Department of **Treasury and Finance**

CONCEPTUALISE

ICT projects technical guidance
Business case development
DRAFT FOR COMMENT

Victoria

Contents

1. Introduction

1.1 Context

Information and communications technology (ICT) is critical for government to effectively deliver the services it provides. Many ICT projects are designed to enable a service transformation objective. They are inherently difficult to plan and deliver when compared with traditional asset or service delivery projects.

The investment lifecycle and high value high risk guidelines (lifecycle guidelines) provide agencies with practical assistance to shape investment proposals, inform decisions about them, monitor their delivery and track the benefits they achieve. This framework applies to all projects, including ICT projects. The stages of the investment lifecycle around which the Lifecycle Guidelines are structured are shown in Figure 1.

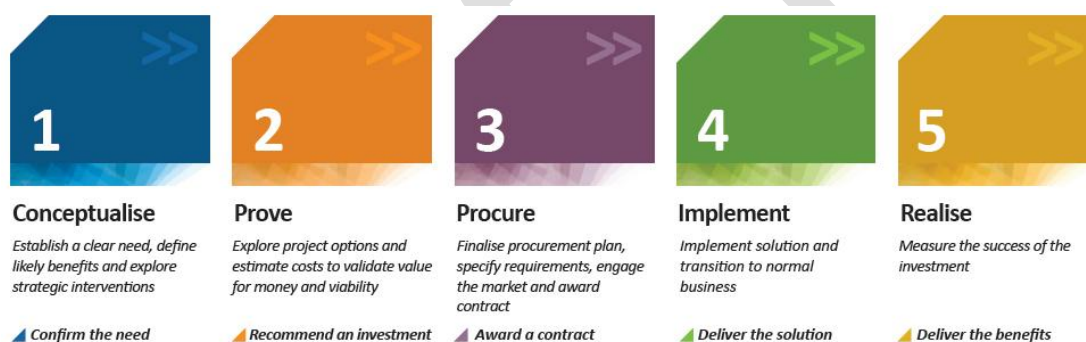| 1	2	3	4	5
Conceptualise	**Prove**	**Procure**	**Implement**	**Realise**
Establish a clear need, define likely benefits and explore strategic interventions	*Explore project options and estimate costs to validate value for money and viability*	*Finalise procurement plan, specify requirements, engage the market and award contract*	*Implement solution and transition to normal business*	*Measure the success of the investment*
Confirm the need	Recommend an investment	Award a contract	Deliver the solution	Deliver the benefits

Figure 1 The five stages of the investment lifecycle

This guidance is a technical supplement to the Lifecycle Guidelines. It provides agencies with assistance in applying the guidelines to ICT projects and developing business cases for ICT projects, specifically building on the project lifecycle stages of *Conceptualise* and *Prove*. Additionally, this guidance provides advice on implementing ICT industry leading practice in areas including delivery staging, technology selection and business readiness. It has been developed for use by:

- business and technology stakeholders;
- project planning and delivery teams; and
- officers from central agencies undertaking reviews and assessments of High Value/High Risk (HVHR) ICT projects.

A strong business case is critical to the success of any project. An ICT business case is not fundamentally different to a business case for any other class of asset or service delivery project. However, ICT projects often face challenges defining, quantifying and managing benefits, costs and risks. Improving the quality of business cases for ICT projects will increase the opportunity for these projects to be delivered successfully. Robust business cases will clearly identify the business need to be addressed, support funding decisions and provide a baseline for assessing project delivery and benefits.

1.2   Leading practice in ICT

> ICT-enabled projects have historically experienced significant cost overruns and time delays, generally on a greater scale and incidence than other types of projects. The November 2011 Victorian Ombudsman's report into Victorian Government ICT-enabled projects and Sir Peter Gershon's final report into the Australian Government's use and management of ICT released in October 2008 both highlight the need to improve the delivery of ICT-enabled projects. Cost overruns and time delays in ICT-enabled projects have also been experienced by other public sector jurisdictions and in the private sector.

Existing frameworks and guidance provided by government for delivering large projects already encompass many leading practices. These frameworks include:

- Investment Management Standard;
- HVHR framework (see section 1.3); and
- Quarterly Major Project Reporting.

This technical guidance builds on the material listed above, providing advice for implementing government frameworks and taking advantage of industry leading practices to improve the success of ICT project delivery. A key leading practice is the staged delivery of ICT projects. Others that have been incorporated into this guidance are:

- *Technology selection.* Optimisation of selection of an ICT solution between a number of competing dimensions, including ease of implementation, benefits realisation, degree of organisational change and total cost of ownership.
- *Business readiness.* Defining and developing solution understanding, acceptance and adoption within the business, enabling business benefits to be realised.
- *Project definition and scoping*. Defining and managing the requirements for a project in terms that are appropriate to each stage in the project lifecycle and to the realisation of benefits.
- *Procurement.* Linking of existing Victorian Government procurement processes with staged delivery of ICT projects, early market engagement, contract negotiation and contract management.

The Department of Treasury and Finance (DTF) expects that project business cases will incorporate the practices set out in this guidance.

1.3   HVHR framework

The HVHR framework was endorsed by the Victorian Government in December 2010. It is designed to ensure increased rigour in the planning and delivery of major infrastructure and ICT investment projects. Projects with the following profiles are categorised as HVHR:

- projects with a total estimated investment (TEI) greater than $100 million;
- projects categorised as high risk by the Gateway project profile model; or
- projects otherwise deemed by government to be high risk.

Under the framework, HVHR projects are subject to the following requirements:

- A preliminary business case must be provided to the asset project's early filtering stage. (Note: Non-HVHR projects must submit a strategic assessment to early filtering.)

- Projects must undergo a DTF assessment of the business case and gain Treasurer's approval prior to funding consideration by government.
- After funding approval, Treasurer's approval of the following will be required:
  - procurement documentation before it is released to the market, including expression of interest (EOI), request for tender/proposal (RFT or RFP);
  - procurement process decisions (preferred bid and appointment of successful contractor(s));
  - any major contract variations subsequent to the project commencing; and
  - Gateway reviews – red-flag escalation as part of the approval process.
- The project will be subject to mandatory Gateway reviews. Where a Gateway review report includes 'red flag' recommendations (i.e. recommendations requiring critical and urgent action), these must be escalated to the Treasurer with an appropriate action plan. In relation to business case and procurement-related reviews (Gates 1 to 4), an appropriate red-flag action plan will be required as a pre-condition for the Treasurer's approvals noted above.

Some ICT projects may be deemed as HVHR based on the categorisation criteria listed above, while others may become HVHR during their lifecycle if significant difficulties are encountered during planning or implementation.

1.4 Staged delivery of ICT projects

Under a staged delivery approach, each project stage is discretely scoped and costed based on the outcomes of previous stages and continued business alignment. Although a full business case is developed, it is refreshed following each project stage, with progressively more refined and detailed cost estimates (including contingency) and benefits analysis. Approval to proceed is focused on the most immediate project stage, rather than the entirety of the project.

A staged delivery approach reinforces continual assurance processes and close monitoring and evaluation of progress at key project milestones. It allows greater opportunity to regularly refresh project cost estimates, which are often very difficult to predict at the early stages of an ICT-enabled project. The approach supports improved quality and timeliness of information around emerging risks and cost pressures throughout the lifecycle of a project.

DTF expects that agencies will submit a business case that articulates clear project stages aligned to key deliverables. Funding for each stage may be provided discretely and progressively based on a review of the full business case, progress to date and government priorities. This process occurs for each stage of the project until the project completes or a decision is made not to progress. It allows greater opportunity for agencies to refresh project cost estimates, which are often very difficult to predict at the early stages of an ICT-enabled project. It will also provide improved quality and timeliness of information regarding emerging risks and cost pressures.

The proposed approval and project delivery process that agencies should undertake is shown in Figure 2.
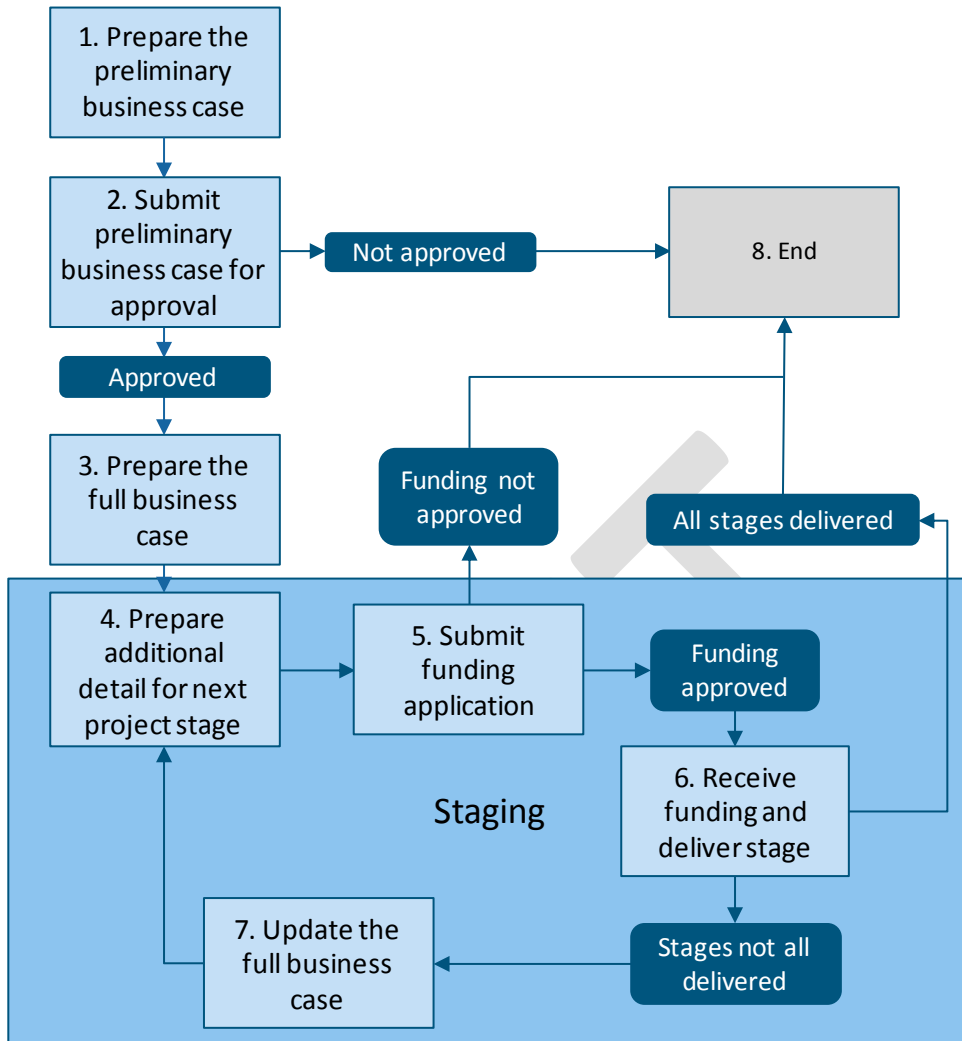
Figure 2 Staged approval process

2. ICT project solutions and options

2.1 Strategic response

The preliminary and full business case must present a number of viable alternative strategic responses to a problem. Strategic responses are one or a mix of high-level interventions to respond to an identified problem. The lifecycle guidance for *Stage 1: Conceptualise* and *Stage 2: Prove* discuss the concept of strategic response, and how these should be presented in a preliminary and full business case. These requirements apply to ICT projects.

2.2 ICT project options

The lifecycle guidance for *Stage 1: Conceptualise* and *Stage 2: Prove* discuss the concept of project options, and how these should be presented in a preliminary and full business case.

Project options identified in a preliminary business case are likely to be very high level. These should be presented with consideration to cost implications, procurement, affected stakeholders, key risks and governance. Proposed project stages should be identified in principle.

Project options presented in a full business case must cover all the same areas as a preliminary business case but with a significantly greater level of detail. This must include fully detailed and costed project stages.

2.2.1 Technology solution

An ICT project business case must incorporate a balanced perspective of the 'do nothing' response to provide a benchmark against which to judge other options. Including this response is particularly important when it is not zero cost, which is often the case in ICT projects (e.g. costs to maintain legacy systems and risk of system failure). The business case must include the potential to provide alternative and non-technology-reliant responses.

Having assessed these options, different technology-enabled approaches will drive the key parameters of project cost, time to delivery, risk and fit to requirements. The three main technology approaches are:

Vanilla commercial off the shelf (COTS)	A non-customised COTS solution using technology and solutions available in the market in their standard form.
Customised COTS	A COTs solution using existing technology and solutions, but with modifications or additions requiring development.
Bespoke development	A new purpose built solution to the problem.

Large-scale ICT systems typically lie on a continuum from COTS packages to custom developed (or bespoke) solutions. The former is provided by large, usually global, software vendors creating comprehensive packages for one or more industry verticals. The latter relies on a developer or in-house resources developing unique applications for specific business needs. Falling between these approaches is a customised COTS solution – a COTS solution incorporating modifications and/or additions. In reality, most ICT projects are likely to contain elements of both COTS and bespoke design.

2.2.2 Solution considerations

This section sets out the issues associated with these three main categories of technology option. The limitations and opportunities of a COTS and bespoke approach are set out in Table 1. A full evaluation of the alternatives specifc to the problem should be presented in the business case.

Table 1 Limitations and opportunities of COTS versus custom responses

Factor	limitations and opportunities	
	COTS	Bespoke development
Business requirements	Selecting the best package software to fit the business is difficult. Project requirements may need adjusting, or some business requirements may need to be deferred to future releases to align with the vendor's roadmap. Customisation is time consuming and expensive. A COTS solution may be appropriate when there is a close alignment with the business requirements. The project or business may heavily customise a COTS product so that it becomes a bespoke development, and benefits are significantly reduced.	Clear, specific requirements are necessary in achieving the required business outcome. A bespoke strategy will suit a business activity that involves proprietary information. The short-term cost advantages of a bespoke development strategy may show benefits over a COTS strategy. But the whole-of-life costs to maintain legacy in-house ICT solutions over COTS solutions must be considered. If the business is not prepared for the process changes of a COTS product and requires subsequent customisation, a bespoke strategy may be more appropriate.
Enterprise-wide architecture strategy	The COTS vendor may not strictly follow the agency's business objectives and standards. If there is alignment with the vendor, then budgeting for major projects can be more accurate. Agencies must understand the vendor's technology and commercial roadmap and whether it is consistent with its own technology direction.	Designed in accordance with legacy architectures, which may not be aligned to the objectives and standards of future requirements.
Flexibility/scalability	COTS products are generally more function rich compared with point bespoke development. Requirement 'workarounds' may be required. It is hard to integrate multiple COTS packages within one technology environment and different technical frameworks. If system integration is required (including interfaces to technology platforms) and the COTS vendor is committed to adaptability in their product roadmap, then a COTS solution may be the better	Easily customised but interfaces need to be developed with other applications, consuming additional time in development and testing phases.

ICT project solutions and options

Factor	limitations and opportunities	
	COTS	Bespoke development
	choice.	
Obsolescence	Enhancements are provided by the vendor but may not be available as and when needed. Business-critical functional capabilities may be removed from the system as the COTS product evolves.	Enhancements must be custom developed, but the development lifecycle is flexible. More enhancement flexibility for long lifecycle projects.
Time to implement	'Vanilla' COTS implementations with little or no customisation can often be implemented quickly, especially if it meets most agency requirements and requirements are flexible to align with the provided package. Most COTS packages come with tools to extend or customise the solution to meet specific client needs. This takes a similar period as required for a bespoke development and may be upgraded with the core COTS package (if done per the COTS vendor specifications).	Similar (if not more) time is required than for a COTS application, especially in terms of completing the analysis, design and development using a newly implemented platform. New point solutions developed on existing platforms can often be quick but may not modernise the technology architecture.
Cost	Initial cost is often lower, and access to functional and technical enhancements are provided while support costs continue to be paid. Operating costs may be high if package features are procured but not used; licensing, maintenance and support fees usually apply; future product updates are not budgeted for; significant customisations occur during implementation. Where customisation occurs, the total cost of ownership (TCO) shouldn't be underestimated. A customisation needs to be supported and potentially fully re-implemented whenever the COTS product is upgraded. The full cost depends on the characteristics of the customisation that has been implemented.	Initial cost and operating costs correspond to the nature of the system. With bespoke development, unnecessary product features are rarely included and licensing fees rarely apply or are minimal (e.g. database and associated development software licenses and hardware costs do apply).
Testing and defects	COTS solutions are generally lower risk, especially if used as expected. Some fixes to defects are only available in later releases.	New product generally carries a greater risk, as may be 'untested' in the required operating environment.
Documentation	High-quality documentation generally provided supporting 'out of the box' functionality of the solution. This will need to be tailored by the project team.	The quality of the documentation will depend on the skill of the project team preparing the material.
Training and communication	Training requirements depend on the contract. Vendor training material is often available but may need to be extended to cover implementation-specific configuration and/or customisations. It will also need to be aligned to the specific job roles and requirements of the users.	Training requirements depend on the contract and will need to be fully developed.

Factor	limitations and opportunities	
	COTS	Bespoke development
Support	This must depend on vendor support and training (or the project's implementation partner) of the system. For large COTS vendors, support is generally online, 24/7 and extended by networks of other users of the solution.	Support and training is usually provided by the project team.

2.2.3 Ranking solutions

Agencies need to provide sufficient information to justify the selected technology approach over the alternatives. In ranking the alternative solutions, the following issues should be considered:

- *Strategic alignment.* A business case must clearly demonstrate the business need it is addressing and the how the recommended strategic response aligns with government policy and business strategy. The recommendation should align with the strategies outlined in the departmental planning documents.

- *Prioritise vanilla (or minimally customised) COTS solutions.* This may require some changes to the business compared to customised COTS and bespoke solutions, but is likely to have a competitive whole-of-life cost.

- *Total cost of ownership.* Whole-of-life costs of each response including licences, maintenance, enhancement and upgrade costs should be part of the ranking consideration (see section 2.3).

- *Business process update.* Options that enable a simpler, lower cost or lower risk solution through changes to business process should be prioritised higher. Often what this practically translates to is an update of business processes to align with leading practice and to align with a vanilla or minimally customised COTS solution.

- *Existing technology.* Existing systems, platforms, technologies and support arrangements that the solution will be required to interface with must be considered. Strategies that support existing arrangements may be prioritised where these are complex and/or inflexible, although this should be done with care to ensure unnecessary legacy constraints are not placed on the solution.

- *Risk reduction.* There is inherent risk in any strategic approach. Ranking of strategic responses should clearly identify the risks involved for each response and incorporate this risk analysis in the ranking process (see section 3.6).

- *Consultation.* Ensure consultation with key stakeholders and independent subject matter experts on the preferred direction and options (see section 3.5).

The following sections describe some additional considerations when identifying the technical solutions for an ICT project.

2.2.4 Other considerations

Regulatory requirements

Regulatory and regional considerations can drive the decision on an appropriate technology solution. Software vendors develop for a global industry. The degree to which legislation, regulation or other regional considerations diverge from the business processes embedded in the software package determines the need for customisation.

It is important for agencies to understand the extent of customisation to a COTS product required to suit the local regulatory environment, and to make these transparent in the business case.

Appropriate resources

Appropriately skilled resources are necessary in both COTS implementations and bespoke development projects. An evaluation of the skills for implementation and ongoing support teams should be budgeted for and included in the business case.

2.2.5 ICT project delivery approach

Different project delivery options can vary costs, risks, benefits realisation and even scope. For example:

- *Variations to project staging.* The same project may be broken up into stages in a number of different ways. As discussed in section 1, ICT projects must present the recommended project option aligned to discrete delivery stages.

- *Delivery methodology.* Examples of methodologies commonly employed are traditional 'waterfall' methodology or various types of Agile methodology.

- *Levels or configurations of outsourcing.* Agencies may choose to outsource solution development to one or many contractors under various procurement methodologies available within government.

- *Variations to scope.* Small variations to scope may not greatly affect benefits realisation but may have a large impact on project delivery costs, risks and timeline.

- *The order or timing of delivery.* Variations to the order that particular scope items are delivered may provide time, cost or risk reductions.

When detailed cost breakdowns are provided, these variations become levers that may be used to influence cost and support selecting the project that best aligns with policy, business need and funding available. Agencies must evaluate the alternative project delivery approaches to support the analysis and selection of the recommended project option.

2.3 Developing a project budget

The lifecycle guidance for project budgeting and costing provides information on how to develop a project budget (including base cost, risk allocation and appropriate contingency). It also provides guidance on project costing. While the latter is primarily geared towards building and construction projects, similar principles apply to costing ICT projects.

2.3.1 Cost categories for ICT projects

Cost information is central to the business case. It will be a key driver of decisions on whether to proceed with a project, how to proceed with a project and how to fund a project. DTF expects that the business case for an ICT project will incorporate a robust assessment and quantification of costs. For significant ICT projects, it may be appropriate for departments to seek external assistance in this regard.

It is common for the following types of costs to be underestimated or omitted from an ICT project business case:

- *Business change and transition.* Training, communications and other business readiness activities required to enable or support business transformation and fundamental changes to the work processes.

- *Existing technology readiness.* Bringing existing ICT systems into ready state for the new solution, for example, desktop or operating system upgrades.

- *System interfaces.* Building interfaces with other ICT systems, within or beyond the department.

- *Data requirements.* Data quality assessments and remediation, and data migration.

- *Customisation whole-of-life costs.* Re-implementing customisations of COTS solutions following each product upgrade.

All costs must be presented so that it is clear how they are derived and assurance is provided that all relevant costs have been considered. The exact level to which costs should be detailed will differ from project to project. Early engagement with project stakeholders, including DTF, will assist in ascertaining the appropriate level to which costs should be broken down for each project and business case stage.

The categories of costs that should be included in an ICT project business case are detailed in Table 2. All categories listed should be included in the preliminary business case and the full business case, differing only in the level of detail and accuracy provided. More detail on examples of costs that should be considered in an ICT project is provided in Appendix C.

Table 2 Cost categories

Cost category	Description
Project costs	For all options, the costs of acquiring, developing and delivering the solution should be detailed, based on delivery phases, work packages, functional components, milestones and outcomes. This approach enables cross-checking, provides clarity and confidence in the underlying analysis, and supports funding decisions based on implementing parts of a particular solution and decisions regarding cost profiles of delivery methods. The same solution delivered in a single phase may have a different cost if delivered over multiple phases or different time periods.
Benefit realisation costs	This includes costs incurred in setting up and implementing measurement, monitoring and reporting on benefits realisation. A benefit management plan with associated cost breakdown must form part of the business case.
Business change and transition costs	This refers to the cost of preparing, training, moving and supporting people until new practices are embedded. A business change readiness assessment should be undertaken as part of the business case. This will identify all change and transition efforts required and enable a change management strategy with accurate cost estimates relating to service transition costs to be derived. This also forms the basis for a detailed change management plan to be produced in later stages of the project.
Program/project management costs	This includes costs associated with the program office, which will provide project support for: tracking and reporting; information management; financial accounting; risk and issue tracking; managing project dependencies and interfaces; quality control; and change control. Cost estimates for project assurance services should form part of the costs detailed in both the preliminary and full business case. These may need to be refined throughout the project lifecycle as more information becomes available.

ICT project solutions and options

Cost category	Description
Total cost of ownership (TCO)	These are costs associated with the whole-of-life maintenance, support, enhancement and upgrade of the solution.
	The solution options should be modelled and a TCO analysis undertaken to inform the basis for the preferred option. A TCO assessment will quantify the solution's lifetime costs and include cost factors such as: hardware; software; data cleansing and migration; incremental support costs; release management; vendor upgrade and technology roadmap; service management; and configuration management.
	In the case of a COTS solution, key TCO elements are likely to include ongoing licence fees and reimplementation of customisations after each product upgrade, as well as the initial implementation costs. This is particularly important in an ICT project where implementation costs often form only part of the overall lifetime costs of a solution.
	The TCO may change over a project's lifecycle. It is important that the TCO is refreshed and updated at each stage of the project, aligning with key milestone review points. This will help inform stage-based exit strategies and funding decisions for future stages.
Exit costs	Under a staged delivery approach, a decision will be made on whether to approve and fund each stage separately, requiring full knowledge of exit costs and risks for each stage.
	Exit options must be developed for each stage of an ICT project. Options to modify the scope or vendors used on a project should also be thoroughly explored in the business case. This allows for flexibility in the event that the project should be re-scoped, re-baselined or cancelled because of a change in government or policy priorities, project delivery issues or vendor(s) or contractor-related issues.
Project contingency	ICT-enabled projects are complex and uncertain, and there are often elements that are unable to be costed with any certainty at early stages, as well as unforeseen risks that will materialise during the course of the project. Contingency is intended to provide for these events.
	The level of contingency will vary depending on the nature and stage of the project but will generally be at its largest at the beginning of a project, when costs are highly uncertain and many risks may yet materialise. Project contingency should be clearly identified in the project budget and refreshed at each project stage.
	Project contingency is estimated using the same techniques as other project costs such as expert estimation, formal estimation techniques or a combination of both. Contingency estimates should be based on clearly stated assumptions and reviewed by appropriately qualified personnel.

Software licensing costs

The impact of software licensing can be a significant cost because software vendors can change licensing models throughout the life of ICT systems.

Agencies should be aware of the possible impacts that a change in licensing might have on the TCO of the project. Additionally, the quantum of the software licence fee is linked to usage, typically via the size and nature of the hardware used or by the number of registered or concurrent users (per seat). In the case of per-user licensing (or similar volume/metric-based licensing models), it is often possible within the system, even if prohibited in licensing agreement, to expand the number of users without making adjustments to the licensing fees. Software vendors usually apply a periodic review of users. Poor management of users on the system can result in very substantial licensing fee exposure.

In either case, projects often encounter price shocks if: the licensing model is misunderstood; the base metrics on which the license costs are calculated are incorrectly estimated; or the usage changes dramatically. Appropriate monitoring systems are required to ensure licensing exposure is tightly managed.

Licensing costs also drive the ongoing maintenance and support costs paid to the vendor for the life of the system. Agencies should assess how incremental changes to licensing costs impact on the TCO, including any changes to support costs.

Business process transformation, training and communication costs

One of the key differentiators between COTS and custom-developed solutions is the degree of business process transformation required by the client. COTS packages are delivered in modular form, aligned to existing business processes. Modules from leading vendors may incorporate leading or better practice business processes. COTS clients can choose the degree to which they adopt the business processes or customise the package to conform to their prevailing business processes. A customised solution will not require of itself significant business transformation. However, customisation will bring a cost that is often underestimated, and depending on its extent, recurs as the package is upgraded in future.

Training and communications are part of the business readiness for a new ICT system and, independent of the chosen solution, must be adequately scoped and costed in the business case. If the business is not prepared for the business process implications of a COTS solution, a project will often run into scope, schedule and cost issues.

Vendor strategy and technology alignment

Three key issues that agencies should consider in assessing alternative ICT solutions that relate to the vendor's technology architecture are set out in Table 3.

Table 3 Key issues in assessing alternative ICT solutions

Issue	Consideration
Locking into the vendor's future technology path	When choosing a COTS software vendor, the client is choosing the future developments required to operate the software, comprising hardware, networking, reporting, tools and support models, as well as the business and software architecture.
	Agencies should fully examine the vendor's technology roadmap, how it has evolved over time and what are the possible future directions the product might take. They should assess the consistency of this roadmap against the technology direction and needs of the agency.
Upgrading and supporting the model for the COTS solution	At some point in the lifecycle of the software product, the client will be faced with upgrade decisions. Software vendors cannot adequately or cost-effectively support aging software platforms. Vendors will eventually stop providing support for aged software and users must decide to risk continued use of 'out of support' software, to upgrade to a current version or to move to an alternative solution.
	This upgrade decision has a significant impact on TCO for agencies who select customised COTS solutions and may cause a customised COTS solution to be more expensive in the long run than a bespoke solution. This is due to the potential need to implement customisations each time the product is upgraded.
	Agencies need to be aware of the proposed vendor's historical and potential future upgrade path and support cycles, where the proposed ICT solution is in the current release cycle as a guide to the next upgrade and implications for legacy systems.

Issue	Consideration
The interdependency of the vendor roadmap with the client's architecture strategy	There is a critical interdependency between the technology roadmap of the proposed ICT vendor and the architectural roadmap of the client. ICT standardisation is a key operating expense driver. Support and maintenance costs will increase if non-standard equipment or software is introduced into the ICT environment. Agencies must demonstrate that there is an understanding of the TCO impact of non-standard ICT systems and the impact over time if the technology roadmaps of the proposed ICT solution are not aligned with the architectural roadmap of the ICT environment.

2.3.2 Cost estimation techniques

No cost estimation technique will consistently provide the most accurate result. The appropriate selection of techniques for a particular project must be based on the specific project and the skills and experience available within the project team. External specialists should be engaged to supplement the internal team where required.

The cost estimations and sensitivity analysis of each project component should be made using recognised techniques and based on clearly stated assumptions. Techniques continue to evolve for ICT projects but generally fall into one of three high-level categories:

- *Expert estimation.* Cost estimates are based on expert judgement. Techniques such as specific company templates or project management software and group estimation techniques (e.g. Wideband Delphi) fall into this category.

- *Formal estimation.* Cost estimates are based on formulas derived from historical data. Analogy-based techniques (e.g. ANGEL, Weighted Micro Function Points), parametric models (e.g. COCOMO) and size-based estimation models (e.g. function point analysis, use case analysis, user story based analysis) fall into this category.

- *Combination of expert and formal estimation.* Cost estimates are based on a combination of estimation techniques. This includes mechanical combination techniques (e.g. the average of a WBS estimate and analogy-based estimate) and judgemental combination (e.g. expert judgement based on estimates from a parametric model and group estimation).

Table 4 provides the steps of a cost estimation framework for an ICT project. Each step represents considerable effort and analysis and requires specific knowledge and experience.

Table 4 Cost estimation framework

Step	Description
Understand the outputs	The outputs of the project are based on the scope and outcomes required by the project and the solution that is being implemented to meet these outcomes.
Break the outputs into logical work components	Break outputs into components that can be understood and costed individually, for example: requirements analysis and design; COTS configuration; bespoke development; testing; hardware purchase and ongoing support; software purchase and ongoing support; project management office; risk management activities; and business readiness activities.
Determine the cost driver behind each component	Each individual component will have one or more cost drivers, determined by the specific nature of the component. Common cost drivers are *effort* (the cost of COTS configuration may be determined by the effort required to complete the configuration); *time* (where a particular resource is required on a project for a certain period of time, the cost may be based on that time period); *physical unit* (the cost of software licences, hardware items, etc.); and *complexity* (the cost of a custom development may be based on the complexity of the module).

Step	Description
Estimate the cost of each component	Each project component should be costed using the methodology most relevant to the driver of the costs. In many cases there will be multiple ways to estimate costs. For effort-based drivers, the cost of a COTS configuration may be determined by the cost (and associated effort) of a resource for a defined time period, using expert or formal estimation techniques. For unit-based drivers, the cost of software licences will be estimated based on the number of licences required multiplied by the estimated unit cost of the licence. For complexity-based drivers, the cost of a custom development may be estimated using a combination of formal and expert estimation techniques.
Cross check costs against similar projects	Wherever possible, cost estimates must be cross-checked against previous similar projects as a check that costs are reasonable, appropriate and complete.
Seek independent review	All cost estimates and assumptions should be independently reviewed by people who are experienced in undertaking similar projects in similar environments. This provides advantages of a fresh perspective, new thinking and potentially a different skillset. Independent review also provides a perspective clear of any potential bias resulting from involvement with the project or its stakeholders. Independent review should be undertaken to a level that is appropriate to the stage of the business case. It may be necessary to look outside the agency to engage someone with the appropriate level of experience and independence.

2.4   Evaluating ICT project options

The project options presented in the ICT project business case should be compared based on robust financial evaluation to determine the recommended project option. In evaluating the alternative project options for ICT projects, departments should consider the following:

- *Detailed financial evaluation.* Based on the cost estimates, quantified benefits and identified risks, a lifecycle-oriented cost-benefit analysis (CBA) methodology should be used to evaluate options and justify the project on a value-for-money basis. This should include analysis of total cost of ownership of each solution. DTF requires economic and financial analyses using discounted cash flows in calculating net costs and benefits.

- *Risk reduction.* There is inherent risk in any project option. Ranking of project options should clearly identified the risks involved for each option and incorporate this risk analysis in the ranking process. This should build on the risk analysis undertaken as part of the strategic response ranking. Section 3.6 provides more detail on risk management for ICT projects.

- *Delivery timescales and benefits realisation.* The time required to realise project benefits under each project option should be considered in regard to the length of time before the benefits are needed.

- *Existing technology.* Existing solutions, platforms, technologies and support arrangements that the solution will be required to interface with must be considered as part of the ranking. This should build on existing technology analyses undertaken as part of the strategic response ranking.

- *Consultation.* Ensure consultation with key stakeholders and independent subject matter experts on preferred direction and options is taken into consideration.

3. Recommended solution

The recommended solution section of the preliminary and full business case must clearly state the recommended project option and address the rationale for its selection. The lifecycle guidance for *Stage 1: Conceptualise* and *Stage: 2 Prove* provides information on how the recommended solution is presented in a business case. These requirements apply to ICT projects.

For an ICT project, the recommended solution in the full business case is expected to be presented with the following level of detail:

- A clear description of the project including objectives and scope. This must clearly define the boundaries of the outcomes that are to be achieved by the project.

- Clear project stages aligned to approval decisions and deliverables, and an exit strategy relevant to each project stage. For each stage the scope, objectives, milestones, deliverables, performance measures/targets and benefits (where applicable) must be clearly defined.

- Full and accurate evaluation and presentation of business benefits, costs, risks and options, and any other information needed to make a fully informed decision on whether or not to proceed with a project or project stage, on what basis to proceed and how it should be funded.

- All key aspects at each stage of the project realistically quantified or assessed, so that their achievement can be tracked and measured. In some cases, independent verification of costs and benefits may be appropriate. It should capture both quantitative and qualitative benefits of a proposed initiative.

- Focus on business capabilities and impact, rather than having a technical focus and being driven by technical outcomes.

- Accountabilities, commitments and funding required for the delivery of benefits and management of costs at each stage presented clearly and, where necessary, extending beyond the duration of the project.

- Governance structures presented in a transparent manner, reflecting delivery responsibilities and incorporating appropriately skilled and experienced members.

- Procurement strategy clearly evaluated and articulated, and linked to defined stages of the project's lifecycle.

- Strategy and process for tracking progress, monitoring costs and benefits realisation at each stage clearly articulated.

The remainder of this section provides additional guidance for agencies in developing the recommended solution section of the business case for an ICT project. Appendix A and Appendix B provide specific content for an ICT preliminary and full business case additional to requirements set out in the Lifecycle Guidelines.

3.1 Project description

The project description in the business case provides the definition of what the project is going to deliver in terms of business benefits, scope, outcomes and capabilities. It sets the scope of the project and the boundaries of outcomes that are intended to be achieved. Scope is then linked via the business case to the solution to be delivered by the project, providing the first level of solution requirements.

Scope is critical to defining the delivery timelines, resourcing and budget requirements of the project. Appropriate scoping of ICT projects will improve deliverability by providing the necessary information at each stage of the project in support of appropriate funding, procurement, contracting and implementation decisions.

3.1.1 Defining an ICT project

Some of the key issues for agencies in assessing the business case are:

- specification of the project in terms of outcomes, business benefits, capabilities and functions to avoid constraining the solution (specifying 'how' a solution will work should be confined to the people doing the actual technical implementation once a clear understanding of 'what' is being built has been defined);

- ensuring that outcomes are not 'over-scoped', resulting in too many requirements and/or requirements that are not directly relevant to achieving the project benefits;

- insufficient focus on non-functional and technical requirements such as performance, system screen navigation, security, privacy and back-up/recovery;

- making sure that requirements don't align too closely with current, dated or redundant business practices;

- making sure that interfaces and dependencies on existing technology are clearly specified and factored into the project;

- failing to include sufficient time or resources in the project schedule to:
    - allow requirements to be fully understood, specified, reviewed and approved for each phase in the project before commencing the next phase in the project lifecycle
    - allow time for proper review of requirements from subject matter experts or independent reviewers; and

- not locking in requirements that are inconsistent with the capabilities of a preferred or chosen COTS vendor package.

3.1.2 Defining project scope

Scope will evolve (but should not unilaterally expand) progressively throughout the project lifecycle. It should increase in completeness and detail from the conceptualise stage of the project until the scope is fixed at each approval stage.

The project scope must be clearly defined at each stage of project delivery. This should be to a level of detail that is appropriate to that stage and to support appropriate decision-making processes, including decisions to proceed to the next project stage. It is expected that project scope will be progressively refined in alignment with the development of the preliminary and the full business cases, and during each stage of project delivery.

Recommended solution

Preliminary business case

The preliminary ICT project business case should contain the following documentation to provide clear definition of project scope:

- *Scoping statement*. The scoping statement establishes the key parameters of the project, setting out what the solution will do. It should capture, in broad terms, the product or deliverable of the project, including the key features, benefits, limitations and outcomes of the solution together with a list of expected beneficiaries and users of the solution. As a minimum this should set out
    - project owner, sponsors and stakeholders (in PRINCE2 terms);
    - a statement of the business (service) problem the project is intended to solve;
    - project goals and objectives;
    - high-level project deliverables and milestones;
    - areas not within the goals or objectives of the project (what is out of scope); and
    - high-level, 'first order' cost estimates (–30% to +50% accuracy)

Statement of work. The initial scope of work is developed from progressively refining the goals, outcomes, functions and constraints of a proposed ICT system, including business process interfaces with the system, integration with other ICT systems, and data cleansing and migration. This should include discrete project delivery stages (see section 3.2). Each requirement should be aligned to benefits of the new solution. Requirements must be documented, actionable, measurable, testable and traceable, and relate to the identified business needs.

Full business case

The full business case should update the scoping statement and the statement of work with additional detail sufficient to allow detailed cost estimates to be prepared. This includes:

- detailed project deliverables that are aligned to clear project stages;

- detailed project goals and objectives aligned with project stages and deliverables;

- clarity of areas not within the goals or objectives of the project (what is out of scope), in light of additional detail regarding project stages and deliverables;

- detailed project milestones aligned with project stages and deliverables; and

- detailed cost estimates, typically –10% to + 50% accuracy (an explanation should be provided on the level of confidence of estimates).

It is expected that the scope of the current project stage will be fully developed at a very high level of confidence. Later stages of the project should be scoped to the greatest level of detail known at that time, with caveats provided to explain where detail (or risk) is not yet known and how this detail will be determined to support decision making by government.

As part of developing the full business case, it may be appropriate to undertake a request for information (RFI) or EOI process to develop an understanding of potential vendors and solutions, cost structures and implementation. This information can inform scope and the nature and cost of potential solutions. Requirements used in an RFI or EOI can be broad and non-specific in terms of the solution required, encouraging vendor innovation. An RFI, EOI or other approach to market must be undertaken within the Victorian Government's procurement framework and probity standards (see section 3.4 and www.vgpb.gov.au).

Approvals for additional procurement steps of this nature should also be aligned with the HVHR process more broadly.

3.1.3 Accountability

The project's senior responsible owner (SRO) has ultimate accountability for the scope of a project and must fully understand and endorse the agreed scope and any changes to it. DTF expects that agencies have appropriate processes in place to manage projects to their approved scope (see sections 3.1.2 and 3.7).

3.1.4 Resources

At each stage in the project lifecycle, it is important to ensure scoping and requirements specification is done by appropriately skilled and experienced people. Specific ICT project training and experience, as well as relevant functional sector knowledge, are critical skills to provide the necessary conduit between business and subject matter experts and the technical or vendor teams involved in the project. For example, they can:

- assist in engaging the appropriate people to support at each stage;
- provide techniques and support for collecting, refining, documenting and managing requirements through the full project lifecycle;
- assist in managing changes to requirements through the change control process;
- provide continued assistance to the project team in terms of requirements clarifications and supported interactions with business; and
- act as a point of contact for stakeholders to the project to discuss details of requirements or raise a change request.

Due to the evolving nature of requirements, the appropriate people to do these tasks may not be the same throughout the project.

3.1.5 Independent review

Requirements specifications at each stage in the project lifecycle should be reviewed by independent (internal or external) subject matter experts in the business and the technology selected. This can be used to inform and/or adjust subsequent stages of the project.

Independent review provides advantages of a fresh perspective, new thinking and potentially a different skillset. It also provides a perspective clear of any potential bias resulting from their involvement with the project or its stakeholders. It may be necessary to look outside the business to engage the appropriate level of experience and independence, especially to support the project's governance structure.

3.2 Project staging

The recommended solution should be presented in discrete project stages, appropriate to the project being proposed. The delivery stages for projects will be different, depending on the solution type, delivery methodology, complexity and risk.

The project stages set out in the preliminary business case will be in-principle only and represent best knowledge at that time. It is recognised that agencies will not be in a position to conduct an in-depth analysis of the project at this point.

For the full business case, project stages should be clearly defined, with details of scope, objectives, milestones, deliverables, performance measures/targets, benefits (where applicable) and exit points. In particular, the stage for which approval is being sought should be presented with full and accurate costs (including contingency), risks and a detailed project plan.

Examples of project stages that may be appropriate to ICT projects include:

- *Proof of concept.* A partial realisation of a solution intended to demonstrate its feasibility. This stage may include early engagement with the market for information.

- *Prototype.* An early sample or model solution. A prototype is designed to test and trial a new design to enhance precision by system analysts and users. Prototyping often serves to help refine specifications for the final solution. This may be done in collaboration with a vendor in the case of a COTS solution, or a development contractor in the case of a custom solution.

- *Trial or pilot.* An initial rollout of a solution into a production-like environment, targeting a limited scope of the intended final solution. The purpose is to test whether the system is working as it was designed while limiting business exposure.

- *Functional delivery.* Stages may be broken up according to delivery of areas of functionality or particular business outcomes. For example, delivery of a particular report, process or function.

- *User delivery.* Stages may be broken up according to delivery to different user groups, allowing for 'safe' user groups to use the solution first.

One of the benefits of staged delivery of projects is the ability to evaluate the project at the end of each stage. This allows increased understanding and knowledge from each stage to be built into subsequent stages and decisions. Where further analysis and understanding gained through completed stages suggests a better solution or different staging this should be presented in the full business case for consideration in the next round of the staged process.

3.3 Project costs

The estimated costs for the recommended solution should be set out based on the parameters outlined in section 2.3. The level of detail and accuracy of the costs should be greatest for the project stage for which approval is being sought. The costs associated with subsequent stages can be informed and refined as the project progresses.

3.4 Procurement strategy

The procurement process is regarded as being the full procurement cycle from first engagement with a vendor(s) through to the project's completion. This section provides guidance on developing the procurement strategy, which forms part of a preliminary and full business case.

For details on execution of the procurement strategy and conducting and managing procurement activities in alignment with the *Procure* and *Implement* stages of a project, see the ICT projects technical guidance *Procure and deliver*. Procurement approvals associated with the HVHR process are set out in section 1.3.

3.4.1 Staged approach to procurement

The procurement process should be undertaken with the delivery stages of the project in mind. This will be different for each project depending on the stages and the solution being undertaken. The procurement strategy should be developed with the following considerations:

- Early engagement with the market may be needed to identify feasible alternative technology solutions before commitment to a specific approach.

- There may be greater use of tendering with multiple suppliers for detailed design, scoping and cost estimation, and competitively evaluating these tenders before a contract to deliver a project or stage of a project is awarded.

- Active contract management will be needed to explicitly incorporate project stages with associated milestones, performance and payment schedules.

- Suspend, exit or terminate clauses will need to be built into contracts to provide the opportunity to undertake staged review and decisions without incurring additional costs or penalties (such as liquidated damages) at the end of each stage.

Procurement strategies and contracts should be structured to follow a staged delivery approach and to comply with VGPB procurement and probity guidelines.

3.4.2 Early engagement with the vendor market

Vendors can be used at the early blueprint and prototype stages of a project to refine the project solution and identify risks to project delivery. Experience in other jurisdictions suggests that vendors can particularly inform the early stages of the business case and reduce risk by providing key information to inform later stages of the project and associated approaches to market. For many complex projects, these interactions can be used to gain increasing clarity (as well as risk identification) around the ultimate ICT solution.

Agencies should engage as early as possible with the vendor market to define and refine the potential technical and business solutions in a progressive fashion. Typical market tools include RFI, EOI and RFT. The RFT stage can be used to generate competitive tension around defined technical and business requirements.

3.4.3 Increased competition

Aligning procurement to project stages provides the ability to use multiple suppliers for different stages of the project. Agencies are able to competitively evaluate tenders for each stage prior to awarding a contract, allowing the optimum vendor to be selected for the tasks being undertaken in that stage. This reduces risk by providing contract exit points aligned with each stage and informing market engagement and selection for later stages.

Tendering separately for individual stages also increases market competition at later stages by not locking in a single vendor for the entire project duration. The increased competitive tension may be used to offset price increases that may be introduced due to the shorter duration of contracts and the need for vendors re-bid for later stages of the same project.

3.4.4 Active contract management

Active contract management is critical to the success of ICT projects. Any discussion in relation to the project must be conducted through the lens of the contract. The procurement strategy in the business case should detail tools to enable active contract management throughout the project that can be negotiated into the vendor contract during the procurement process. This becomes particularly important when procurement aligns with a staged delivery approach, requiring that contracts have tools built in with the ability to support re-scoping, re-baselining or even cancelling projects. Table 5 provides details about active contract management tools that can be employed.

Table 5 Active contract management tools

Active contract management tool	Description
Contract variation processes	The need for contract variation may arise at any point in a contract, making clear processes around how this should be managed essential. In a situation when a vendor has been contracted to fulfil tasks across two or more stages in a staged project this becomes particularly important because these processes will be needed to execute any contract variations required to align with the government approvals.
Fees and payment milestones	Fees and payment milestones should be aligned with project stages. This provides clean delivery break points to enable projects to be stopped for review and negotiation of any necessary contract variations.
Performance management processes	Performance management processes should align very closely with project stage reviews and milestones. This enables actions resulting from performance management issues and findings to be built into subsequent phases. This also provides for realignment of performance management processes where necessary to align with any contract variations.
Suspend/review points	Pause or review points should be written into the contract to align with the end of each project stage. These need to allow sufficient time for the previous stage to be completely assessed and for the approval process to be completed for the subsequent stage. Contracts should be written to ensure the State is not potentially liable for large liquidated damages bills for 'delay'.
Exit/termination points	The contractual tools to enable vendor contracts to be terminated in line with a government decision to cancel a project must be written into contracts. Contracts should be written to ensure the State is not expected to pay large break or exit fees for contracts if this situation occurs.

3.5 Business readiness (stakeholder engagement)

Business readiness for an ICT project is not fundamentally different to an asset or service delivery project. Successful project delivery and full realisation of business benefits relies on stakeholder acceptance and utilisation of the new solution. The methods by which stakeholders are brought to understand, accept and adapt to the new solution are not unique to ICT projects. However, many ICT projects are far reaching in the number and variety of stakeholders and users impacted. This is often underestimated when projects are initiated resulting in significant overruns of time and budget.

3.5.1 Planning for organisational change

Business readiness is a planned, integrated and targeted approach to engaging people in the process of organisational change. All of the business readiness activities must be adequately costed as part of the business case.

In some large and complex service transformations, training and communications can be the single largest cost item. Service transition (the transition of the ICT solution from the project environment to the production environment) can also have significant cost and process implications. Key considerations that should be taken into account when planning and preparing the business and users for service transformation are:

- Avoid underestimating the costs and efforts required for organisational change. Organisational change takes time and effort and may be the single largest project cost.

- Ensure that the change management plan is supported by strong direction from senior management. This improves engagement and commitment by stakeholders across the business. There is a strong link between project success and the demonstrated commitment of senior management in the business affected by service transformations.

- Avoid leaving organisational change management until the end of the project – it should be an integral aspect of the project from the outset.

- Incorporate comprehensive stakeholder engagement strategies. The accountability to enact change and achieve business benefits must lie with the parts of the business that are going to benefit from them. Assigning ownership of change encourages commitment to the change and continued stakeholder engagement with the project.

An ICT project business case should clearly demonstrate the steps taken to ensure that the relevant sections of the business are (or can be) suitably ready for the proposed business transformation. In particular:

- The preliminary business case is expected to demonstrate a high level understanding of the size of the transformation to enable high-level costing estimates.

- The full business case must provide a more thorough level of understanding of the specific business readiness activities to enable more detailed costing.

3.5.2 Understand the current environment

All business readiness activity supports a change from the current state to a future state. In order for effective assessment and planning of the changes required, it is necessary to have a clear understanding of the current working environment as a basis to plan business readiness activities and as a benchmark against which to determine the success of benefits realisation. Agencies may need to undertake extensive business process mapping before being in a position to determine or assess technology solutions.

3.5.3 Model the future environment

The design of the proposed business processes and systems will shape the future environment for the organisation, users and beneficiaries. The gap between the current state and the proposed future state will determine the level of effort and organisation change budget for the project, both of which are key inputs to the preliminary and final business cases. A model of the proposed future organisation should consider:

- new or modified products or services;

- staff changes – increases or decreases both short term and long term;

- communication and training required for beneficiaries of the product or service;

- communication and collaboration with other government agencies, other jurisdictions and other stakeholders;

- changes brought about by legislation or regulation, policy, procedure and process;

Recommended solution

- location considerations, including CBD, metropolitan and regional;
- infrastructure, including ICT infrastructure, customer service presence and office accommodation, security, privacy and the provision of tokens (e.g. licenses); and
- supply chain, including storage and distribution of goods, tokens and stationery.

The preliminary business case should contain qualitative statements to describe the future environment, enabling key and large areas of change to be identified and supporting high-level costing.

The full business case should present a detailed breakdown of the future environment covering each of the points listed above, enabling a quantitative comparison with the current environment to support change management planning and detailed costing.

3.5.4   Develop a change management plan

A change management plan is a critical component of a full business case for an ICT project. A change management plan is a detailed blueprint for all aspects of implementing a project into the agency, and should include the following components:

- rationale, objectives and approach;
- current state and future state analysis;
- funding and infrastructure arrangements;
- impact assessment an workloads including key steps, responsibilities and timeframes;
- governance including senior executive involvement, communications and stakeholders (training plan; staff, customers and beneficiaries);
- structure transition (including transitional arrangements) and service transformation;
- risk management plan; and
- evaluation of performance.

There is a clear causal link between successful change management and the experience levels of those developing and executing the change management program. An agency embarking on a complex ICT or service transformation project should ensure that accountability for the change management plan resides with suitably experienced, accountable and skilled staff.

3.5.5   Develop an ICT service transition plan

As part of the full business case, a detailed and fully costed ICT service transition plan should be developed. It will closely interact with the change management plan.

The plan should detail the way that the ICT solution will be promoted from the development environment to production including performance metrics (availability, uptime etc.), support arrangements (user support and maintenance), business continuity, capacity management, licensing constraints, third party access, security and any non-standard commercial terms with vendors. The ICT service transition plan should identify any additional training required for ICT staff.

The activities to enable a successful service transition require funding and resources to be allocated as part of the project and must be factored into the business case.

- The preliminary business case should provide sufficient high-level detail of the type and magnitude of transition, including high-level cost estimates.
- The full business case must contain ICT service transition activities that are fully understood, planned and costed.

There are a number of industry standard templates for creating ICT service transition plans, including the service transition module of ITIL v3.

3.6 Risk management

ICT projects have a complex risk profile due to their abstract nature, complexity and unique cost structures. Risks are often difficult to identify and quantify, and it can be a long period of time before it is apparent that a particular risk has materialised. Some of the key areas of consideration for agencies in identifying and costing risks in an ICT business case include:

- ensuring all keys risks associated with a project or solution are specified to support appropriate decision making;
- a level of confidence that solution prerequisites will be in place, and associated risks are included where appropriate;
- ensuring risks associated with baseline assumptions not holding true are evaluated;
- ensuring detail is not confused with accuracy – risk registers don't need to be long but need to be focused on major risks that have the potential to affect the success of the project; and
- ensuring risk management is not treated as an administrative function – risk management is a key tool to identify and mitigate major factors that could negatively influence the outcomes (increase costs/timeframes or reduced benefits) of the project.

DTF expects that the business case for an ICT project will incorporate an assessment and quantification of risks, and a risk management plan.

3.6.1 Risks relevant to an ICT project

The types of risk that are likely to apply to an ICT business case are detailed in Table 6. All risk types listed in the table should be considered for inclusion in both the preliminary and the full business case. This table is not intended to be exhaustive.

Table 6 ICT project risks

Risk	Description
Obsolescence risk	The risk that a solution or aspects of the solution (hardware, COTS product version, etc.) will become obsolete before the solution is fully deployed, or before the full return on investment of the solution has been realised. The obsolete aspects of the solution may no longer be supportable, which will incur either significant risk in continuing to operate on an unsupported solution, or additional cost to implement an upgrade or replacement of obsolete components.
Scope creep	Scope creep or unmanaged scope additions and changes present a risk to a project because they often result in additional cost and time. Practical mitigation of this risk requires that scope changes are managed through defined change control process that ensures all the appropriate approvals, budget adjustments and timeline adjustments are made. These should not affect the successful delivery of a project.

Recommended solution

Risk	Description
Vendor risk	The same uncertainties and complexities that make ICT projects difficult to define, cost, plan and execute for government can affect vendors. Where unforeseen issues to delivery occur this can cause vendor delay or even failure to deliver. A well-defined contract and active vendor management should provide the tools to manage this risk, including terminating contracts where necessary.
Inexperience risk	Major ICT projects are undertaken infrequently. This introduces the risk of errors of judgement being made at all stages of the project due to lack of relevant experience. This can be mitigated through the engagement of external expertise, for example, in the form of a solution provider, assurance partner or 'critical friend'.
Technical risk	Technical risk encompasses a range of potential ICT project risks related to the specific solution or technology being used. This may include risks such as: • incompatibility between products or solutions; • complex components that prove extremely difficult to implement or test; • development tools not suited to development; • unexpectedly high occurrence of system defects; • system failures; and • underestimation of effort required to align with existing technology. These risks are mitigated through implementing quality assurance and testing processes that should highlight the risks before they become unmanageable.
Personnel risk	ICT projects often require a large number of specialised staff over a long period of time. This introduces a range of personnel and staffing risks including: • staff shortages (i.e. due to sickness and attrition); • loss of key project staff; and • over-reliance on key experienced staff.
Solution acceptance risk	The benefits of a solution cannot be realised until it is fully accepted and used by its target users. Regardless of the success of other elements of the project, if the solution is not put to use the project is effectively a failure. In order to mitigate this risk it is necessary to plan, fund and undertake business readiness activities. In some cases the effort required to bring the business into a state of solution-acceptance readiness is significant and ongoing throughout the project (see section 4.5).
Security risk	Many ICT projects involve collecting, storing and/or transmitting sensitive data. This may be commercially, personally or operationally sensitive. The risk of this data being accessed and used in an unauthorised manner needs to be managed as part of a security risk strategy. Mitigation will depend on the type of solution being built and the type of security risks identified, and may range from password security all the way to secure buildings and installations. This must be managed on a case-by-case basis.
Risk of disaster	Critical ICT solutions should be designed with the possibility of 'disaster' in mind. This encompasses situations where the solution goes out of service, potentially for an extended period of time. Examples include fire, power failure or major weather event. Mitigating this risk involves developing a disaster recovery plan, which may range from having a backup power generator, to developing a full disaster backup site. The types of mitigation required will need to be assessed based on the impact of having the solution out of service for any length of time.

3.6.2 Risk management plan

In order to fully define and evaluate risks, a risk management plan should be developed with the business case and should contain the full details of each risk including:

• a costed impact of the risk should it not be appropriately mitigated;

• risk mitigation plans and associated costs;

• risk contingency plans for risks not mitigated and associated costs;

- an evaluation of each risk in financial terms;
- identifying milestones where key risks should be mitigated and therefore contingency budget can be returned to the funding source; and
- identifying the risk owner.

A risk management plan helps drive appropriate risk management throughout the lifetime of the project and sets out the effort and cost of risk management for the business case.

Preliminary business case

All key risks to the success of the project should be listed, along with a high-level plan of mitigation strategies. The risk management plan should contain clear definition of key risks that may have a significant impact on the project viability or selected solution.

Full business case

A detailed risk assessment should be undertaken and an associated risk management plan and risk register provided. This assists in defining risks and ensures mitigation strategies are built into project costs and planning.

3.6.3   Risk evaluation techniques

An evaluation technique should be used to quantify the risks associated with a project in financial terms and this should be clearly documented. This analysis can be used to inform the project's contingency level. Appropriate techniques include:

- an estimated monetary value (EMV) calculation that provides a weighted average of the anticipated impact;
- a risk model that aggregates risks using a simulation technique;
- a net present value (NPV) calculation using an accepted discount rate.

A regular evaluation of risks should be planned for key stages throughout the project lifecycle.

3.6.4   Assign risk owners

Risks and their mitigation plans should be owned by an appropriate project member or business stakeholder. This ensures continued monitoring and adherence to the mitigation strategies, as well as encouraging realignment of the mitigation plan with the risk as it evolves. Risk ownership assignment and associated responsibility should be defined to encourage early detection of risks and innovative mitigation strategies but avoid becoming a mechanism to assign blame.

3.6.5   Risk escalation

Risk escalation processes must form part of the risk management plan presented in the full business case. Accountability for mitigating project risks rests with the governance groups that should feature as part of the risk escalation process. Key to the success of risk management by governance forums is reporting mechanisms to ensure risks are captured at all levels within the project and escalated where mitigation actions are ineffective or insufficient delegated authority exists to enable corrective action.

3.7 Governance

Appropriate governance structures are critical to the success of ICT projects due to their inherent complexity and abstract nature and complex risk profile. Formal governance is necessary to provide the appropriate forums for ongoing project control and monitoring as well as enabling effective decision making regarding the boundaries for project delivery to ensure that the endorsed project scope and budget are delivered.

The Lifecycle Guidance for Project Governance provides details of leading practice, templates and techniques for effective project governance, and can be applied to ICT projects. Additional considerations for ICT projects are set out below.

3.7.1 Seek an independent perspective

Ensure there is an independent review or perspective on the steering committee. This independent perspective can be used to provide content expertise, systemic thinking, facilitation skills, organisational knowledge and a fresh and unencumbered perspective to support clear decision making and governance. This function may be filled through engaging a 'critical friend' (see section 3.7.3).

3.7.2 Central agency involvement

The HVHR framework (see section 1.3) introduces a greater level of oversight and involvement in the project assurance process by DTF. This includes scrutinising and assessing preliminary and full business cases at the early stages of the project.

To support this oversight, central agency representatives may be members of the project steering committee, as well as reference groups and working groups as appropriate. This will depend on the nature of the project, its risk profile, and the skill and expertise brought to the project by central agency representatives. This does not replace departmental accountability for the investment and its outcomes.

3.7.3 Project assurance

Project assurance involves providing an independent view of how the project is progressing. The findings of any project assurance activities should be reported to the steering committee and be considered as part of their governance activities. Under PRINCE2, there are three views of assurance: business, user and specialist.
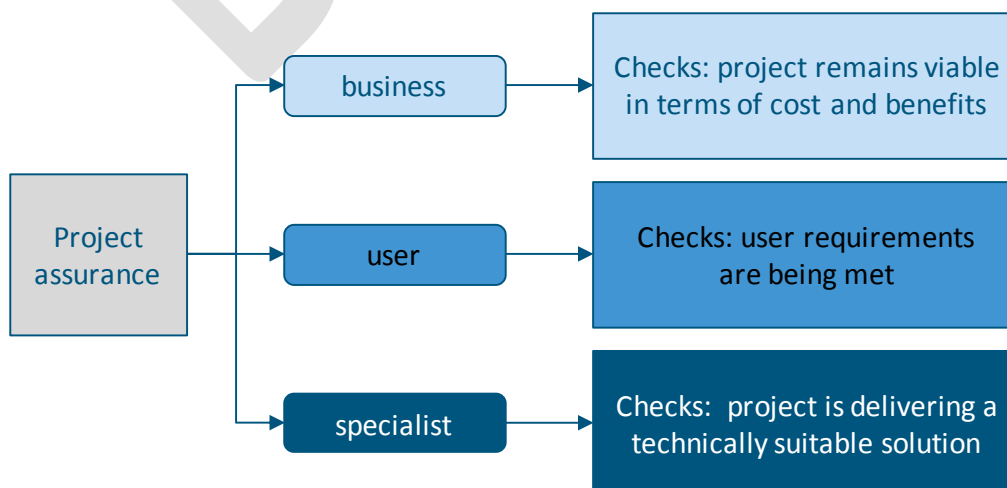
For an ICT project, assurance activities should provide details of all three aspects of the project. These may be combined or undertaken by steering committee members. However it is recommended that for HVHR ICT projects, assurance is undertaken by external and independent parties. The following sections outline different assurance options that may be considered for ICT projects. Depending on the attributes of the specific project it may be advisable to employ more than one of these options. The nature of the independent assurance should be determined by the size, complexity and risk profile of the project.

Critical friend

A 'critical friend' is someone who provides independent assurance through continuous challenge, asking critical questions and identifying areas for improvement while assisting the project governance group as a non-executive member of the steering committee.

A critical friend offers skills and experience including content expertise, systemic thinking, facilitation skills, organisational knowledge or a fresh perspective to the executive governance team to deepen the evidence base, develop policy, solve a specific problem, widen debate, reinforce strategy or develop new working methods. A critical friend is usually a part-time role and appointed on a periodic or continuous assurance basis; however, is likely to be most effective when appointed for the duration of the project on a continual basis.

Periodic assurance

Periodic assurance involves regular health reviews of projects including status and trajectory. This is often undertaken on a two- to three-monthly basis and usually focuses on business assurance – that the project is on track to deliver the benefits and outcomes as specified. This is appropriate for less complex, non-dynamic parts of projects.

Continual assurance

Continual assurance involves ongoing involvement of a person or team with the project. Under this arrangement the independent person or team will attend key project meetings, review project documentation and conduct any further investigation necessary to provide assurance that the project is progressing appropriately. This assurance activity may be undertaken as part of the role of a third party certifier.

Gateway reviews

Gateway reviews are compulsory for all HVHR projects. Certain gateway reviews may also be beneficial for projects that are not categorised as HVHR. The Gateway review process provides further information.

3.7.4   Sign off

Final business case sign off is required from the SRO. Due to the complexity and unique risk profile of ICT projects, DTF expects that the business case is also be endorsed by an appropriate governance committee that includes key business stakeholders and the senior executive accountable for ICT within the agencies impacted.

Appendix A: ICT-specific content for preliminary business cases

Preliminary business case	Additional detail and content for ICT preliminary business case
Part 4.1 Solution options considered	• Project options considered should include: o variations to project staging; o delivery methodology; o COTS product selection (where relevant); o COTS customisation (where relevant); o levels or configurations of outsourcing; o variations to scope; and o order or timing of delivery. • Ranking criteria for project options should include: o detailed financial evaluation; o risk reduction; o delivery timescales and benefits realisation; o existing technology; and o consultation.
Part 4.2 Details of the proposed solution	• Clearly specify the project in terms of outcomes, business benefits, capabilities and functions. • Avoid specifying 'how' a solution will work. • Avoid aligning with outdated business practices where possible. • Provide a scoping statement. • Provide a statement of work (initial version). • Present the recommended solution with proposed delivery stages.
Part 4.3 Cost estimates	• Project costs broken down sufficiently to provide a basic understanding of the cost of each function. • Consider including appropriate ICT project-specific cost types as listed in Appendix C. • Ensure the TCO of the solution is taken into account as part of high-level cost estimates. • Ensure all costs are presented such that it is clear how they are derived and assurance is provided that all relevant project components have been considered. • Ensure project contingency estimates are clearly identified as part of the budget. • Seek expert independent assistance to verify assumptions and cost estimates.
Part 4.4 Procurement strategy	• Clearly describe the proposed procurement strategy. • Include Gateway reviews in the procurement process. • Align procurement with staged delivery.

Preliminary business case	Additional detail and content for ICT preliminary business case

Part 4.6 Risk management	• Ensure key areas of consideration for ICT projects are taken into account including:
	   o ensure all key risks are specified;
	   o risks associated with solution prerequisites;
	   o risks associated with baseline assumptions;
	   o avoid confusing detail with accuracy; and
	   o avoid treating risk management as an admin function.
	• Consider including risk types particularly relevant to ICT projects.

Part 4.7 Governance arrangements	• Provide a detailed governance plan, setting out key accountabilities, responsibilities and escalation mechanisms.
	• Leading practices to consider when developing the governance plan:
	   o Select an SRO with appropriate experience and seniority.
	   o Select steering committee members based on merit and delegated authority.
	   o Minimise points of accountability.
	   o Separate project governance from organisational governance.
	   o Separate project governance from stakeholder management.
	   o Seek an independent perspective.
	• Ensure central agency involvement is part of the governance plan.
	• Specify key project assurance techniques and processes that will be used (e.g. a critical friend, periodic assurance, continual assurance, Gateway reviews)

Appendix B: ICT-specific content for full business cases

Full business case *(Headings taken from the draft full business case template)*	Additional detail and content for ICT full business case

3.2 Strategic options considered and strategic response	• Options considered should include 'do nothing' and non-technology (business process changes), as well as technology (COTS or bespoke) strategy.
	• Ranking criteria should include:
	  o TCO;
	  o business process update;
	  o existing technology;
	  o strategic alignment;
	  o risk reduction; and
	  o consultation.

4.1 Description of project options considered	• Project options considered should include:
	  o variations to project staging;
	  o delivery methodology;
	  o COTS product selection (where relevant);
	  o COTS customisation (where relevant);
	  o levels or configurations of outsourcing;
	  o variations to scope; and
	  o order or timing of delivery.

4.2 Stakeholder identification and consultation	• Demonstrated stakeholder involvement in developing the business case, in particular determining genuine business need and defining business benefits. • Demonstration of consultation with key stakeholders and independent subject matter experts on assumptions and constraints.

4.5 Financial analysis	• Ensure commonly omitted costs are factored into estimates such as:
	  o business change and transition;
	  o existing technology readiness;
	  o system interfaces;
	  o data requirements;
	  o customisation whole-of-life costs.
	• Ensure TCO of the solution is considered.

Full business case *(Headings taken from the draft full business case template)*	Additional detail and content for ICT full business case

4.6 Risk	- Ensure key areas of consideration for ICT projects are taken into account including:
	  o ensure all key risks are specified;
	  o risks associated with solution prerequisites;
	  o risks associated with baseline assumptions;
	  o avoid confusing detail with accuracy; and
	  o avoid treating risk management as an admin function.
	- Consider including risk types particularly relevant to ICT projects including:
	  o obsolescence risk;
	  o scope creep;
	  o vendor risk;
	  o inexperience risk;
	  o vendor risk;
	  o solution acceptance risk;
	  o security risk; and
	  o risk of disaster.
	- Provide a risk management plan.
	- Evaluate risks in financial terms using a recognised evaluation technique.
	- Assign risk owners.
	- Ensure risk escalation processes are built into the risk management plan.

4.8 Options ranking	- Ranking criteria for project options should include:
	  o a detailed financial evaluation;
	  o risk reduction;
	  o delivery timescales and benefits realisation;
	  o existing technology; and
	  o consultation.

4.9 Details of the recommended solution	- Present the recommended solution with proposed delivery stages. - Clearly specify the project in terms of outcomes, business benefits, capabilities and functions. - Avoid specifying 'how' a solution will work. - Avoid 'over-scoping', specifying requirements that are not directly relevant to achieving project benefits. - Ensure non-functional requirements are specified. - Avoid aligning with outdated business practices where possible. - Ensure interfaces and dependencies on existing technology are specified. - Ensure interfaces and dependencies on existing technology are specified. - Provide a scoping statement and a statement of work.

Recommended solution

Full business case (Headings taken from the draft full business case template)	Additional detail and content for ICT full business case
4.11 Stakeholder engagement and communication plan	- Ensure key areas of consideration for ICT projects are taken into account including: - Avoid underestimating the full costs and efforts required for organisational change. - Ensure the change management plan is supported by senior management. - Avoid leaving change management until the end of the project. - Incorporate comprehensive stakeholder engagement strategies. - Ensure the current environment is understood and model the future environment. - Provide a change management plan. - Provide an ICT service transition plan.
4.12 Procurement	- Develop a procurement strategy, taking into account the following considerations for staged delivery: - early engagement with the market; - greater use of tendering with multiple suppliers for different stages; - active contract management; - suspend, exit or terminate clauses built into contracts; and - HVHR requirements and existing government probity and procurement rules.
4.13 Governance structures	Description of governance structures that will be implemented, including identifying key roles, responsibilities, required experience and level of seniority. Where appropriate this should include naming candidates. This should include any independent governance or support requirements.
4.14 Risk management planning and monitoring	- Demonstrate consultation with key stakeholders and independent subject matter experts on risks and risk mitigation strategies. - Consider phased implementation as a risk reduction strategy. - Consider solution prototyping and vanilla COTS implementation as a risk reduction strategy. - Where a customised COTS solution is considered, clear consideration of risks involved including whole-of-life risks of the solution. - Conduct appropriate risk assessment for any new system development work that will be undertaken, treating this as 'unproven' material input to the project. - Quantifying risks in financial terms via an appropriate risk evaluation technique. - Cost mitigation strategies, including an 'exit' strategy.

Full business case (Headings taken from the draft full business case template)	Additional detail and content for ICT full business case
4.16 Detailed costing	• Break down project costs sufficiently to provide a detailed understanding of the cost of each benefit/outcome/function. • Consider including appropriate ICT project-specific cost types as listed in Appendix C. • Ensure TCO of the solution is clearly broken down and estimated. • Ensure all costs are presented such that it is clear how they are derived and assurance is provided that all relevant project components have been considered. • Ensure project contingency estimates are clearly identified as part of the budget. • Provide highly refined cost estimates (including contingency) for the stage for which funding is being sought. • Seek expert independent assistance to verify assumptions and cost estimates.
4.17 Sign off	• Signoff by the executive responsible for ICT.
4.18 Exit strategy	• Details and costing for an 'exit strategy' should be included for each stage of the project.

Appendix C: ICT project-specific cost types

The following list of specific costs types are those that are likely to be found in an HVHR ICT project and should therefore be reflected, as appropriate, in the estimating model for the full business case. This does not represent an exhaustive list, nor are all these cost types going to be appropriate for all projects:

- software licences;
- new or upgraded hardware;
- data centre capacity and operating expenses;
- disaster recovery site(s);
- requirements analysis;
- solution design;
- custom development;
- COTS configuration;
- unit testing;
- system testing;
- performance testing;
- user acceptance testing;
- automated testing tools;
- test and defect management tools;
- external system interfaces;
- data analysis, cleansing and migration;
- vendor technical and functional support;
- software maintenance;
- software enhancements;
- software upgrades;
- production and backup storage;
- new or upgraded desktop hardware;
- business needs analysis and readiness;
- desktop software;
- network usage;
- helpdesk support;
- project management office, including risk, issue and status management;
- procurement and legal support;
- office space for the project team and support ;
- travel, accommodation and incidental expenses;
- independent assurance;

- training development and execution;
- backfill of line staff seconded to the project, in workshops or in training;
- internal project and stakeholder communications;
- handover support; and
- external specialist contractors/consultants.