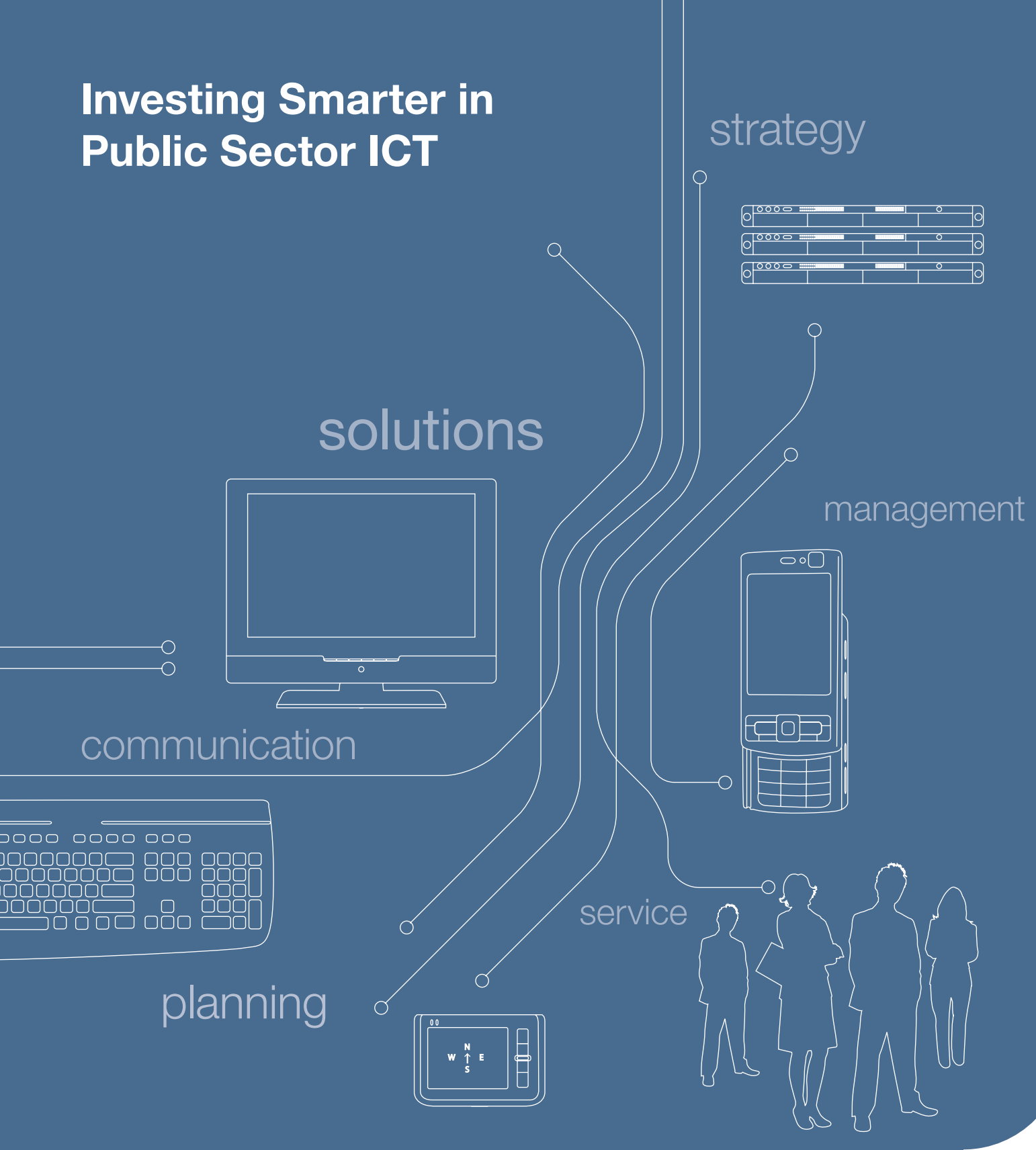
Investing Smarter in Public Sector ICT



Turning Principles into Practice

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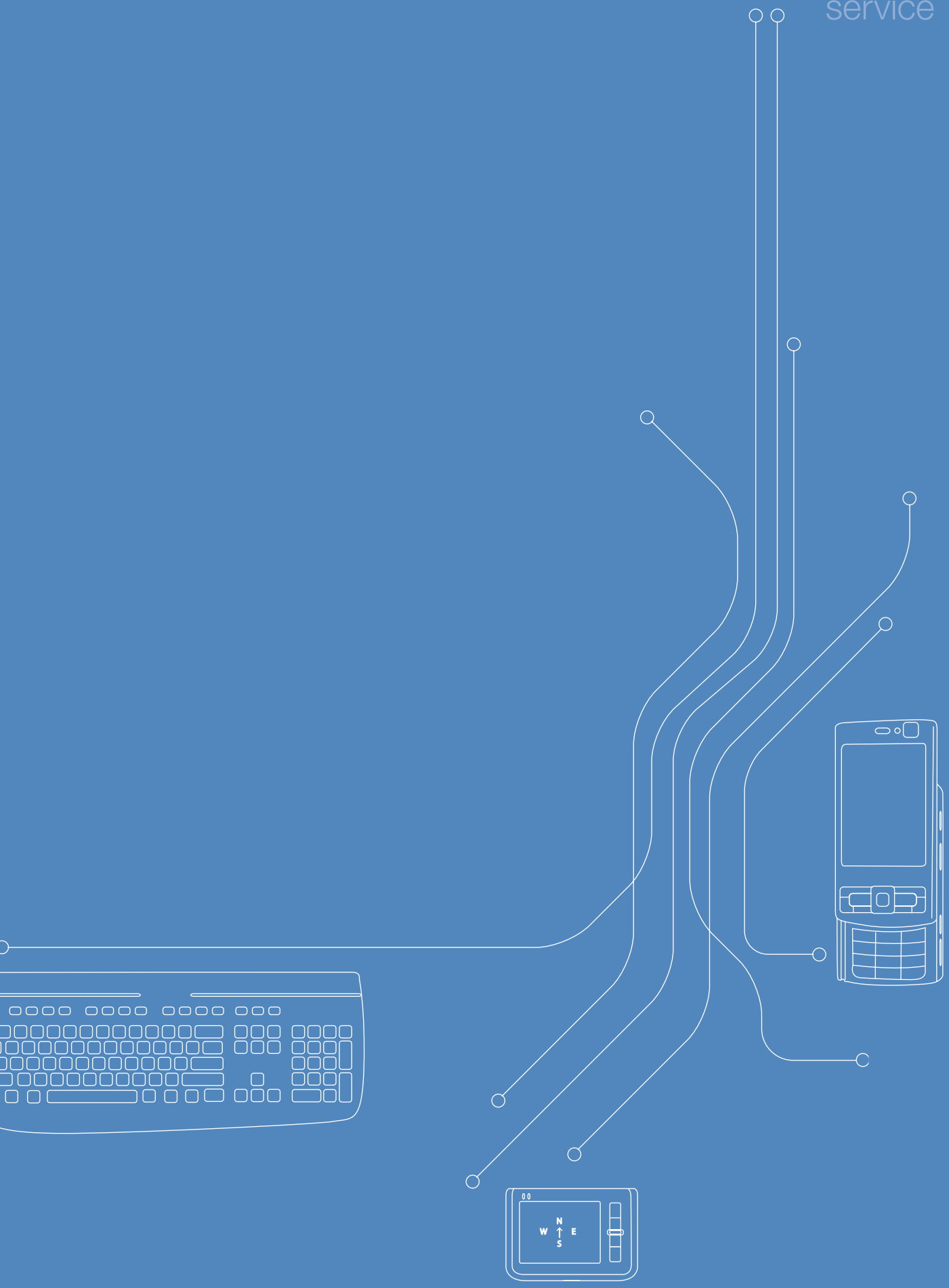

Foreword

Like most large enterprises in Australia, the Victorian public sector has steadily increased its spending on information and communication technology (ICT). Government investments in ICT generally aim to achieve more efficient administration, more coordinated operation, and more informed public participation. Despite these laudable goals, results from Victoria's public sector ICT investments have often been disappointing.

Recent ICT-focused audits carried out by my office, as well as data from the Department of Treasury and Finance's Gateway Unit, clearly indicate that agencies within the Victorian public sector sometimes begin large, expensive ICT projects without a clear understanding of goals, required resources, or risks.

Some projects are not planned carefully and others are not structured properly. These projects will undoubtedly struggle during implementation and deliver disappointing results—if indeed they deliver any benefit at all. Media exposure of poor project outcomes reflects public concern about the poor performance of taxpayers' investment in ICT failures.

This guide uses a lessons-learned approach to develop general principles that can be applied by any agency undertaking an ICT-dependent investment. These principles are structured around an ICT investment life cycle that extends from creating an initial understanding of the organisational need for an ICT investment, to carrying out a final review of the outcomes of that investment. These principles are illustrated with case studies based on my office's experience with ICT projects across the Victorian Government.

The guide is aimed at chief executive officers (CEOs) and senior responsible officers (SROs), who are accountable for projects where the technology is not always understood. All meaningful ICT projects include a degree of uncertainty and, therefore, a level of risk. However, by asking the right questions and employing the right principles, CEOs and SROs are likely to achieve better and quicker project outcomes at lower costs, which is a clear example of smarter ICT investment.

DDR PEARSON
Auditor-General
30 July 2008

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Introduction

Context

In 2007, the Victorian public sector spent over $1.5 billion[1] on new and existing information and communication technology (ICT) enabled asset investments and infrastructure.

The government funds these investments to improve service quality, deliver new types of services and enhance the efficiency and cost effectiveness of public administration in important sectors such as education, health, justice, transport and water.

> 'Organisations do not invest in projects so that they can come in on time on budget or even to meet specifications! Projects are undertaken to realise benefits.'
>
> *Raymond C Young, Improving implementation, organisational change and project management*
>
> *ANZSOG, p 36*

Fundamentally, ICT investment management is an exercise in governance. Public sector ICT investors need to get governance right. In this context they are accountable for:

- clearly defining the reason for an ICT investment
- shaping the solution that will answer that need
- overseeing the procurement and implementation of the investment
- realising benefits, including tracking the delivery of benefits throughout the investment life cycle.

> 'IT governance often gets confused with IT management and the CIO gets to be accountable for anything that has the word IT attached to it. As a consequence the business ends up being interested onlookers and expert critics, rather than accountable participants in any business process pertaining to IT.'
>
> *Christina Gillies, Improving implementation, organisational change and project management*
>
> *ANZSOG, p 23*

Challenges and issues for public sector ICT investments

Despite the promise of significant benefits from ICT investments, the reality has often been disappointing. Many government ICT investments don't meet functionality expectations, are delivered much later than scheduled, and come in well above budget.

Our recent ICT-focused audits, as well as data collected by the Department of Treasury and Finance's (DTF) Gateway Unit[2] show that many medium-to high-risk ICT projects are inadequately planned, structured, and implemented and lack any coherent measurement of benefits.

Disappointing results from ICT are not restricted to the public sector. The Standish Group has found that more than 70 per cent of all ICT projects in the private sector either fail completely or don't deliver on time, within budget, or to expected requirements (see Figure 1).

FIGURE 1: ICT PROJECT FAILURE RATES IN THE US PRIVATE SECTOR, COMPARED WITH UK AND VICTORIAN PUBLIC SECTOR GATEWAY PROJECT STATUS.

Note: Gateway uses Green / Amber / Red ratings for project status. Red is not equivalent to project failure.

Source: Standish, UK Gateway, and Victoria Gateway project status review data

[1] Sourced from Factbase, a collection based on data provided by Victorian departments to the Department of Treasury and Finance. This data includes both operational and capital expenditure.

[2] A key component of DTF's Gateway Initiative, the Gateway Review Process is an independent assurance and review process carried out at key decision points (gates) in a program or project's life cycle.

Purpose of this guide

This guide is for chief executive officers (CEOs) and senior responsible officers (SROs) involved with the governance and management of ICT investments. Its central premise is that robust governance and skilful management can play a significant role in achieving success with an ICT investment.

The better practice advice in the guide is distilled from lessons and observations drawn from 10 recent VAGO audits of ICT enabled investments (see Appendix A), aggregate data derived from DTF's gateway reviews of ICT investments, and academic and better practice literature.

Acknowledgement

The Victorian Auditor-General's Office would like to acknowledge and thank staff from the Department of Treasury and Finance, Professor Michael Vitale, chief information officers from a number of Victorian public sector agencies and Mr Peter Niblett for assistance and advice they provided during the preparation of this guide.

Structure of the guide

The structure of the guide is based on the six stages of the 'ICT investment life cycle'[3]. For each stage there is an analysis of the issues and challenges faced in public sector ICT investments, together with suggested better practice approaches and advice on avoiding project failure.

Stage 1. **Understand and explore**

Clearly understand the organisational need, explore likely approaches and articulate potential benefits.

Stage 2. **Identify and refine options**

Identify and analyse the range of approaches and options, including non-ICT options, available to satisfy the organisational need.

Stage 3. **Decide to invest**

Confirm that the proposed investment is worthwhile and of greater merit than other proposals competing for funds, and develop a procurement strategy.

Stage 4. **Procure a solution**

Confirm a procurement approach and select suppliers that offer best overall value for money, including risk reward trade-offs.

Stage 5. **Manage delivery**

Manage implementation and delivery of outputs and benefits, regularly review the ongoing need for an investment, confirm that the solution remains valid and viable, and oversight/handover of operations to realise the expected benefits.

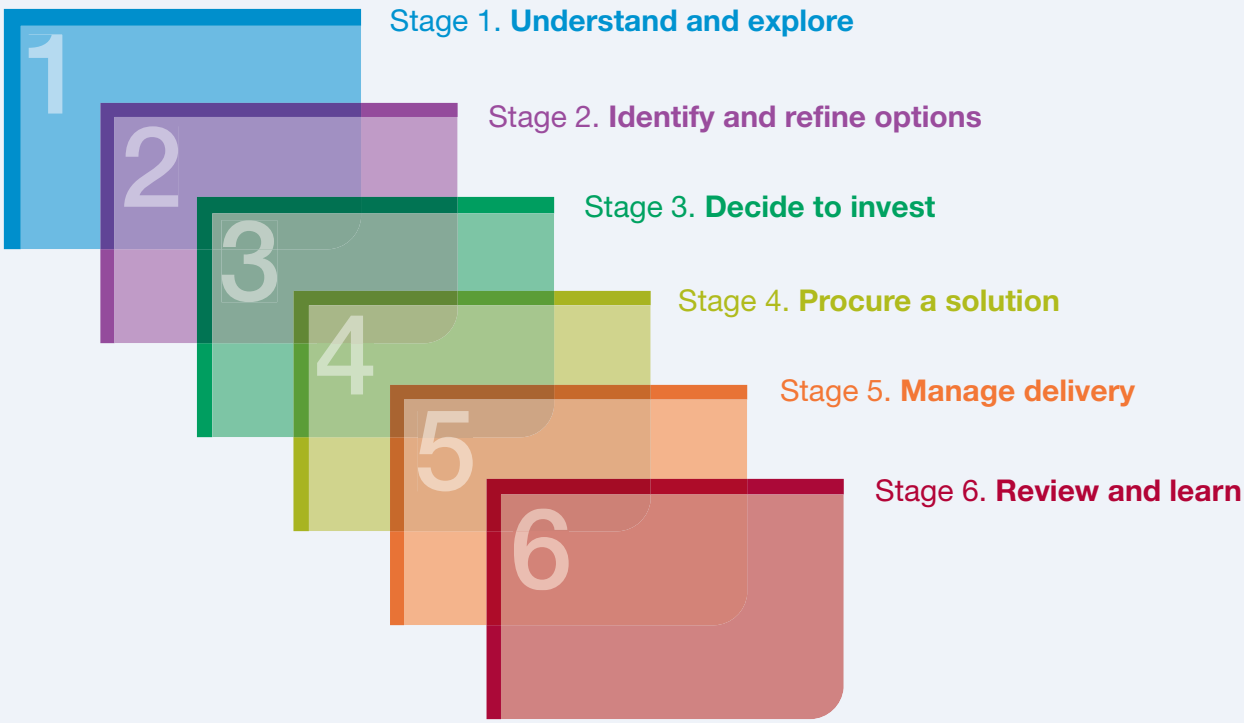
Stage 6. **Review and learn**

Review performance of the investment, assess whether it is achieving expected benefits, and capture lessons learned.

> 'Project managers and implementers can afford to declare success in the short run, but executives and investors are in it for the long haul ... In general, companies that do not deliberately set out to achieve measurable business results do not achieve them.'
>
> *Markus M.L quoted in Standards Australia, HB 280–2006 Case studies, p12.*

[3] Based on Victorian Department of Treasury and Finance Investment Life Cycle Guidelines, 2008.

FIGURE 2: THE ICT INVESTMENT LIFE CYCLE



Source: Victorian Auditor-General's Office, based on Department of Treasury and Finance Investment life cycle guidance

Stage 1

Understand and explore

Clearly understand the business need, explore likely approaches and articulate potential benefits.

Key better practice messages

- Use evidence-based analysis
- Front load time and effort in investment planning
- Get the right people involved
- Make allowance for 'optimism bias'

Overview

The goal for an ICT investment is to produce desired benefits by addressing a clear need. The investment life cycle starts with identifying the need for the investment.

Fundamentally, investors need to demonstrate that:

- the proposed investment is consistent with government policy and strategic objectives
- there is a need for the outputs that the proposed investment will produce
- the likely benefits of the investment will exceed the costs.

Use evidence-based analysis

Issues we have observed

One of the main reasons that ICT investments fail is that the basic rationale for the investment was either not understood or shared by all the parties with a stake in the outcome.

Sometimes investors themselves are unclear about what is driving the ICT investment decision or what benefits the investment can reasonably be expected to deliver.

Sometimes there is not enough communication between those who are proposing the investment and those who will have to work with it, if it goes ahead.

This situation ultimately has led to ICT investments that:

- are not linked to, or do not support, government policy objectives
- promise benefits that are unlikely to be achieved
- are not supported within the agency, or by key stakeholders
- experience cost and schedule blow-outs.

Illustration

The government approved $78 million over five years for a project based on a business case developed by the agency.

Some three years after the investment's initiation, senior management decided to confirm the validity of their investment by visiting comparable interstate and international agencies to review similar systems.

The visits confirmed that the initial estimates (of time, cost and benefits) in the original business case were significantly deficient and would require major revisions to project scope and estimated cost.

The final project funding allocation ($171 million in 2002) greatly exceeded the final estimate of benefits to the state ($100 million).

Practical steps to take

Compare with similar experiences

When building the investment case, compare the proposed investment with similar national and international experiences in the public and private sectors.

Try to identify why others have succeeded, or failed, and the lessons learned.

Get the investment 'logic' right

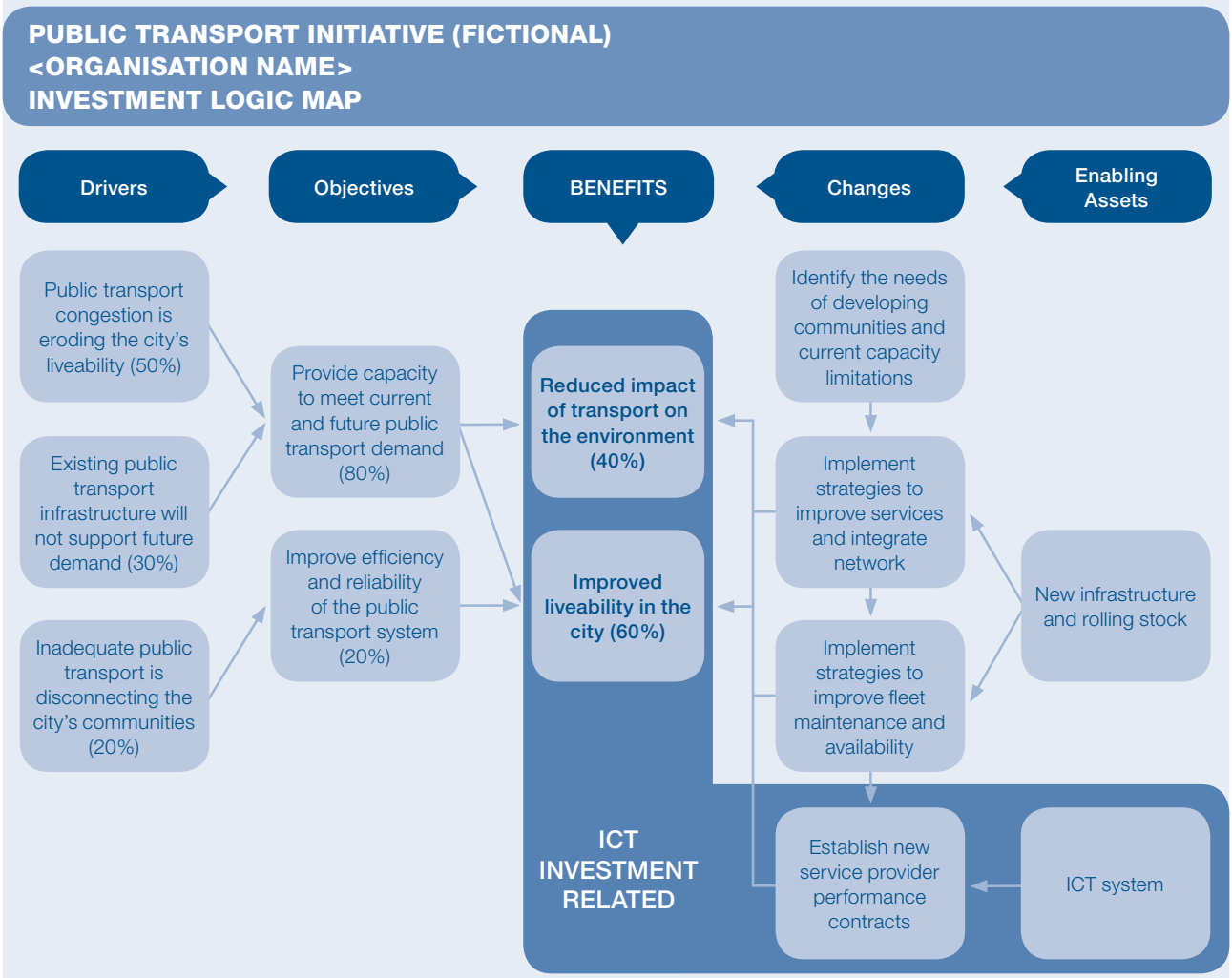
An effective way to make sure that the proposed ICT investment will address the organisation's need is to build a logic map. This visual tool can help define a logical case for the investment and provide evidence as to whether the ICT investment will benefit the agency.

An investment logic map helps to identify:

- why the investment is required
- what benefits it expects to provide
- the business changes and enablers required to deliver anticipated benefits.

Figure 3 (overleaf) shows an example of an investment logic map.

FIGURE 3: AN EXAMPLE INVESTMENT LOGIC MAP



Key Performance Indicators

Benefit 1: Reduced impact of transport on the environment (40%)

KPI 1: increased share of trips taken on public transport vs. road

Benefit 2: Improve the liveability in the city (60%)

KPI 1: Increase in the percentage of public transport services that arrive on time
KPI 2: Increase in the frequency of services

Note (percentage) indicates relative importance of drivers, objectives or benefits to this investment

Document Control

Version: 1.0
Original ILM Workshop Version
Date: 06/06/2008
Facilitator: Facilitator's name
Investor: Investor's name

Last modified
Date: 06/06/2008
By: Name

Template Version: 3.00

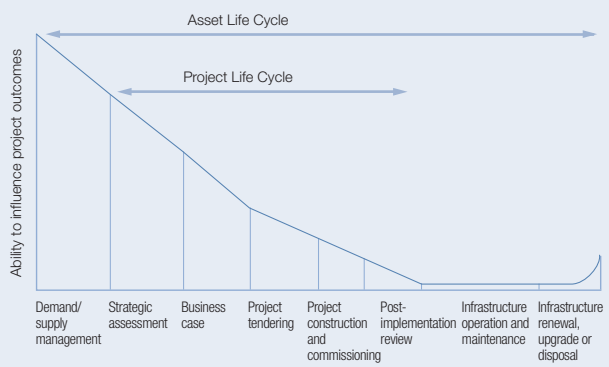
Source: Victorian Department of Treasury and Finance

Front load time and effort in investment planning

Issues we have observed

The greatest opportunity for investors to influence project outcomes and costs is in the early stages of an investment's life cycle (see Figure 4 below).

FIGURE 4: INFLUENCING PROJECT OUTCOMES BY STAGE



Source: Department of Treasury and Finance Business Case Guidelines, 2006.

Often investors do not commit enough time up-front to build a robust case for their investment, and consequently miss a 'golden' opportunity at a critical time.

Failing to commit the necessary time and effort to clearly define the logic early in the investment life cycle can lead to significant differences between planned and actual time, cost, and capability outcomes.

Cutting corners on analysis of proposed benefits and of potential implementation issues, can put successful implementation at risk 'down the track', leading to decisions being made 'on the run', occasionally resulting in inaccuracy and a lack of transparency and accountability.

Illustration

The investment's success was highly dependent on adequate ICT infrastructure being in place in partner agencies. The initial project budget made minimal provision to address infrastructure deficiencies that were evident at the program's outset.

Considerably more effort could have been put into early planning for infrastructure development.

The failure to do this contributed to implementation problems and delays that damaged the confidence of partner agency staff in the investment.

Practical steps to take

Do an early 'reality check'

Use an investment logic map and an investment concept brief to help to clarify the investment's purpose and intent, as well as to 'reality check' any early assumptions.

Make a realistic assessment of the likelihood of success, given the implementing agency's existing commitments, priorities, capabilities, and capacity.

Get the right people involved

Issues we have observed

Often important stakeholders or partners are not involved in the key investment decisions. This can result in investments being made without the support or commitment of those that have the ability to affect the success or failure of the investment.

This issue is compounded when ICT-enabled business transformation programs are 'owned' and driven by the ICT function in an agency. Experience shows that this leads to:

- poor business accountability, acceptance and sponsorship
- resourcing and prioritisation of activities focused on ICT deliverables rather than business deliverables, such as process design, governance, organisational change and training.

Illustration

The investment was undertaken without adequate consultation or understanding of the change required, resulting in little buy-in or ownership of the project from the departments, and even from some staff within the ICT unit.

The implementation of the new system resulted in significant resistance from staff and users, resulting in delays and ongoing operational issues.

Practical steps to take

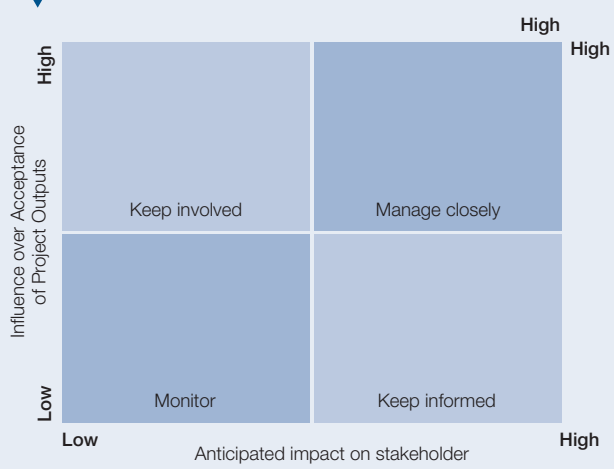
Map key stakeholders

Use a stakeholder mapping tool to identify all interested parties who could be affected by the investment.

Engaging key stakeholders is critical in investments across multiple agencies, and in large-scale change investments aimed at transforming the current way of doing business.

Without the support of key stakeholders, a proposed investment might not get the necessary resources or commitment to deliver the benefits from the investment.

FIGURE 5: EXAMPLE OF A STAKEHOLDER MAPPING TEMPLATE



Source: National E-Health Transition Authority

Engage early

Involve the people that the investment will affect, and those who have the authority to influence its acceptance, when defining the ICT investment.

If these people are not involved at this stage the proposed benefits can be perceived as lacking legitimacy or as not being able to meet the identified need.

Identify and clarify roles and responsibilities

Use a responsible, accountable, consulted and informed (RACI) matrix to describe and clarify roles and responsibilities. The tool is useful to describe:

- who should be involved
- where their involvement should be, eg, at steering group level or on the project team
- ensure that you have the right composition for your partnership or project group
- ensure everyone knows and understands the role they have within the group.

The RACI matrix can help describe the roles and responsibilities over the life of the investment. These are:

- responsible—refers to the person who has the responsibility to initiate action to ensure that decision is carried out
- accountable—refers to the person or people who can approve or veto decisions
- consulted—refers to the person or people who must be consulted or engaged in a meaningful way specifically to influence outcomes
- informed—refers to the person or people who must be informed about actions, activities or decisions but cannot influence outcomes.

Figure 6 shows an example RACI matrix.

FIGURE 6: AN EXAMPLE RACI MATRIX

Responsible for	Councillors (Member e-Champion)	Executives (Senior Responsible Owner)	Programme Managers (e-Gov Programme Manager)	Service Managers (Business Case Sponsor)	IT Managers (Project Manager)	Business Improvement Managers (Project Teams)	Business Analysts (Project Team)	Finance Managers	Procurement Managers (Project Team)
1.1 Fit with Programs, Strategies & Plans	R	A	A	R	R	R	R	C	C
1.2 Strategic Value	C	R	A	R	R	A	R	I	I
1.3 Organisation, Communications & Process	C	R	A	R	R	A	R	R	R
1.4 Strategic Business Case	I	A	R	R	R	R	R	C	C

Source: The Improvement & Development Agency (IDeA), UK, 2007

Allow for 'optimism bias'

Issues we have observed

Recent audits have identified that 'optimism bias' is a problem in ICT investment in the Victorian public sector. Investors have a tendency to:

- be over optimistic about timeframes
- overestimate the benefits to be delivered
- underestimate the costs and complexity of implementation.

Timeframe slippages or cost overruns can arise because an overly optimistic view was formed early in the investment's life about the practicalities and logistics of the implementation.

Investors succumbing to optimism bias often fail to fully assess:

- the capability of their agency or partner agencies to deliver complex projects
- the agency's ability to absorb change—including the financial viability of participating agencies
- technology or innovation risks, often arising from a solution that had neither been proven nor accepted elsewhere
- readiness and capability of the market to participate in delivering the investment.

'When pessimistic opinions are suppressed, while optimistic ones are rewarded, an organisation's ability to think critically is undermined.'

Delusions of success, How Optimism Undermines Executives' Decisions,

Harvard Business Review, 2003

Illustration

A UK study shows that ICT investments are at greater risk of optimism bias and associated cost overruns than other types of infrastructure investments.

Project type	Optimism bias (%)
Stations and terminal buildings (Non-standard buildings)	4 – 51
IT system development schemes used in transport (Equipment/development)	10 – 200

Source: Mott MacDonald, Review of Large Public Procurement, p 32

Practical steps to take

Use 'reference class modelling'

A reference class model[4] allows the investor to measure the investment's potential outcomes with those of similar, past projects—to produce more accurate predictions.

How to use reference class modelling

1. Select a set of past projects to serve as your reference class.
2. Assess the distribution of outcomes. Identify the average and extremes in the reference class project outcomes.
3. Predict your project's position in the distribution. Intuitively estimate where your project would fall in the reference class's distribution.
4. Assess your prediction's reliability. Counteract your biased prediction from step 3. Based on how well your past predictions matched actual outcomes, estimate the correlation between your intuitive prediction and the actual outcome.
5. Correct your intuitive estimate. Adjust your intuitive prediction based on your analysis.

Source: Delusions of success: How optimism undermines executives' decisions.

Harvard Business Review, 2003.

Make explicit any adjustments for optimism bias

Make explicit adjustments to cater for potential optimism bias, such as:

- increasing the estimated costs by allowing sufficient contingency
- decreasing the impact of the estimated benefits
- delaying the predicted date of delivery.

Seek independent external advice and assurance

Seek expert assurance and validation from subject matter experts early in the project life cycle. Significant investments might also require a formal Gateway Review – Gate 1 Strategic Assessment.

Further references

DTF guidance

Further Gateway information can be obtained from http://www.gatewayreview.dtf.vic.gov.au/

- Gate 1, Strategic Assessment, Gateway Initiative, Gateway Review Process.
- Investment Management Guidelines—Benefits Management Framework, April 2007.

Investment Management information can be obtained from http://www.dtf.vic.gov.au/investmentmanagement.

- Investment Management—Problem Definition 3.0 June 2008.

Life Cycle Guidance information can be obtained from http://www.lifecycleguidance.dtf.vic.gov.au

- Investment Life Cycle Guidelines—Strategic Assessment, July 2008.
- Gateway Initiative, Business Case Development Guidelines, December 2006.
- Investment Life Cycle Guidelines—Business case, July 2008.

Other guidance

- HM Treasury, Review of Large Public Procurement in the UK, report prepared by Mott MacDonald, HM Treasury, UK, 2000.
- Flyvbjerg B, Skamris Holm M, Buhl S, Underestimating Costs in Public Works Projects, APA 2002;68(3):279–295.

[4] Flyvbjerg, Bent, (2006). 'From Nobel Prize to Project Management: Getting Risks Right.' Project Management Journal, vol. 37, no. 3, pp. 5–15

Stage 2

Identify and refine options

Identify and analyse the range of approaches and options, including non-ICT options, available to satisfy the business need.

Key better practice messages

- Evaluate a wide range of options
- Consider the non-technological solution
- Consider options to collaborate or leverage off other agencies' investments
- Consider incremental development options

Overview

CEOs and SROs need to ensure that the full range of options that could satisfy the business need are identified and analysed so that they understand the relative merits and risks of each option.

Failure to fully appreciate all available options (including non-technological options) can result in unnecessarily expensive or complex solutions, or in solutions that will not properly address the business need.

Evaluate a wide range of options

Issues we have observed

Agencies often give government only two choices when proposing an ICT investment—a choice to do nothing, or a choice to invest in the (agency preferred) ICT solution.

This approach precludes consideration of a wide range of possibilities, including asset/non-asset, timing/phasing, scale, location and delivery options.

Options should not be limited to asset solutions only; policy and/or legislative changes may amend the direction, scope or urgency of the organisational need or provide a viable 'non-technological' solution.

Illustration

Due to its preference for managing the investment centrally, the agency did not investigate whether the solution could be outsourced or provided via co-sourcing.

As a result, opportunities for better design solutions or any cost savings were foregone.

Practical steps to take

Identify several different types of technology or options

Where applicable and practical, identify and analyse several different types of technology or options for sourcing that would satisfy the business need.

This analysis will show that the options presented to government are not limited to certain technologies and will demonstrate that innovative solutions have been considered.

Think about the adaptability and flexibility of the various options to meet potential future service delivery changes. For example, is the solution scalable and flexible; does it align with current and future enterprise architecture?

Consider the non-technological solution

Issues we have observed

Non-technological options are rarely considered when proposing ICT investments. This is mainly because the 'fix' being sought in the business has already been characterised as a technology (rather than business) solution.

Investors need to consider both technological and non-technological solutions to address business needs.

Likewise, technological options may also require a critical non-technological enabler (such as process change or staff re-training) to produce the desired benefits.

Illustration

Gauld and Goldfinch explain (ICT investment) failure in the public sector by four 'pathological' enthusiasms:

1. Idolisation—staff 'idolise' ICT and see it as leading to great benefits
2. Technophilia—more and better technology prevents or fixes problems
3. Lomanism—feigned or genuine belief of ICT suppliers and sales staff in their company's products
4. Managerial faddism-new management or structures bring benefits and prevent or fix problems

Dangerous Enthusiasms: E-Government, Computer Failure, and Information System Development Dunedin, New Zealand: Otago University Press, 2006.

Practical steps to take

Ask for the 'non-technological' solution to be included in any analysis

Maintain a sceptical view of the 'promise' that an ICT investment offers.

Develop a 'straw man' non-technological option to understand the generic business costs and issues that the ICT investment will face.

Consider options to collaborate or leverage other agencies' investments

Issues we have observed

Many agencies are independently investing in similar technologies (sometimes even with the same suppliers) without fully considering the benefits of collaboration.

'Joined-up' projects often have the potential to deliver greater benefit to the system as a whole, compared with multiple projects in which agencies pursue individual solutions.

Shared services arrangements can offer economies of scale and help avoid duplication by leveraging inter-agency and government-wide investments. State governments have adopted varying forms of shared service organisations to deliver cost effective, improved services.

The implementation of shared services is often challenging and requires a robust, disciplined implementation approach, as well as strong recognition of the many change management issues that will need to be addressed.

Illustration

The investment created standardised infrastructure across 10 departments with all participating departments adopting the same technical solution.

Through this approach, departments were able to optimise collective purchasing power, which eliminated the need for each agency to develop their own solution and avoid duplicated design and development costs.

This has also allowed for the possibility of further development and application across government using this common infrastructure.

Practical steps to take

Look for options to cost share or collaborate

Although 'joined-up' ICT projects are, by their nature, more difficult to complete, they should be considered as a viable option early in planning for an ICT investment.

Consider the economies of scale, and concentration of (scarce) critical technology skills that these options offer.

Consider incremental development options

Issues we have observed

Some ICT investments seem to be driven by the 'newness' of technology options, rather than an understanding of the requirements of the organisation.

An incremental improvement to existing ICT may be the best way to address a given organisational need, but is often eclipsed by the 'glamour' of a new technology solution.

These types of projects are often described as 'solutions looking for problems'.

Illustration

The agency reviewed a number of alternative solutions available in the market as a replacement for its legacy systems.

It decided that the available solutions were overly complex for its business and chose to invest in process change and a small in-house system as the best way to improve its business.

Practical steps to take

Re-design and re-use

Consider how a new business requirement could be met by the following incremental options:

- restructure or re-engineer existing business processes to achieve the desired result without any ICT investment
- re-use or adapt an application, technology or architecture already in use
- re-use a solution already in place elsewhere in government
- refine large complex projects into phased delivery ICT projects.

Further references

DTF guidance

Gateway information can be obtained from http://www.gatewayreview.dtf.vic.gov.au/

- Gate 2, Business Case, Gateway Initiative, Gateway Review Process.
- Gate 3, Readiness for Market, Gateway Initiative, Gateway Review Process.

Investment Management information can be obtained from http://www.dtf.vic.gov.au/investmentmanagement

- Investment Management—Solutions Definition 3.0 June 2008.
- Investment Management—Benefit Definition 3.0 June 2008.

Life Cycle Guidance information can be obtained from http://www.lifecycleguidance.dtf.vic.gov.au

- Investment Life Cycle Guidelines—Options Analysis, July 2008.
- Investment Life Cycle Guidelines—Business case, July 2008.

Other guidance

- Robin Gauld and Shaun Goldfinch, Dangerous Enthusiasms: E-Government, Computer Failure, and Information System Development. Dunedin, New Zealand: Otago University Press, 2006.

Stage 3

Decide to invest

Confirm that the proposed investment is worthwhile and of greater merit than other proposals competing for funds, and develop a procurement strategy.

Key better practice messages

- Build a compelling argument that is a reliable road map for the investment
- Define the business case for all partner agencies
- Identify and secure funding from partner agencies
- Understand ability to take on and execute change

Overview

The development of a business case is the final planning step for an ICT investment. A business case should include:

- a compelling argument for the investment of government funds and a demonstration of 'value for money' (i.e. the benefits outweigh the costs, and the risks are acceptable)
- an assessment of the success of the investment based on a sound appreciation of capability of any partners (such as other agencies and vendors) and available technology
- a reliable road map for implementation that will provide a baseline for governing and managing the investment.

Build a compelling argument that is a reliable road map for the investment

Issues we have observed

Our audits consistently identify poorly developed business cases as a significant cause of implementation problems and poor realisation of benefits.

Implementation issues that could have been anticipated and analysed in a business case often manifest themselves during the life of the investment, triggering a 'crisis', rather than 'planned' response to managing the investment.

Poor business cases often mean that investors are not clear about the business benefits, which almost certainly leads to poor outcomes from the ICT investment.

Illustration

Common flaws in business cases

Some of the common flaws we have observed in ICT investment business cases include:

- investment appraisals failing to demonstrate whether the program's benefits outweigh the costs
- not analysing or reviewing the capacity and capability of partner agencies to participate in and manage the effects of the significant change posed by the investment
- the failure of agencies to gather enough evidence to accurately estimate the budget, which increases the risk of cost overruns
- not validating and reviewing the capacity or capability of the market to deliver the ambitions of the proposed change
- not considering total cost of ownership up-front, leading to critical components of the investment being under-funded, which potentially puts the overall investment at risk
- not developing project timelines or milestones at the time of the funding decision, with critical dependencies and activities often being left undefined
- not holding a detailed discussion about 'key related processes' for consideration in tandem with project implementation, such as change, quality and risk management
- not identifying key project delivery risks or a management strategy for these risks
- not supplying evidence of a commitment to re-examine and re-affirm the project objectives and the scope at each significant milestone throughout the project implementation/development process

Practical steps to take

Be comprehensive and use evidence

A comprehensive, evidence-based business case contains:

- information to enable a fully informed decision to be made on whether funding (or other resources) should be provided, or whether the proposal should proceed
- a reliable estimate of expenditure implementation schedules and benefits to be received
- an understanding of the total cost of ownership across the investment's life
- empirical data (e.g. data from past projects or similar projects elsewhere), have been adjusted for the unique characteristics of the current environment/project. When such information is not available and the project is worth doing, acknowledge the level of risk and build in adequate tolerances in your timelines and budgets
- clear communication of the key issues and recommendations arising from the business case to aid executive decision-making. Ensure stakeholders are aware of financial impacts, such as compressed timelines or changes to scope.

DTF's Business Case Development Guidelines provide detailed guidance on what you should include in a comprehensive business case. This guidance is available at http://www.lifecycleguidance.dtf.vic.gov.au.

Use the business case as a benchmark for progress review

Use the business case as a benchmark against which project performance can be measured to check whether key objectives and benefits are being met.

Make the business case a living document that will run for the lifetime of the investment, not just a mechanism to obtain funding. By using the business case as a tool for monitoring progress, it is possible to be more confident that the intended benefits of the investment will be realised.

Define the business case for all partner agencies

Issues we have observed

Some investments provide value for money from a whole-of-government perspective, but might not 'stack up' for all partner agencies. This can lead to situations where CEOs and SROs find themselves being required to fund an investment that will not achieve a reasonable return or benefit, when viewed from the perspective of their own agency.

This can lead to significant delays due to protracted negotiations about value, the relative contributions of partners, and the impact on individual agencies.

Investors need to explicitly recognise the business case for each participating agency and be mindful that:

- benefits may not accrue equitably for each participant but may still be of substantial value to the state as a whole
- the cost of the ICT investment may affect the financial viability of individual agencies.

Illustration

The lead agency did not develop an overall business case for the investment. Much later, the lead agency required its partner agencies to develop individual business cases as a basis for making the investment decision.

The development of the business cases by partner agencies identified that while the overall benefits for the state potentially exceeded the costs, this was not the case for individual agencies.

This led to protracted delays, while the partner and lead agencies negotiated the relative amounts of their co-contributions.

Practical steps to take

Understand the costs and benefits for all partner agencies

Take care to define costs and benefits for all partner agencies up-front and ensure that these are clearly understood.

Identify and secure funding from partner agencies

Issues we have observed

Partner agencies are often not clear about their respective levels of contribution.

This can lead to:

- investments being delayed due to a lack of available funds
- significant funds being diverted from agency's operational budgets.

Illustration

The lead agency failed to clearly communicate with its partner agencies about the costs involved in the investment.

It failed to acknowledge that viability of ongoing operations was an issue for some of the partners and that the partners were not able to fund their share of the capital or recurrent costs associated with the ICT investment.

In the end, the lead agency had to divert an additional $35 million from its own operational budget to support its partners.

Practical steps to take

Identify and secure required funding from partner agencies

Make sure that all partners in the investment are clear about the level of funding they are required to contribute, and confirm that they will have the funds available when required.

Understand ability to take on and execute change

Issues we have observed

ICT investments can involve a significant transformation or re-engineering of the business. However, investors often don't analyse their agency's readiness or capability to undertake this change. This issue can be exacerbated where multiple agencies with very different levels of ICT capabilities are involved in the same project.

A misunderstanding of the readiness or capability to change can lead to delay, particularly when multiple parties are working on a project. A careful consideration of the organisation's history with regard to change should be part of the process of building a business case.

Illustration

Delays were primarily due to an underestimation of the complexity of the project and the readiness of partner agencies, by both the vendor and the departments.

The post-implementation report revealed that the original schedule was regarded as 'uncompromising' and had minimal consideration for contingency planning and the ability of the partner agencies to implement the solution.

Specific delays were attributed to clashes with the implementation of other departmental ICT projects, project scope changes, and the need to re-work and correct flaws in the solution provided by the vendor.

Practical steps to take

Analyse all major changes required for success

Analyse and describe the major changes required for the ICT investment to succeed and assess their likely impact on the agency.

Further references

DTF guidance

Gateway information can be obtained from http://www.gatewayreview.dtf.vic.gov.au/

- Gate 3, Readiness for Market, Gateway Initiative, Gateway Review Process.

Life Cycle Guidance information can be obtained from http://www.lifecycleguidance.dtf.vic.gov.au.

- Investment Life Cycle Guidelines—Business case, July 2008.

Stage 4

Procure a solution

Confirm a procurement approach and select suppliers that offer best overall value for money (including risk and reward trade-offs).

Key better practice messages

- Become an informed buyer
- Consider a range of procurement options
- Clearly describe what needs to be procured
- Prefer proven technological solutions
- Be aware of the risks of a fixed-price contract
- Use appropriately skilled people to oversee procurement
- Ensure a transparent and fair procurement process

Overview

Understanding what the market can offer is nearly as important as understanding what you want from the market.

When a procurement process is completed effectively, the goods and services procured have a positive impact on the delivery of government programs, services and capital projects through quality resources, delivered at the right price, when needed.

When procurement is completed ineffectively, agencies are exposed to multiple risks:

- the process may be perceived as unfair or not transparent, leading to potential project delays due to protests from prospective suppliers, and a loss of confidence in government
- there may be inadequate competition, leading to reduced value for money for the government and the community
- providers of goods and services can face unnecessary costs from poorly managed processes
- the process, and the subsequent management of the purchase, can fail so completely that the goods and services are not provided at all.

Become an informed buyer

Issues we have observed

Investors should become 'informed buyers' and educate themselves about what is actually available in the market to determine whether the market is equipped to meet the required specifications.

In particular investors need to understand:

- the likelihood of the market being able to achieve the desired end result
- the willingness of the market to modify an existing product to meet a specialised service need.

Illustration

During the project's tender evaluation phase, the agency identified a number of risks associated with the contractor's proposed solution, including that the:

- proposed software was untried with the contractor's existing clients
- contractor had not previously implemented the proposed solution
- contractor had not developed the proposed software
- contractor had not previously dealt with the developers of the software code
- extent of redevelopment exceeded expectations, leading to a higher risk of timelines not being met.

Despite these concerns about the availability of a solution in the market, or of a vendor capable of delivering the solution, the agency procured the proposed solution.

Many of the risks identified in the tender evaluation eventuated, causing significant delays.

The contract was subsequently terminated and the agency incurred further delays in looking for a new vendor.

Practical steps to take

Test market understanding and responsiveness

Engage with potential suppliers as early as possible to test whether the market understands the desired outcomes from the investment and agrees that these are achievable.

Undertake a market evaluation to test market responsiveness to the requirements and the likelihood that the project will attract sufficient competitive interest.

Refer to:

- Victorian Auditor-General's Office, Public Sector Procurement: Turning Principles into Practice. This document can be obtained from http://download.audit.vic.gov.au/files/Procurement_BPG.pdf
- Project tendering guideline developed by DTF. The document can be obtained from: http://www.lifecycleguidance.dtf.vic.gov.au.

Consider a range of procurement options

Issues we have observed

ICT procurement is still mainly done through the use of traditional 'sealed bid' tendering approaches, rather than through more interactive and flexible approaches, which are designed to enhance value for money and risk/reward outcomes.

Relationship procurement approaches, such as public private partnerships (PPPs) and alliancing are emerging as innovative procurement options that should be considered as a viable choice for complex procurements, including some ICT investments.

Although these and other more innovative methods can provide a more 'commercial' approach to public sector procurement, they require greater vigilance in respect of tender planning and governance, and increased attention to probity arrangements, so that the integrity of the procurement is maintained and optimal sharing of risk is achieved.

Illustration

Only a small number of suppliers exist for a desired system worldwide and two major equipment suppliers dominate the Australian market.

Most of the systems acquired around the world involve long-term contracts for the supply of a proprietary system. Such arrangements have created technical barriers to purchasing authorities, with respect to obtaining the solution and changing equipment or suppliers during the contract period if the systems and equipment fail to operate as required.

The agency's procurement approach was designed to overcome these problems by:

- breaking the system into a number of separate components
- establishing a system where component parts were interchangeable (through the use of transparent architecture).

Rather than providing detailed specification requirements, the agency set out desired outputs and outcomes and gave the tenderers considerable flexibility in how to meet the desired outputs and outcomes.

Practical steps to take

Consider alternative procurement options

Consider using alternative procurement options, such as alliances or PPPs to better manage investment risks. More innovative procurement options can provide:

- flexibility with respect to the number of tendering stages
- flexibility with respect to the timing for closing of bids and contractual close, including retaining the option to accept further 'best and final offers' after initial 'best and final offers' have been received, and after a previously announced closing date
- multiple bidders entering detailed contractual and legal discussions with the tendering agency, in parallel with each other, thus maintaining competitive pressure
- partial acceptance of proposals, e.g. acceptance of only the design components of a tender.

Clearly describe what needs to be procured

Issues we have observed

The market tends to offer only what the purchasing agency specifies. It is, therefore, critical that agencies clearly specify their requirements when approaching potential suppliers.

A clear understanding of the functional, technical and commercial specifications of potential suppliers is crucial to a good procurement outcome, by ensuring:

- better understanding of project risks
- appropriate estimation of project costs
- a good fit with current ICT systems.

Illustration

To develop user requirements the partner agencies:

- formed internal user groups that consulted with operational staff and external technical advisers
- studied similar systems operating nationally and internationally
- appointed senior representatives to the project steering committee and the project management team, to ensure an ongoing focus on user needs.

The governing body formally endorsed the specified user requirements before approval of the request for expressions of interest and request for proposal documents, and the memorandum of understanding (which preceded the contract).

Practical steps to take

Specify solutions or outcomes, not just inputs and outputs

To encourage innovative bids and better value for money, consideration should be given to specifying desired solutions or outcomes rather than just detailed inputs or outputs.

Commission an independent check of the specification and requirements. Make sure that they reflect the needs identified in the business case, and are affordable and technically feasible.

Prefer proven technological solutions

Issues we have observed

Improvements in ICT occur at a rapid pace and vendors constantly offer newer technologies promising better solutions.

However, our audits and international research show that investments based on unproven technologies are very risky and susceptible to extensive delays, cost overruns and failure.

Illustration

The agency chose an existing and proven version of the software despite the vendor promoting and promising a new and transformational product that it was still developing.

Overseas, several government agencies had procured the promised new version of software. This new software did not materialise as scheduled, leading to significant delays, cost overruns and loss of confidence of key stakeholders in the investment.

Practical steps to take

Minimise customisation

Give preference to known rather than new technologies, and minimise customisation of standard software.

Be aware of the risks of a fixed-price contract

Issues we have observed

Fixed-price contracts are one response to the desire for certainty, transparency and probity in acquiring and using ICT resources. Such contracts can be an effective way of managing small, tightly specified projects. For larger, more complex projects; however, fixed-price contracts are often problematic.

Complex projects are not typically, (and often cannot be) completely specified in advance—the details of later stages of the project are determined by the outcomes of earlier stages. This is not necessarily an indication of weak or incomplete planning, but rather simply a recognition that knowledge will increase as the project progresses.

In this environment, using a fixed-price contract for the entire project is at best optimistic and at worst deceptive.

The result often is a project delivered with reduced functionality—for the purposes of staying within the agreed budget—or a project delivered with increased cost to provide the agreed functionality.

Illustration

The use of a fixed-price ICT contract for the design, build and rollout of the project, and provision of ongoing maintenance and support, while seen as advantageous because it identified potentially adverse cost variations, proved to be problematic.

In an environment where the business case had not been properly developed and the relevant parties were not fully informed, this led to the project scope being subject to significant ongoing change.

Ultimately these problems contributed to the cost and time overruns on the project.

Practical steps to take

'Chunk' large investments

Agencies that use fixed-price contracts for ICT projects should attempt to break the projects into small pieces and contract for each piece separately.

This will require additional time for contract negotiation and funding approval, but will increase the likelihood that the expected functionality is actually delivered at the expected cost.

Agencies that use a single fixed-price contract for a large, complex ICT project should make contingency plans for the likely outcomes of overspending and under delivery.

Use appropriately skilled people to oversee procurement

Issues we have observed

A lack of commercial acumen is often a reason for poor ICT procurement outcomes, as agencies may simply lack skills and knowledge about what is feasible and realistic.

Agencies might have staff with knowledge of the business process driving procurement; however, these staff often lack commercial skills or an understanding of the technology markets.

Illustration

Due to inexperienced staff and poor oversight, no formal acceptance criteria had been defined and no critical evaluation of the engaged contractors was conducted.

Contractors who did not have the skills to deliver the complex system were hired.

There were no steps taken to ensure that contractors understood their roles, their performance was not measured and appropriate contractual mechanisms were not implemented.

Practical steps to take

Supplement in-house expertise

Investors need to ensure that they have access to:

- staff or external consultants who are skilled in, and understand the ICT market and procurement processes
- a governance board that has commercial skills, business acumen and appropriate expertise.

Ensure a transparent and fair procurement process

Issues we have observed

Failing to ensure you have the right structure, roles and governance to oversee your procurement can lead to severe reputational damage to the agency and the investment.

Illustration

After the conclusion of the procurement process, a complaint was made by an unsuccessful tenderer alleging a number of process breaches, as well as a conflict of interest between a staff member of the agency and the successful tenderer.

A conflict of interest complaint was found to be substantiated due to the fact that an employee had inappropriate social contact with a tenderer during the bidding phase.

However, the investigation also found that agency's decision-making about tenderers was not made by any one individual and this inappropriate social contact did not have any impact on the outcome of the tender.

Practical steps to take

Pay close attention to the applicable probity requirements

Seek advice, and consult the guides and codes prepared by the Department of Treasury and Finance, the Victorian Government Purchasing Board and the State Services Authority.

Appoint probity advisers and separate probity auditors to ensure that the right advice and assurance is available.

Provide probity training for staff involved in tendering.

Further references

DTF guidance

Gateway information can be obtained from http://www.gatewayreview.dtf.vic.gov.au/

- Gate 3, Readiness for Market, Gateway Initiative, Gateway Review Process.
- Gate 4, Tender Decision, Gateway Initiative, Gateway Review Process.

Partnership Victoria information can be obtained from http://www.partnerships.vic.gov.au

- Partnerships Victoria Policy Framework, Government of Victoria, 2000.
- Partnerships Victoria Practitioners' Guide www.partnerships.vic.gov.au.

Life Cycle Guidance information can be obtained from http://www.lifecycleguidance.dtf.vic.gov.au

- Investment Life Cycle Guidelines—Project Tendering, July 2008.

Project Alliance information can be obtained from http://www.dtf.vic.gov.au/CA25713E0002EF43/pages/asset-management---project-support-project-alliancing

- Project Alliancing Practitioners' Guide, April 2006.

Other guidance

The Hidden Threat to E-Government. Avoiding large government IT failures, OECD Public Management Brief No.8. 2001.

Stage 5

Manage delivery

Manage implementation and delivery of outputs and benefits, regularly review the ongoing need for an investment, confirm that the solution remains valid and viable and oversight/ handover to operations to realise the expected benefits.

Key better practice messages

- Clarify governance and management roles
- Get the right balance right
- Get consensus on multi-agency projects
- Build early warning systems
- Actively intervene in poorly performing projects
- Strengthen independent oversight on the project
- Adopt a proven project methodology
- Embed risk management
- Manage the relationship with the contractor
- Don't cut corners on quality assurance of software
- Manage the change process
- Recruit skilled staff who are capable of delivery

Overview

Good governance and sound project management are key ingredients for successful implementation of ICT investments. CEOs and SROs need to ensure there is adequate oversight of:

- changes to scope
- adherence to policies and procedures
- management of technical and financial aspects of the project.

Clarify governance and management roles

Issues we have observed

The roles and responsibilities of investment sponsors, steering committees and project managers often aren't identified and documented. Equally, often the reporting relationships and accountabilities among stakeholders are unclear.

Failure to clarify responsibilities can lead situations in which:

- there is no individual or group responsible for achieving benefits, or for the operational or financial outcomes of the project
- there is no individual or group with either the responsibility or the management authority to take remedial action, where it is apparent that the project is experiencing difficulties.

Illustration

The steering committee did not have the authority to allocate resources from the participating agencies and business groups, which caused delays and resulted in the agencies managing their implementation separately.

At several stages during the project, milestones for individual participating agencies were not achieved within the specified timelines. In some cases, action was not taken to set new timelines.

Governance of the project and coordination of participating agencies could have been improved through the participation of more senior departmental representatives on the steering committee.

Practical steps to take

Implement a governance structure at the start of the investment

Define and implement the governance structure for the project before investing.

Ensure the responsibilities, accountability and decision-making authority of each party involved in the project are aligned and clearly defined.

In multi-agency implementations get a senior stakeholder from each agency to act as the investment's 'champion'. This provides the clearest and most useful senior link between the project and the agency.

Get the balance right

Issues we have observed

Governance bodies often lack experience and understanding of the complexity (both technical and business) and challenges involved in implementing ICT enabled investments. They can also suffer from a lack of representation by senior management.

Governance bodies can also become dominated by a single approach, or succumb to 'group think' without an external voice to challenge or test assumptions.

This can manifest itself in optimism bias about what can be achieved, poor change management, and lack of robust governance or inadequate commercial acumen.

Illustration

The governing body did not involve senior management or specialist advisers leading to a vacuum of expertise and leadership.

There was no challenge or oversight of the project manager and no risk management or reporting instituted or insisted on by the governance body.

Governance was ineffective—the final system did not meet the business need and was poorly implemented. This caused the agency to suffer severe disruption to its business and significant damage to its reputation.

Practical steps to take

Look outside your agency for skills and experience

Consider appointing independent external members in governance bodies to ensure that agency executive members are supported and constructively challenged in their role.

Get senior management buy-in

Assign project sponsorship to an appropriate senior manager, or through the creation of a steering committee representing senior management from across the agency (and its partners, if appropriate).

Get consensus on multi-agency projects

Issues we have observed

In cross government or multi-agency ICT capital development projects, there might not be consensus among the participating agencies as to how responsibility and accountability for the project should be achieved.

Designated lead agencies do not always establish a monitoring function to oversee the operation of fundamental project controls in participating agencies.

Lead agencies also do not always work in conjunction with participating agencies to ensure that:

- project budgets include the life cycle costs expected to be incurred by participating agencies
- common charts of account and accounting rules are established at each participating agency so that development and recurrent costs can be recorded consistently and accumulated to disclose the full cost of the project
- financial reports include all material expenditure incurred by all participating agencies
- project forecast 'cost-to-completion' figures are updated regularly and monitored to reconcile with the cost assumptions in the original business case.

Illustration

The lead agency did not record or monitor expenditure by partner agencies on its development and ongoing support.

Partner agencies incurred an additional $10.4 million for costs associated with the project, over and above what had been recorded by the lead agency.

The governing body overseeing the implementation did not have visibility of this additional expenditure being incurred or of the total cost associated with the system's implementation and operations.

Practical steps to take

Allocate all funds initially to the lead agency

Lead agencies must accept responsibility for the overall financial management of the project.

This necessitates that the lead agency establish a system for the financial management of the project, which will ensure a flow of financial information from participating agencies.

Set up systems to get data from participating agencies on project controls and costs

Participating agencies should also accept responsibility and accountability for any funds transferred to them.

As the responsible agency remains accountable for the final use of transferred funds, its financial management systems should be designed to produce relevant and timely information on the use of transferred funds.

Build early warning systems

Issues we have observed

Agencies aren't always aware of the true state of a challenged or failing ICT investment until it is too late to take effective remedial action. In particular we found that agencies don't always:

- analyse and report project progress
- estimate, record or track total costs as the project proceeds
- calculate or disclose variances in cost on completed work.

Illustration

Problems in obtaining project-related information from the financial and payroll systems meant that there was a two-month delay in providing senior management with project reports.

Project managers did not have timely information on the performance of completed work and could not make informed project or investment decisions.

Practical steps to take

Use 'earned value' analysis management tools

Earned value management[5] (EVM) is a project management control tool allowing visibility into technical, cost and schedule planning, performance and progress. It allows project costs incurred to date to be compared with the value of work performed at any point in time.

[5] Federal CIO Council, A framework for developing earned value management systems (EVMS) policy for information technology (IT) projects, December 5, 2005.

Actively intervene in poorly performing projects

Issues we have observed

ICT investments develop a momentum of their own once they are approved and underway.

In some projects this momentum can be dangerous and needs to be tempered with regular, independent and objective reviews, followed by positive intervention early on in the project, if required.

Often there is little or no consideration given to terminating a project, as project cancellations are seen as a sign of failure and weakness.

Organisations that are constantly trying to make the most effective use of ICT should expect that from time to time, projects will be cancelled while underway. This should not be taken as a sign of careless planning or ineffective management, but as an indication of ICT risks and the high rate of change in the public sector environment.

Active management is only effective if projects are actually cancelled, from time to time, because they are not performing.

Illustration

A report on ICT procurement encourages corporations to 'kill projects early and often' to enhance value delivery from the total ICT investment portfolio.

Source: Gartner, 'The Elusive Business Value of IT', August 2002.

Practical steps to take

Use active management

Cancel or re-scope a project as soon as it becomes apparent that it cannot be delivered satisfactorily.

Cancelling a project is never easy, but is essential if confidence in ICT staff and ICT governance is to be maintained.

Strengthen independent oversight on the project

Issues we have observed

Agencies don't always seek independent reviews of their investments. Governance and project management is strengthened by regular independent reviews during the investment's life cycle.

Often internal audit is not engaged, and Gateway Reviews are not carried out, even when government requires them. Independent reviews can help to avoid or minimise the impact of some of the problems that confront investments.

Illustration

Although the endorsement of the funding submission was conditional on the program undergoing a series of Gateway Reviews at key decision points, only one of the five reviews required in the funding approval had been conducted.

Further, there was no internal audit activity conducted or planned for the program by the department.

The governance body of the program did not seek regular independent assurance on the progress of the program and could not substantiate its assertions that the program was delivering the planned benefits.

Practical steps to take

Use external reviews to validate the progress of the investment

Investors should engage early with their agency's internal audit/review function, to seek independent reviews (including external consultants) to validate the progress of an investment.

DTF's Gateway Review Process provides a valuable external set of checkpoints for investors. The Gateway Review Process is designed to improve infrastructure and ICT project development and delivery across government.

The DTF Gateway Review Process should be tightly integrated into the scope and schedule of major ICT investments.

Adopt a proven project methodology

Issues we have observed

Projects that are 'challenged' or that have failed often have not followed a defined project management methodology, and consequently have poor project controls and documentation.

Conversely, we observe that successful projects often adhere to proven project management and system development methodologies.

Illustration

The project lacked a structured approach or project methodology. There was no evidence of:

- documentation of formal sign-off of project functionality by relevant stakeholders
- formal sign-off of key project deliverables, such as business requirements, specifications, and testing and data-conversion strategies
- risk or issue reporting or escalation.

The poor implementation of the project resulted in significant damage to the financial and professional reputation of the agency. It was only after the agency began implementing a project management framework that positive results began to be clearly seen from the project.

Practical steps to take

Use well-defined project management methodologies

Effective project management involves a number of key processes, including project sponsorship, resourcing, quality planning and management, project reporting and user involvement.

For ICT investments, consider using PRINCE2, which is a recognised and tested methodology for the management of ICT projects.

Use an appropriately skilled project manager

Appointing an appropriately skilled project manager who has the support of senior management is also fundamental to the successful implementation of a system.

The project manager should have project management skills, experience with similar systems and be familiar with the principles of systems implementation. It is desirable that the project manager already has experience with projects of the size and complexity of the proposed investment.

Embed risk management

Issues we have observed

Agencies are generally proactive in conducting an initial risk assessment of a project. The majority of projects also identify risk-mitigation strategies as part of that initial assessment and prioritise the proposed treatments of the risk.

However, as with many other areas of project documentation initiated at the beginning of a project, agencies don't always follow through to check that actions are being taken on risk-mitigation strategies or to keep their risk treatment registers current throughout the life of the project.

Illustration

The project charter, implementation plan and early project reports identified several risks, but the agency did not consider any mitigation actions.

Many of these risks eventuated during the project. Due to poor processes, unspecified timeframes, and a lack of people responsible for mitigation actions, risk treatments were not applied.

Practical steps to take

Build risk management on a sound framework

Develop a risk-management strategy and plan based on a sound framework, such as the Australian and New Zealand Standard AS/NZS 4360:2004 Risk Management (or equivalent).

The risk-management plan should give a consolidated view of the project's approach to risk management across all aspects of the project and provide guidance and a suggested approach to the escalation of issues.

Risk management should be embedded into project practice and governance arrangements by including risk as a standing agenda item for steering committee meetings.

Manage the relationship with the contractor

Issues we have observed

Contractor management requires input from a number of levels, ranging from project managers to senior management and the governance body.

Contractors have sometimes been released before completing all work to the required quality.

Illustration

Despite the fact that performance issues identified in the post-implementation testing had not been resolved, and despite the number of problems experienced by users immediately following roll-out, the project was signed-off by the project sponsor and the contractor was released from its performance guarantee.

Immediately after roll-out, users started to report problems with the performance of the system.

In another instance, software was implemented into a production environment with a number of known material defects, without the required action plans and without an undertaking from the contractor that the defects would be addressed as required.

Practical steps to take

Manage and monitor contract performance

Once a contractor is selected it is important that the contractor is managed and monitored.

The contractor should be monitored against the required specifications with any concerns identified at the earliest opportunity and raised with the contractor so that they can be effectively dealt with.

Don’t cut corners on quality assurance of software

Issues we have observed

In the rush to meet delivery deadlines, software and system testing by agencies is sometimes compromised.

In some instances this may mean that software is released before it is fit for purpose or implemented with significant manual workarounds required to compensate for the deficiencies of the software.

Illustration

Actual testing took longer than planned but the testing period could not be expanded because of the agency pressure to roll-out the upgrade.

The agency did not follow its own guidelines when accepting the software. Acceptance of, and payment for, the software occurred without the user acceptance testing exit report to demonstrate that the user acceptance testing criteria had been met.

As a result, the software went into production in a form that did not meet contractual performance standards and did not meet user and business needs.

Practical steps to take

Use comprehensive independent quality assurance

A comprehensive independent quality assurance (QA) function can play a major role in the successful delivery of project benefits.

Thorough testing and full sign-off before ‘going live’, prevents premature or inappropriately timed deployment.

A ‘go-live’ decision should only happen after extensive testing or piloting, and should ensure that either all scope items have been fully met or that clear post-implementation plans exist, which include timeframes for their achievement.

This ensures that the final delivered solution meets the required outcomes. Additionally, it can also highlight problems before going live and enable more informed decision-making about the implementation.

Manage the change process

Issues we have observed

Agencies often have an inadequate understanding of change management delivered through ICT investments.

Inadequate change management can lead to poor buy-in from users and result in significant user resistance and lack of acceptance of the software, leading to business disruption.

Illustration

The project lacked a strong and effective change management focus to ensure adequate communication, training and support. There was a general lack of communication and consultation between the project team and users during the implementation of the project.

While monthly meetings were held, insufficient information was available on progress, outstanding issues and plans for progression of the project. This was further exacerbated by the fact that the system went live without input from all relevant stakeholders.

The project experienced significant user resistance and lack of acceptance of the software, leading to business disruptions.

Practical steps to take

Get buy-in of key stakeholders ahead of the change

Get key stakeholders to buy-in ahead of the change so there is support within the agency. If this support is not obtained, key stakeholders may feel that a change is being forced on them and consequently could resist the change being delivered.

A focus on change management also ensures that the affected areas of the organisation receive adequate training, communication and support.

Users will then be prepared for a change that may significantly modify the way they perform day-to-day activities and provide a level of comfort to accept the change.

Recruit skilled staff who are capable of delivery

Issues we have observed

Very often we find that:

- key positions are assigned to inexperienced staff who lack the capabilities to deliver
- agencies have not thought through their resourcing requirements early enough and have configured establishment levels that do not provide sufficient remuneration to attract the necessary ICT staff
- much of the project management is done by contractors, and only limited knowledge is held by agency staff
- agencies do not require contractors to effectively transfer knowledge.

Illustration

Key project positions were staffed with people that lacked relevant project management or implementation experience.

Inexperienced staff could not manage the project due to its level of complexity.

An appropriately skilled internal project director and project manager were not part of the project team for three years. The investors could not, therefore, ensure that the organisation's interests and needs were being appropriately looked after.

Practical steps to take

Manage and develop human capital

Investors should develop the project's resourcing strategy as fully as possible, identifying key resources and tasks, and known skills shortages.

The resourcing strategy should:

- articulate retention approaches for key human resources, including contracted resources
- contain a recruitment plan that takes into account lead times to recruit and induct new staff
- regularly revisit assumptions to ascertain whether resources allocated to project functions are adequate, appropriately skilled and experienced
- make sure that project managers are qualified, experienced and dedicated to the project and have appropriate authority and access to resources in order to deliver
- look to transfer skills from contractors to in-house staff wherever opportunity allows.

Further references

DTF guidance

Gateway information can be obtained from http://www.gatewayreview.dtf.vic.gov.au/.

- Gate 5, Readiness for Service, Gateway Initiative, Gateway Review Process.

Investment Management information can be obtained from http://www.dtf.vic.gov.au/investmentmanagement.

- Investment Life Cycle Guidelines—Solution Implementation, July 2008.
- Investment Management—Benefit Reports 2.9 June 2008.

Other guidance

- PRINCE2 is a process-based approach for project management, providing a scaleable method for the management of all types of projects. For more information on PRINCE2 see www.ogc.gov.uk.
- The American Project Management Institute's Project Management Body of Knowledge (PMBOK) is a collection of processes and knowledge areas generally accepted as best practice within the project management discipline. See www.pmi.org.

Stage 6

Review and learn

Review performance of the investment, assess whether it is achieving expected benefits and capture lessons learned.

Key better practice messages

- Focus on benefits realisation
- Baseline the current state
- Build in benefits capture

Overview

An ICT investment can only be considered successful if it delivers its intended benefits at an acceptable cost.

Investors need to focus on business benefits and actively monitor and report progress towards realising those benefits.

Investors should make sure that:

- benefit reviews are conducted for investment 'outcomes' as well as 'outputs'
- there is a 'baseline' of the current state of business so that improvements can be assessed
- ownership, accountability and responsibility are clear enough to facilitate benefits capture and monitoring
- benefits monitoring is used to support decision-making.

Focus on benefits realisation

Issues we have observed

Agencies don't always give the same focus to the realisation of expected benefits as they do for 'hard' project measures, such as 'on time', 'on budget', and 'in production'.

The delivery of intangible benefits (such as productivity gains, morale improvement, or increased customer satisfaction) are rarely analysed or measured with a clear linkage to the ICT investment.

Sound ICT investment management requires a focus on organisational benefits and active management to ensure that benefits are realised.

Illustration

Benefits management can be challenging in the public sector, because some of the most important benefits sought can be difficult to quantify, and in particular might not be tied to an increase in revenue or a decrease in cost.

For example, an ICT system that provides improved policy advice, or one that offers the public increased opportunities to participate in government, could bring about substantial public benefit that would be difficult to measure in dollar terms.

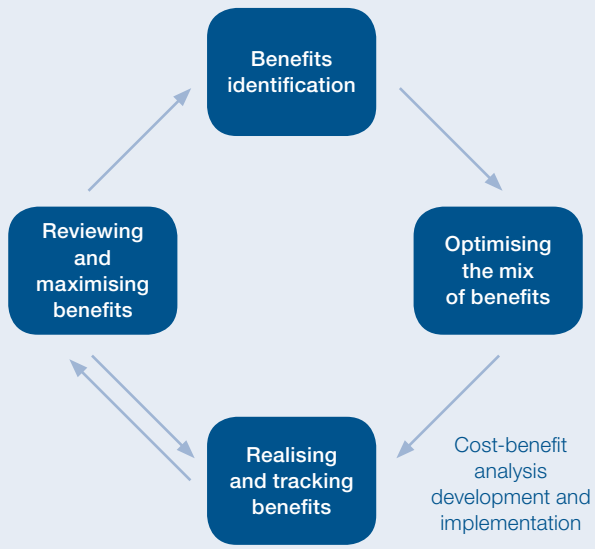
Practical steps to take

Use a defined benefits management process

A benefits management process shows that the organisational change or policy outcomes being pursued in an ICT investment have been clearly defined, are measurable, and ultimately ensures that the change or policy outcomes are actually achieved.

Figure 7 outlines a potential benefits management approach that could be adopted for ICT investments.

FIGURE 7: A CONCEPT FOR A BENEFITS MANAGEMENT SYSTEM



Source: Office of Government Commerce, UK.

Develop a benefits management plan

Use DTF's benefits management tools, and conduct a 'benefits definition workshop'.

FIGURE 8: EXAMPLE OF A BENEFITS MANAGEMENT PLAN

PUBLIC TRANSPORT INITIATIVE (FICTIONAL)
<ORGANISATION NAME>
BENEFIT MANAGEMENT PLAN

IMPROVE LIVEABILITY IN THE CITY 60%

KPI 1	KPI 2
Reliability of services	Frequency of services
Measure Increase in the percentage of public transport services that arrive on time	**Measure** Increase in the frequency of services that are provided
Baseline value 95%	**Baseline value** Services every 10 minutes
Target value for measure/s 99%	**Target value for measure/s** Services every 5 minutes
Date targets will be met 2020	**Date targets will be met** 2020

Responsibilities	
Who is responsible for meeting KPI? [Name] [Position] Private public transport operator	**Who is responsible for meeting KPI?** [Name] [Position] Private public transport operator
Who is responsible for reporting? [Name] Director of Transport Department of Transport	**Who is responsible for reporting?** [Name] Director of Transport Department of Transport

Reporting schedule	
Frequency of reporting Monthly	**Frequency of reporting** Monthly
Source of measurement data Public transport operators	**Source of measurement data** Public transport operators
Starting date for reporting 2009	**Starting date for reporting** 2009
Date reporting will end Ongoing	**Date reporting will end** Ongoing

Document control	Template version 3.0
Version:	[Add]
Last reviewed:	[Add]
Facilitator:	[Add]

Source: Department of Treasury and Finance

Baseline the current state

Issues we have observed

Benefits are not usually 'baselined'. To measure improvements resulting from benefits realisation, a 'baseline' needs to be established. This could involve analysis of existing service delivery targets, such as timeliness, quality, and cost per transaction.

Without this data, there will be no way of assessing whether any later measurements indicate an improvement or not.

Illustration

A benefits realisation plan was developed during the implementation planning stage of the project to identify potential benefits to be derived from the implementation.

The approach included interviews, a literature review, surveys, time motion studies and statistical analysis.

Benefits were classified as either 'bankable' or 'non-bankable' productivity efficiencies.

Baseline measures were completed at local level for release 1 and estimated benefits modelling for release 2 was undertaken based on information provided from the research data.

Anticipated efficiencies were derived to produce measurable and objective key performance indicators for the project.

Practical steps to take

Establish a baseline

Establish a clear baseline of each individual existing business process to which ICT-enabled change is to be applied. Without such a baseline, it is difficult to monitor the progress of your investment.

When done well, baselining can be used to build a meaningful cost/benefit model of the investment and to demonstrate tangible outcomes from the investment.

Build in benefits capture

Issues we have observed

A focus on benefits management enables those delivering and governing ICT programs to focus on business outcomes, not just the implementation of technology solutions.

Benefit reviews and post-implementation reviews also help to identify and capture lessons learned. These lessons are valuable corporate knowledge that can be used as references to support future investments.

Measuring and reporting benefits are also important accountability mechanisms, allowing investors to demonstrate that the investment was a good use of public money.

Agencies often assert that the investment has provided benefits for their business. However, frequently these investments have not been subjected to any review, measurement or reporting of the benefits actually achieved.

In multi-agency projects, monitoring benefits is usually divided among the partners and; therefore, the results are fragmented—resulting in no measurement of the complete investment and diluted accountability.

Benefits management should be built into the 'fabric' of every ICT project, along with rigourous measurement. This ensures that there is a long-term view of benefits monitoring, as some benefits may take months, if not years, to materialise.

Illustration

The agency established a benefits-capture framework early in the system's development, but it lacked a comprehensive range of performance indicators to adequately measure the benefits arising from the system's implementation.

Benefits of the implementation were not measured, tracked or reported.

The lack of systematic measurement and reporting of benefits represents a lack of accountability to ministers, stakeholders and the community, given the importance of the system and the extent of public funds invested.

Practical steps to take

Use benefits measurement tools

The benefit reports guideline is a suitable tool to be used at this stage of the project. It provides a good starting point to allow the tracking of benefits generated by the investment. It is also a tool that leverages the information used in the benefit management plan, which is created at the beginning of the investment life cycle.

The document can be found at http://www.dtf.vic.gov.au/investmentmanagement

Actively measure 'accidental benefits' and 'dis-benefits' as well as expected benefits

Be aware of unforeseen benefits. Benefits that were unforeseen at the time of the investment decision are often delivered, but may not be ultimately recognised. Inevitably, benefits tracking and reporting will uncover additional benefits from an investment.

Note that 'dis-benefits' may also need to be monitored and managed. 'Dis-benefits' are outcomes that increase the cost or time required to produce a given outcome. Often this is due to an increase in the amount of information being gathered, or to additional checks being made on the validity of information when it is entered.

If project planning and implementation have been done properly, the long-term outcome is positive—the overall benefits are worth the overall costs. However, individual organisations, or parts of organisations, might not be better off because there are 'dis-benefits' at intermediate stages of producing the overall outcome. This result needs to be identified as early as possible and dealt with honestly.

No-one likes to be told that their job is going to get more difficult or less satisfying, or that their unit is going to be under additional stress; however, if that is the case, then it is far better to acknowledge the situation than to have it come as a surprise.

Further references

DTF guidance

Gateway information can be obtained from http://www.gatewayreview.dtf.vic.gov.au/.

- Gate 6, Benefits Evaluation, Gateway Initiative, Gateway Review Process.

Investment Management information can be obtained from http://www.dtf.vic.gov.au/investmentmanagement.

- Investment Management—Benefit Reports 2.9 June 2008.

Life Cycle Guidance information can be obtained from http://www.lifecycleguidance.dtf.vic.gov.au.

- Investment Life Cycle Guidelines—Post-implementation Review, July 2008.

Appendices

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A Recent VAGO audits of ICT-dependant investments

Report title	Date tabled
Implementation of the Criminal Justice Enhancement Program (2007-08:26)	June 2008
Project Rosetta (2007-08:22)	May 2008
Delivering HealthSMART—Victoria's whole-of-health ICT strategy (2007-08:17)	April 2008
Follow-up of Selected Performance Audits Tabled in 2003 and 2004, Housing Integrated Information Program, (2007:5) pp. 74–83.	June 2007
Results of financial statement audits for agencies with other than 30 June 2004 balance dates, and other audits, Management Of The Metropolitan Mobile Radio Network Project (2005:5) pp. 75–91.	May 2005
Results of special reviews and other investigations, Implementation of the Telecommunications Purchasing and Management Strategy, (2005:4) pp. 101–117.	May 2005
Results of special reviews and other investigations, Implementation Of The Government Infrastructure Management System Project, (2005:4) pp. 139–151	May 2005
Report on Public Sector Agencies—Results of special reviews, Has the Mobile Data Network Project Been Well Managed To Date?, pp. 89–113	May 2004
Report of the Auditor-General on Parliament's Information Technology Upgrade	Sept 2003
Report on Public Sector Agencies, Implementation of RMIT University's Academic Management System, pp. 58–88	February 2003
IT Project Management: Best Practice	February 2003

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Website: <www.audit.vic.gov.au>

B Bibliography

Victorian Government Guidance

Department of Treasury and Finance <www.dtf.vic.gov.au>	Gateway Reviews and Best Practice Guidance Investment Management • Benefits Management Framework (2007) • Problem Definition (2008) Life Cycle Guidelines Material • Strategic Assessment (2008) • Business case (2008) Project Alliancing • Practitioners' Guide (2006)
Partnerships Victoria <www.partnerships.vic.gov.au>	Practitioners' Guide (2001) Policy Framework (2000)

National Government Guidance

Australia New Zealand School of Government <www.anzsog.edu.au>	Schwass M, LINZ and the development of Landonline (2006) Vitale M and Keyes-Pearce S, Sydney Water Customer Information and Billing System (2003-1.1) Vitale M, Cargo and culture: the Customs Integrated Cargo System (2007-92.1) Westaway J, Integrated National Crime Information System (2005-30.1) Improving implementation, organisational change and project management (2006)
Australian National Audit Office <www.anao.gov.au>	Public Sector Governance Volume 1 Best Practice Guide—Framework, Processes and Practices (2003)
Department of Finance and Deregulation <www.noie.gov.au>	National Office for the Information Economy, E-government Benefits Study (2003)
National E-Health Transition Authority <www.nehta.gov.au>	Standards implementation plan template (2007)

International Government Guidance

Office of Government Commerce (UK) <www.ogc.gov.uk>	Common Causes of Project Failure (2006) Managing the Benefits: An Overview (2005) Successful Delivery Pocketbook: Leading and directing successful delivery (2006) Successful Delivery Toolkit (2008) The OGC Gateway Process • A manager's checklist (2007) • Gateway to success (2004) Successful IT: Modernising Government in Action (2000)
HM Treasury (UK) <www.hm-treasury.gov.uk>	Mott MacDonald, Review of Large Public Procurement in the UK, (2000)
National Audit Office (UK) <www.nao.org.uk>	Improving IT procurement, HC 877 Session 2003-2004 (2004)
Office of Management and Budget (USA) <www.whitehouse.gov/omb/>	Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs(2005)
Federal Chief Information Officers Council (USA) <www.cio.gov>	A framework for developing earned value management systems (EVMS) policy for information technology (IT) projects (2005)

Other online sources

Standards Australia <www.standards.org .au>	Case studies—How boards and senior management have governed ICT projects to succeed (or fail) (HB280-2006)
Organisation for Economic Co-Operation and Development (OECD) <www.sourceoecd.org>	The Hidden Threat to E-Government. Avoiding large government IT failures, OECD Public Management Brief No.8. (2001) Public Governance and Territorial Development Directorate, e-Government for Better Government (2005)
The Standish Group International Inc. <www.standishgroup.com>	Extreme Chaos (2001)
Thomsett International <www.thomsettinternational.com>.	Project Pathology Causes: Patterns and symptoms of project failure (2006)

Other print sources

Gauld R and Goldfinch S, Dangerous Enthusiasms: E-Government, Computer Failure, and Information System Development, Otago University Press, New Zealand, 2006.

Lovallo D and Kahneman D, "Delusions of success: How optimism undermines executives' decisions", Harvard Business Review, 2003, vol. 81, no. 7, pp. 56–63.

Flyvbjerg B, Skamris Holm M, and Buhl L, "Underestimating Costs in Public Works Projects: Error or Lie?", Journal of the American Planning Association, 2002, vol. 68, no. 3, pp. 279–295.

C Glossary

Appraisal

The process of defining objectives, examining options and weighing up the costs, benefits, risks and uncertainties of those options before a decision is made.

Asset option

An asset option is a means of satisfying service needs with investment in existing assets or the creation of new assets.

Asset strategy

Sets the direction and communicates up-front the assumptions and decisions about levels of service and who provides them. The means by which an entity proposes to manage its assets over all phases of their life cycle to meet service delivery needs most cost-effectively.

Base case

The base case is a realistic option that involves the minimum expenditure to sustain existing standards of service delivery or to achieve previously agreed service standards. Therefore, the base case does not always mean 'do nothing'; rather it is the minimum essential expenditure option (e.g. carrying out obligatory works to meet safety and health regulations).

Benefit

An improvement in service quality, quantity, cost or risk and/or a positive financial output arising from a proposed investment project.

Benefit management plan

The benefit management plan is a document which identifies the benefits expected to be realised from a specific investment in ICT. The plan conforms to the specifications outlined in the Benefit Management Standard.

Benefit reports

A report for the investor that depicts the status of the delivery of the benefits compared to the original expectations.

Business case

A document that forms the basis of advice for executive decision-making for an asset investment. It is a documented proposal to meet a clearly established service requirement. It considers alternative solutions, and identifies assumptions, benefits, costs and risks.

Demand management

A management technique used to identify and control demand for services.

Depreciation

The allocation of the cost of an asset over the years of its useful life.

Evaluation

The process of defining objectives, examining options and weighing up the costs and benefits before a decision is made to proceed.

Financial analysis

An investment evaluation technique which is confined to the cash flow implications of alternative options and is undertaken from the perspective of the individual department or agency or government as a whole.

Gateway Review Process

A review of a procurement project carried out at critical points of project development by a team of experienced people, independent of the project team. These critical points are known as Gateways. There are six Gateways during the life cycle of a project.

ICT-dependent

ICT-dependent projects meet any of the following conditions: (a) The ICT component of the project is critical to the overall success of the investment; or (b) $5m or more of the Total Estimated Investment (TEI) is assigned to the ICT component; or (c) 50% or more of the TEI is assigned to the ICT component. Examples of ICT components include hardware purchases, software development and IT project management costs (i.e. anything that is covered by the WoVG ICT Taxonomy).

Investment

The expenditure of funds intended to result in medium to long-term service and/or financial benefits arising from the development and/or use of infrastructure or assets by either the public or private sectors. A single investment proposal may comprise of a number of related investment expenditures addressed to the same service need.

Investor

The person who has an identified business problem (or opportunity), will be responsible for making an investment decision aimed at solving the problem and will ultimately be responsible for delivering the expected benefits of that investment. This person is often referred to as the 'senior responsible owner'.

Investment concept brief

A two-page document that provides the logic underpinning an investment along with the likely costs, risks, dependencies and deliverables. Its purposes are to shape the best solution to an identified business problem and to enable the selection of competing investments before proceeding to full business case.

Investment logic map

A one-page depiction of the logic underpinning a potential investment. It diagrammatically depicts and relates the drivers, objectives and benefits for an investment and the changes necessary to deliver the identified benefits.

Investment management standard

A best practice approach applied over the life of an investment that aim to reduce the risk of investment failure, provide greater value for money and drive better outcomes.

Investment reviews

Formal scheduled periodic reviews that aim to confirm that the logic for an investment remains valid before recommitting to the investment.

Key performance indicator (KPI)

A measure that has been selected to demonstrate that a benefit expected from an investment has been delivered.

Life cycle cost

Life cycle cost is the total cost of an item or system over its full life. It includes the cost of development, production, ownership (operation, maintenance, support), and disposal, if applicable.

Non-asset option

Under this option, service capacity is met without creating additional assets. This could be done through reconfiguration of the way the services are provided, contracting out, increased use of existing or private assets, or reduction of demand through selective targeting.

Optimism bias

The demonstrated systematic tendency for appraisers to be over optimistic about key project parameters, including capital costs, operating costs, works duration and benefits delivery.

Options analysis

A process whereby a range of options (both asset and non-asset) are evaluated. The most cost-effective options are then selected for more detailed evaluation through a business case.

Partnerships Victoria

The Victorian framework for a whole-of-government approach to the provision of public infrastructure and related ancillary services through public-private partnerships. The policy focuses on whole-of-life costing and full consideration of project risks and optimal risk allocation between the public and private sectors. There is a clear approach to value for money assessment and the public interest is protected by a formal public interest test and the retention of "core" public services. Partnerships Victoria is most useful for major and complex capital projects with opportunities for innovation and risk transfer.

Project alliancing

A form of procurement where the State or another government entity collaborates with one or more service providers to share the risks and responsibilities in delivering the capital phase of a project. It seeks to provide better value for money and improved project outcomes through a more integrated approach between the public and private sectors in the delivery of infrastructure. Project alliancing should generally only be considered in the delivery of complex and high-risk infrastructure projects, where risks are unpredictable and best managed collectively.

Project life cycle

The stages of an asset life cycle between the identification of the need and the delivery and handover of an initiative.

Project management

A controlled process of initiating, planning, executing, and closing down a project. The changes required to enable the benefits of an investment to be delivered are usually defined as projects.

Proposal

An idea for a policy, program or project that is under development and appraisal.

Resources

Labour, materials and other inputs used to produce outputs.

Risk

The extent of variability in, or of exposure to loss in, the expected benefits or returns from an investment. Investment risk is related to the probability of realising fewer benefits than expected.

Risk management

The culture processes and structure that are directed towards the effective management of potential opportunities and adverse effects.

Stakeholder

Those people or entities who may affect, be affected by, or perceive themselves to be affected by, a decision or activity.

Strategic assessment

The phase of the project life cycle during which a need is translated, where justified, into a proposal where outcomes, purpose, critical success factors and the level of strategic alignment are clearly defined.

Value management

Value management is a technique that seeks to achieve optimum value for money, using a systematic review process. The essence of value management is a methodical study of all parts of the product or system to ensure that essential functional requirements are achieved at the lowest total cost. Value management examines the functions required from a product, functions actually performed, and roles of the product's components in achieving the required level of performance. Creative alternatives which will provide the desired functions better or a lower cost can also be explored.

planning strategy solutions

Key Better Practice Principles for Senior Officers lift-out

Published by the Victorian Auditor-General's Office,
Level 24, 35 Collins Street, Melbourne.
First published July 2008. Also published on
<www.audit.vic.gov.au>

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ISBN 1 921 060 816

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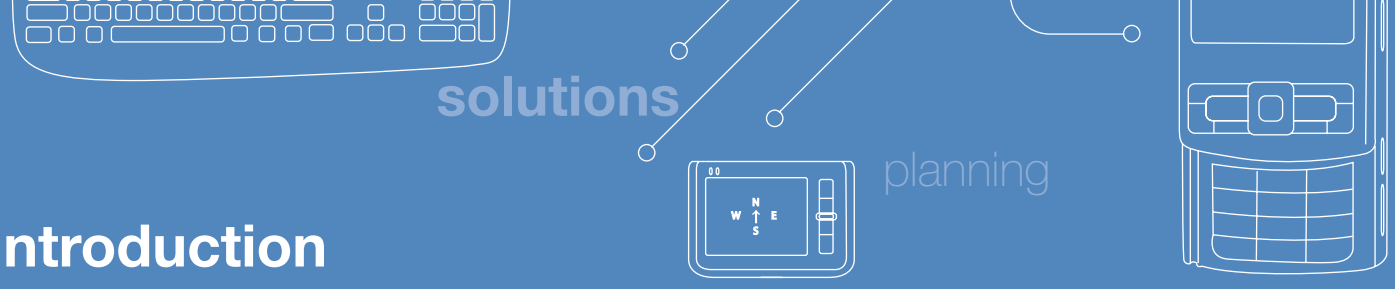

Introduction

In 2007, the Victorian public sector spent over $1.5 billion on new and existing information and communication technology (ICT) enabled asset investments and infrastructure.

The government funds these investments to improve service quality, deliver new types of services and enhance the efficiency and cost effectiveness of public administration in important sectors such as education, health, justice, transport and water.

Despite the potential benefits and returns, experience shows that ICT investments are often challenging and difficult to execute, that they do not always deliver the expected benefits, and can be time consuming and costly.

Recent VAGO audits, together with evidence from Gateway reviews and academic literature, highlight the need to improve the governance and management of ICT investments.

Active leadership plays a significant part in the success of an ICT investment. Good governance and management help ensure that the strategic and business benefits of any ICT investment are realised.

This guide and its associated checklists have been designed to assist public sector chief executive officers (CEOs) and senior responsible officers (SROs) to question and assess whether their investments are delivering their intended benefits, resulting in better business and financial value for government and the public.

The guide and checklists complement the Department of Treasury and Finance's investment lifecycle guidelines for asset investments. Practical advice is structured around the lifecycle of an ICT investment—from the definition of the business need and rationale behind the investment decision, to the delivery of the investment and the evaluation of the expected against the actual benefits.

Key points to consider

- **Investments need to be driven and controlled by the business leaders.** ICT is a business and service delivery issue, not a technical one. ICT investments must be led by senior management and not ICT experts. Active business leadership plays a significant role in the success or failure of an ICT investment and ensures that the strategic and business benefits of any ICT investment are realised.
- **Build robust logic and evidence based business cases.** Invest effort in clearly defining the logic and rationale for your investment and ensure that the business case is based on evidence of need. Recognise any constraints in the capability of your agency and any partners (the market, other agencies, internal stakeholders) to deliver and realise benefits.
- **Establish sound governance and management structures and processes.** Clearly define authority and accountability for the delivery and realisation of benefits. This is especially critical in multi-agency collaborative investments where authority and accountability can become diluted or confused.
- **Involve those with authority to impact on the investment's acceptance.** ICT investments often require commitment and participation from multiple agencies and business stakeholders. Where this commitment and cooperation is not obtained, investments benefits may not be realised or delayed, or cost significantly more.
- **Avoid optimism bias and be a 'tech' sceptic.** By their nature, ICT investments are complex, and this complexity needs to be better recognised before committing your agency. Question and be sceptical about the benefits of using technology: consider non-technology options as well.
- **Understand what the market can and cannot do for you.** Consider alternative procurement approaches such as alliancing and public private partnerships to better share risk. Create 'environments of trust' with vendors. This could involve rewarding good performance rather than just focusing on penalties for poor performance.
- **Use a benefits management approach to keep the focus on business value.** Establish rigourous monitoring and measurement of the achievement of this value. Look out for 'dis-benefits' and ensure that these are minimised.
- **Recruit and retain talent.** Ensure that you have access to project managers and technical staff with the skills to manage and deliver complex technology projects. Ensure that knowledge and skills are transferred from consultants to agency staff.
- **Always seek external and independent assurance.** Seek external assurance through gateway reviews, audits and expert independent advice. Treat this assurance as a 'learning' rather than 'blaming' exercise.

investment management planning strategy

Better Practice for the ICT Investment

Issues we have observed

1 understand and explore

- Investment decisions made without clear understanding of need or evidence of linkages to government policy and agency objectives.
- Poor commitment and support from stakeholders and partner agencies who are often not involved in defining the business need.
- Time not invested at early stages of the investment's life in critically assessing likely implementation challenges.
- The propensity towards optimism bias—tending to be over-optimistic about delivery timeframes and benefits expected, and underestimating the costs and complexity of implementation.

2 review and refine options

- Non-technology options such as process or legislative changes not considered.
- Poorly defined options or 'thin' set of options considered.
- Opportunities for whole-of-government or collaboration to share costs not evaluated.
- Alternative procurement approaches not considered.
- Whole-of-life costs not considered in assessing and evaluating alternative options.
- Options analysis conducted without an understanding of enterprise architecture and current ICT infrastructure and its capability.

3 decide to invest

- Investments are made on the basis of business cases that can't demonstrate that the investment is viable—i.e. that benefits outweigh the costs.
- Implementation schedules and budgets based on poor understanding of capacity and capability of agency and partners to execute.
- Market's ability to deliver the investment outcomes not assessed.
- Total cost of ownership over investment lifecycle is not considered.
- Poor understanding of key risks to delivery and mitigation strategies not established.
- Commitment to financing for project not obtained from partner agencies.

Practical steps to take

1 understand and explore

- Build an investment logic map (ILM) to help visualise business drivers and evidence that the proposed solution is likely to meet the business need.
- Use stakeholder mapping to identify and manage stakeholders. Involve those with the influence and authority to impact the investment.
- For investments spanning multiple entities, consider getting senior responsible officers from each agency to define the logic for the investment.
- Build a benefit management plan, develop measurable key performance indicators (KPIs) and assign accountability for delivering benefits.
- Address optimism bias by using reference class modelling, scenarios and sensitivity testing to compare the proposed investment with similar experiences.
- Refer to DTF life cycle guidance—Strategic assessment.
- Conduct Gateway Review Gate 1: Strategic assessment

2 review and refine options

- Develop a 'straw man' non-technology option to understand the generic business costs and issues that the ICT investment will face.
- Consider partnering with other agencies to obtain economies of scale and concentration of (scarce) critical technology skills.
- Consider restructuring or re-engineering existing business processes to achieve the desired result without any ICT investment.
- Consider re-use or adapting technology or architecture that is already in use.
- Refine large complex projects into phases.
- Consider whether the investment could be a potential Partnerships Victoria project.
- Refer to DTF option analysis guidance and template

3 decide to invest

- Build an evidence based business case that clearly demonstrates that benefits exceed costs and is also reliable roadmap for the investment.
- Take care to define costs and benefits for all partner agencies and that these are clearly understood.
- Ensure that partners in the investment are clear about the level of funds they are required to contribute, and confirm that they will have the funds available when required.
- Analyse the impact of any change, resources required and capability of your agency and any partners to execute.
- Refer to DTF life cycle guidance: Business case.
- Conduct Gateway Review Gate 2: Business case.

solutions

Life Cycle

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- Market capability and interest in delivering on the investment outcomes not assessed or understood.
- Innovative procurement options such as public private partnerships or alliancing not considered.
- Unproven or non standard technology procured.
- Processes not in place to ensure fair and transparent procurement.
- Commercial and procurement skills not available.

- Poor or non functioning governance. Accountabilities and responsibilities not defined.
- No awareness of the true state of a challenged investment, until it is too late to take effective remedial action.
- Limited or no consideration given to terminating poor performing investments.
- A structured project methodology not applied.
- Key positions are assigned to inexperienced staff who lack the capabilities to deliver
- Comers cut on quality assurance and testing.
- Poor change management—resistance to the change not addressed or understood.
- Lack of independent assurance. Gateway reviews/internal audit or external project assurance not sought.

- Governance bodies don't give the same focus to the realisation of expected benefits, as they do to 'hard' project measures, such as 'on time', 'on budget', and 'in production'.
- Immature or no benefits management systems in place. Benefits not defined or measured.
- Accountability for benefits diffused and monitoring diluted. This is more likely to occur in multi-agency collaborative projects.
- No base-lining of existing processes done, making it difficult to measure progress.
- Benefits reviews or post implementation reviews not done.

4 procure a solution

- Be an informed buyer—undertake a market evaluation to test market responsiveness to the requirements and that the investment will attract sufficient competitive interest
- Engage and involve potential suppliers as early as possible to test that the market understands the outcomes desired from the investment and agrees that these are achievable.
- Consider using alternative procurement options such as alliances or private financing to better manage investment risks.
- Where possible use known rather than new technologies, and minimise customisation of standard software.
- Refer to DTF life cycle guidance: Project tendering and Victorian Government Purchasing Board (VGPB) policies for procuring goods and services.
- Conduct Gateway Review Process Gate 3: Readiness for market.
- Conduct Gateway Review Process Gate 4: Project Tendering.

5 manage delivery

- Ensure that the responsibilities, accountability and decision making authority of each party involved in the investment are clearly defined.
- Consider appointing independent external members to governance bodies.
- Cancel or re-scope a project as soon as it becomes apparent that it cannot be delivered satisfactorily.
- Appoint an appropriately skilled project manager who has the support of senior management.
- Use recognised project management methodologies or standards such as PRINCE2 or PMBOK.
- Develop a risk management strategy and plan.
- Seek independent advice and assurance.
- Refer to DTF life cycle guidance: Solution implementation.
- Conduct Gateway Review Gate 5: Readiness for service.

6 review and learn

- Ensure that benefits and post implementation reviews are conducted.
- Actively measure accidental and dis-benefits as well as expected benefits.
- Establish a clear baseline of each individual existing business process to which ICT-enabled change is to be applied.
- Ensure there is clear responsibility and accountability for benefits capture and measurement.
- Refer to DTF life cycle guidance: Post implementation review.
- Conduct Gateway Review Gate 6: Benefits evaluation.

Questions to ask throughout the ICT investment life cycle

Executive officers and investors

Are you satisfied that...

Stage 1: Understand and explore

- There is a clear business imperative for this investment?
- The urgency and priority of the investment has been tested against other investment opportunities?
- Estimates of time, cost and benefits have been adjusted for optimism bias?

Stage 2: Identify and refine options

- Technology and non-technology options have been considered?
- Restructuring or re-engineering of existing business processes to achieve the desired result without any ICT investment has been considered?
- Partnering with other agencies has been considered?

Stage 3: Decide to invest

- The investment is based on an evidence based business case that:
  - clearly demonstrates that benefits exceed costs?
  - is a reliable roadmap for the investment?
  - costs and benefits for all partner agencies upfront so shows that these are clearly understood?
- An analysis of capability of your agency and any partners to execute the ICT investment has been performed?
- Partner agencies have committed to the investment and to any co-contributions and ongoing costs?

Stage 4: Procure a solution

- The market is able to deliver the required needs?
- Alliancing and public private partnerships have been considered as procurement options?
- Processes and checks are in place to ensure probity and transparency of procurement decisions?
- Where possible tested and standard technologies are being procured?
- Probity auditors and advisors are in place?

Stage 5: Manage delivery

- A senior responsible officer has been appointed as the project owner, sponsor and champion—with personal accountability and overall responsibility for the delivery of benefits?
- A governance oversight body with the necessary authority has been established to monitor the investment benefits and resolve issues such as the allocation of adequate resources and risk management?
- Rigourous testing of compliance with quality standards and business needs is in place?
- A skilled project manager is appointed and a recognised project management methodology is in place?

Stage 6: Review and learn

- A sound benefits management approach is in place and used to monitor and track the investment?
- Realisation of benefits is clearly allocated to a business and not a project or technology owner?
- Gateway reviews and independent assurance are being performed?

Project managers

Are you satisfied that...

Stage 1: Understand and explore

- There is clear business support for the investment, and the business drivers and enablers are defined in an investment logic map?
- A benefits management plan has been prepared, and realisation of benefits is clearly allocated to a business and not a project or technology owner?
- Optimism bias has been addressed by using reference class modelling, scenarios and sensitivity testing?

Stage 2: Identify and refine options

- The options are comprehensive and consider all viable approaches?
- Roles, authority and delegation are clearly defined in project charters?

Stage 3: Decide to invest

- An adequately resourced business case is developed, taking into account any optimism bias?
- Governance is not being driven solely by the project team?
- Regular reporting has been established to escalate and resolve risks and issues?
- Project reports to the governance body capture all costs, including those for any partner agencies?
- Project progress is monitored using earned value measurement or a similar technique?

Stage 4: Procure a solution

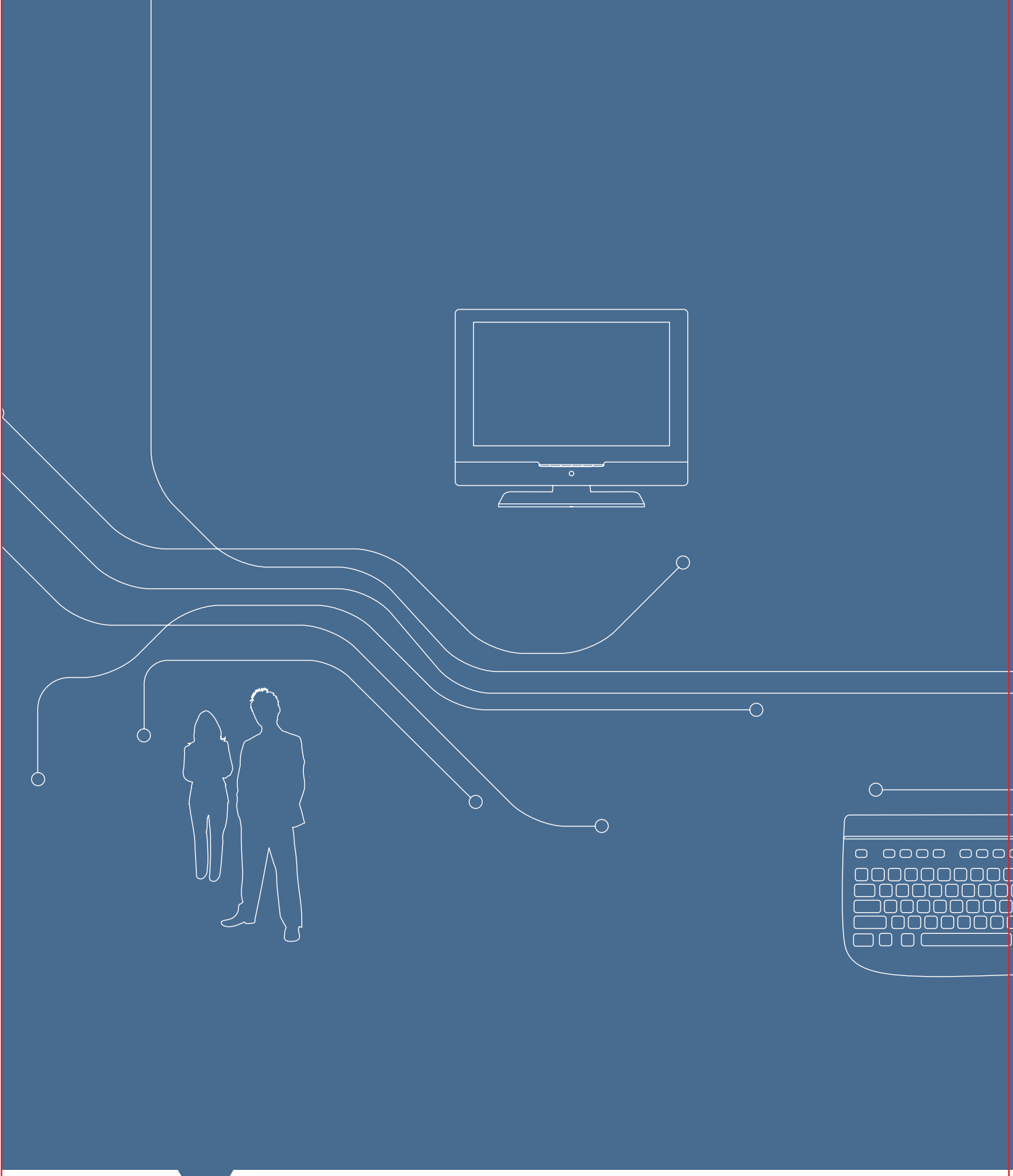
- Requirements are clearly defined by the business and used as a basis for engagement with the market?
- A rigourous analysis has been done of the technical feasibility of the project given the current state of agency infrastructure?
- Market soundings have been undertaken to ensure the (proven) technology exists to deliver on business requirements?

Stage 5: Manage delivery

- Adequate skills are available internally or in the market for the project to succeed?
- Recognised project management methodologies or standards such as PRINCE2 or PMBOK are being used?
- A recognised software development methodology is being used?
- Users are advised and consulted on any changes?
- Users are involved in rigourous testing and signoff of any technology solution?
- A risk management strategy and plan based on a framework such as the Australian and New Zealand Standard AS/NZS 4360:2004 Risk Management is in place?

Stage 6: Review and learn

- Benefits and post implementation reviews are planned and conducted?
- Clear baselines for existing business processes to which ICT-enabled change is to be applied have been established?



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