *Risk is a very personal matter. It is the skills of individual people which give a business the capacity to operate successfully in fields which would be unduly risky for less capable teams. When you start looking into the risks facing a project you are in danger of making these skilled individuals feel that you are questioning their competence.*

There are many excuses for not joining in a risk analysis, but a large proportion can be rephrased as one or more of the following:

- *Are you saying I don't know what I am doing?*
- *It is too early to say anything useful about the estimates, we need more information.*
- *I know there are risks here but it is my job to handle them; go away.*[14]

275 Central agency officials and independent quality assurers often find that this confusion of risk identification with personal criticism of the project team members is a barrier to effectively discharging their responsibilities.

14 Grey, Stephen; *Practical Risk Assessment for Project Management*, John Wiley & Sons, England, 1985.

The consultancy recommended HISTMOD be cancelled; its risk profile was too high, and the schedule and budget needed to complete the project meant that the business case benefits would not be realised.

The consultancy highlighted the following risks:

Political Risk

The Select Committee (controlled by the ruling party) would recommend major changes to both Acts. As the legislative change would not be presented to the House until after the Election, it was unclear what form it would take. Thus the legislative framework on which HISTMOD was based may be changed, altering the specification of the system.

Business Risk

The major business risks were:

- The vision and management style of the CE and Acting CE were quite different – the change of personnel had confused the relationship between DHI and WebBase.
- Governance was poor, because of the lack of monitoring involvement from the central agencies and the Minister, and the dual role of the Acting CE.
- DHI's ability to get what it wanted from the new system was at risk because of poor project and contract management, poor work by the specification team, and the technical problems.
- The project was 35% through its schedule, and three months late, and had spent 60% of its funding. It could not be completed on time and budget. The IT Manager had approved purchase of hardware needed for the knowledge base without approval from the Acting CE.

Technical Risk

WebBase did not have the expertise to develop the knowledge base and they had specified the requirements incorrectly.

The security product defect could only be solved by substituting a different product. To do that would require additional hardware and rework of the Web software.

Political Risk

The case study of the LTSA Drivers Licence project (page 59) is also an example of political risk.

Business Risk

(DSW and WINZ, from interview with Dame Margaret Bazley, 17 August 1999.)

DSW has project standards and policies in place to ensure their projects are generally implemented successfully. As at 30 September 1998, when Income Support merged with the Employment Service to become WINZ, they were in the middle of the FOCIS Programme, which was on track. The responsibility for the FOCIS project was transferred to WINZ on 1 October 1998. As a result of this change in responsibility the project was redirected by WINZ Management with oversight from the SSC Monitoring Unit and the Treasury.

This is also an example of political risk, as the restructuring of the departments was politically driven.

Technical Risk

National Library's NDIS project foundered and the realisation of major technical risk was the core of the problem.

National Library chose to develop its own Search Engine for the Internet (similar to Alta Vista). They also chose to use an Oracle Knowledge Management database, which had not been used for such a large database before. The development team had persistent problems with the Oracle project and, after 6 months, Oracle withdrew support for it. Fortunately National Library had a technical substitution clause in the contract with the Systems Integrator CSC and this was exercised. However, because of the specification requirement to develop a search engine, the solution presented by CSC to replace the Oracle database was too costly. It was uncertain whether NDIS would be implemented in time to avoid Y2K problems as well.

National Library has recently implemented their new systems using standard library management systems.