

Queensland Government Enterprise Architecture

ICT-as-a-service: Decision Framework - Overview

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This version of the *ICT-as-a-service Decision Framework - Overview* was developed and updated by the Queensland Government Chief Information Office.

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Cloud computing guideline

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Information security

This document has been security classified using the Queensland Government Information Security Classification Framework (QGISCF) as PUBLIC and will be managed according to the requirements of the QGISCF.

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1 Introduction

1.1 Purpose

It is important to ensure that there is a consistent approach to ICT-as-a-service decision-making across Queensland Government.

The purpose of the ICT-as-a-service Decision Framework (this document and supporting artefacts) is to support an agency in making well informed and evidence-based decisions to either strategically transition their ICT workload (system/application/data) into an *as-a-service* delivery model, or to deliver via traditional in-house approach or to adopt a combination of these approaches.. The framework also includes criteria to assist agencies in the selection/validation of the appropriate service model and deployment model for their particular business requirements.

In situations where the advice provided in the ICT-as-a-service Decision Framework recommends a path/option which does not yet exist or additional assistance is required, agencies should consult with the Queensland Government Chief Information Office (QGCIO) (as design authority) for advice.

Note - This is **Release 1** of the *ICT-as-a-service Decision Framework*. It has been produced to provide initial guidance to agencies who are seeking to move forward with the ICT-as-a-service philosophy of the government, however it is by no means a complete framework at this point in time.

The Queensland Government is only at the start of its journey to an ICT-as-a-service delivery model and consequently there are lessons which have yet to be learned, building blocks that are still being put in place, and organisational maturity shortfalls in a range of areas that need to be addressed. It is therefore not possible to produce a mature/finalised Decision Framework up front. This framework and other related artefacts will continue to evolve to provide more detailed assistance, procurement instruments and supporting tools for agencies over time.

1.2 Audience

The intended audience for the *ICT-as-a-service Decision Framework* is:

- Business system owners
- Chief Information Officers
- ICT systems managers
- ICT security managers
- ICT network managers
- ICT strategic managers
- ICT investment and planning managers
- Enterprise architects
- Financial and procurement managers
- Information management specialists
- Legal officers.

1.3 Scope

Selecting a ICT-as-a-service migration option for given business applications and data requires a series of interrelated decisions that are influenced by a number of often conflicting factors, including application requirements, constraints, personnel skills, organisational principles and ICT strategy and direction.

The *ICT-as-a-service Decision Framework* consists of an important set of artefacts designed to assist agencies in their decision making processes. However it is important to understand that it is only part of a broader range of tools, processes, skills and methodologies that agencies will need to utilise (and in some cases develop themselves) in order to ensure successful ICT-as-a-service sourcing.

The scope of this framework is outlined below, along with discussion about the inter-related frameworks/methodologies (existing and emerging) that agencies will need to consider.

1.3.1 In Scope

1. Provide criteria and guidance to help an agency to determine via a risk assessment whether an ICT workload (system/application/data) is suitable for ICT-as-a-service delivery.
2. Provide criteria and guidance to help an agency to identify/validate preferred Service Model (Infrastructure-as-a-service (IaaS), Platform-as-a-service (PaaS), Software-as-a-service (SaaS)) and deployment models (public, private, community, managed service) for particular ICT workloads.
3. Provide criteria and guidance for agencies to consider during sourcing/procurement.

1.4 Other considerations/limitations

1. The decision framework is focused on models where an entire workload is being sourced in one way. Hybrid models where some parts of a system are sourced in one way and other parts sourced in another way are not directly covered. However, an agency could in this instance still use the framework by assessing each component separately. For example, an agency could do a risk assessment of two separate cloud components and then view results collectively to make an overall decision.
2. The decision framework covers only the assessment of an individual workload. Overall prioritisation of agencies program of work, and determination of comparative priority of different workloads to the cloud is not part of this document. This requirement is addressed by existing Queensland Government Enterprise Architecture (QGEA) methodologies (see section 2.2 of this document for further discussion about the relationship of this framework to these broader methodologies).
3. Agencies can use the framework to assist in the risk assessment of a solution (or architecture), but it is up to the agency to identify the specific solution/service offering that they wish to assess.
4. Agencies will need to determine which market options can best address their business requirements.
5. The decision framework provides high-level advice on sourcing/procurement considerations. However, further prescriptive advice in this area will, over time, be provided via Queensland Purchasing Policy artefacts/templates/tools (e.g. GITC Cloud module).

1.5 Background

The Queensland Government has identified¹ that it will adopt an ICT-as-a-service strategy and source ICT services, especially commodity ICT services, from private providers in a contestable market.

Queensland Government will take a 'cloud-first' approach to the sourcing of ICT functions, requiring agencies to consider cloud-based solutions in preference to traditional ICT investments wherever feasible and cost-effective.

The QGCIO has been tasked with the role of design authority for *ICT-as-a-service* across government responsible for defining, reviewing and monitoring the overall architecture and approach adopted across Queensland Government with regards to *ICT-as-a-service* and to ensure consistent, coordinated and optimised approach is taken by agencies.

The Queensland Government's vision for ICT-as-a-service and other details of the proposed approach can be found in the *Queensland Government Cloud Computing Strategy*.

1.5.1 Triggers for use of the Decision Framework

There are many situations which could drive or trigger the use of the *ICT-as-a-service Decision Framework*, some of which are listed below:

Driver	Description
Strategic direction	Changes in business strategic direction could trigger the need to review ICT systems and the <i>Decision Framework</i> would be used to assist this process.
New solution required	New business requirements emerge requiring supporting ICT systems. The <i>Decision Framework</i> would be used to assist in the selection of this solution (e.g. BPaaS, SaaS etc.).
Opportunity identified	An opportunity arises to improve service delivery efficiencies and encourage service delivery innovation. The <i>Decision Framework</i> would be used to help make ICT decisions.
High risk systems or replacing systems that are in poor technical condition	Existing applications may be identified as being at risk or no longer supporting emerging business requirements. The <i>Decision Framework</i> would be used to help assess solutions to rectify these issues.
High-cost system	A system may be identified as incurring significantly high costs. The <i>Decision Framework</i> would be used to help assess solutions to identify whether cloud computing could provide lower cost solution.
Innovation	The <i>Decision Framework</i> would be used to assess ICT solutions for innovative ideas.
Annual ICT Planning Cycle	See Section 2.2 for additional information.

¹ In the *ICT Audit, Cloud Computing Strategy, Commission of Audit report* and *Qld ICT Strategy*

2 Framework Context

2.1 Application of the framework

There are two different scenarios (Figure 1) in which the decision framework can be applied:

1. To help identify suitable sourcing approaches for an agencies **entire ICT portfolio**
2. To make a point decision regarding the sourcing of a **single specific ICT workload**.

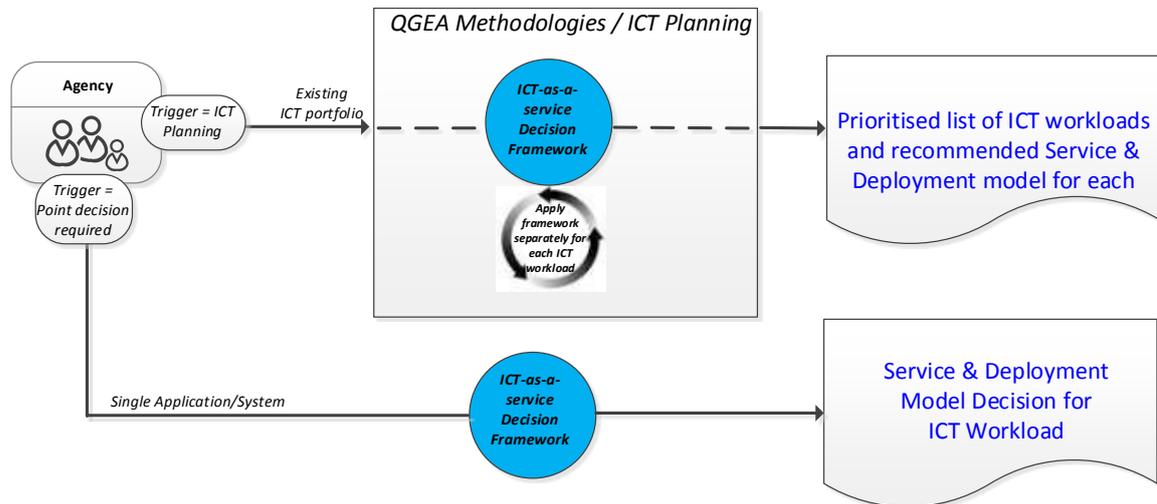


Figure 1: The two different applications for the Decision Framework

The application of the framework to assist in making a point decision about a single application/system is straight forward. However, the use of the framework within broader ICT planning activities deserves further explanation.

2.2 Queensland Government methodology context

This framework provides a number of tools and techniques specific to ICT-as-a-service decision-making. It should be read in conjunction, and applied to, the existing whole-of-government methodologies of ICT planning, portfolio management, program management, project management, benefits management, application rationalisation, ICT skills assessment, ICT workforce planning and business process improvement methodologies.

The whole-of-government methodologies are being reviewed and updated to provide the contextual thinking and background to transition the government to ICT-as-a-service as appropriate. In the future, parts of this decision-making framework may be incorporated into or serve as addendums to sections of these methodologies. Until such time, the reader is encouraged to apply this framework and its techniques in circumstances where ICT-as-a-service options are being considered and/or ICT-as-a-service decision-making is required.

A few examples of applying this framework when implementing whole-of-government methodologies are described in the table below.

Methodology	Example
ICT planning methodology	Provide options for ICT-as-a-service implementation including cloud service models and cloud deployment models (if an asset is assessed as needing to be replaced, optimised or enhanced). Determine if a potential initiative's solution is suitable for ICT-as-a-service delivery.
Portfolio management methodology	Provide additional dimensions that are relevant to ICT-as-a-service offerings when rating attractiveness and achievability of initiatives.
Program management methodology	Provide comparison between traditional IT and ICT-as-a-service sourcing options (for activities that are exploring sourcing and procurement).
Project management methodology	Provide comparison between traditional IT and ICT-as-a-service sourcing options (for activities that are exploring sourcing and procurement).
Benefits management methodology	Provide benefits of ICT-as-a-service offerings and innovative methods for managing these benefits.
Application rationalisation methodology (ARM)	Provide options for ICT-as-a-service implementation including cloud service models and cloud deployment models when the application portfolio is being rationalised.
ICT skills assessment methodology	Provide input into skills required when moving to ICT-as-a-service providers.
ICT workforce planning methodology	Provide input into workforce required when moving to ICT-as-a-service providers.
Business process improvement methodology	Provide additional dimensions that are relevant to ICT-as-a-service offerings when improving business processes.

The following diagram (Figure 2) depicts the **current** relationship between these methodologies, along with the ICT-as-a-service perspective that will need to be considered in each. The diagram also depicts where the *ICT-as-a-service Decision Framework* fits within this broader umbrella of investment/ICT planning.

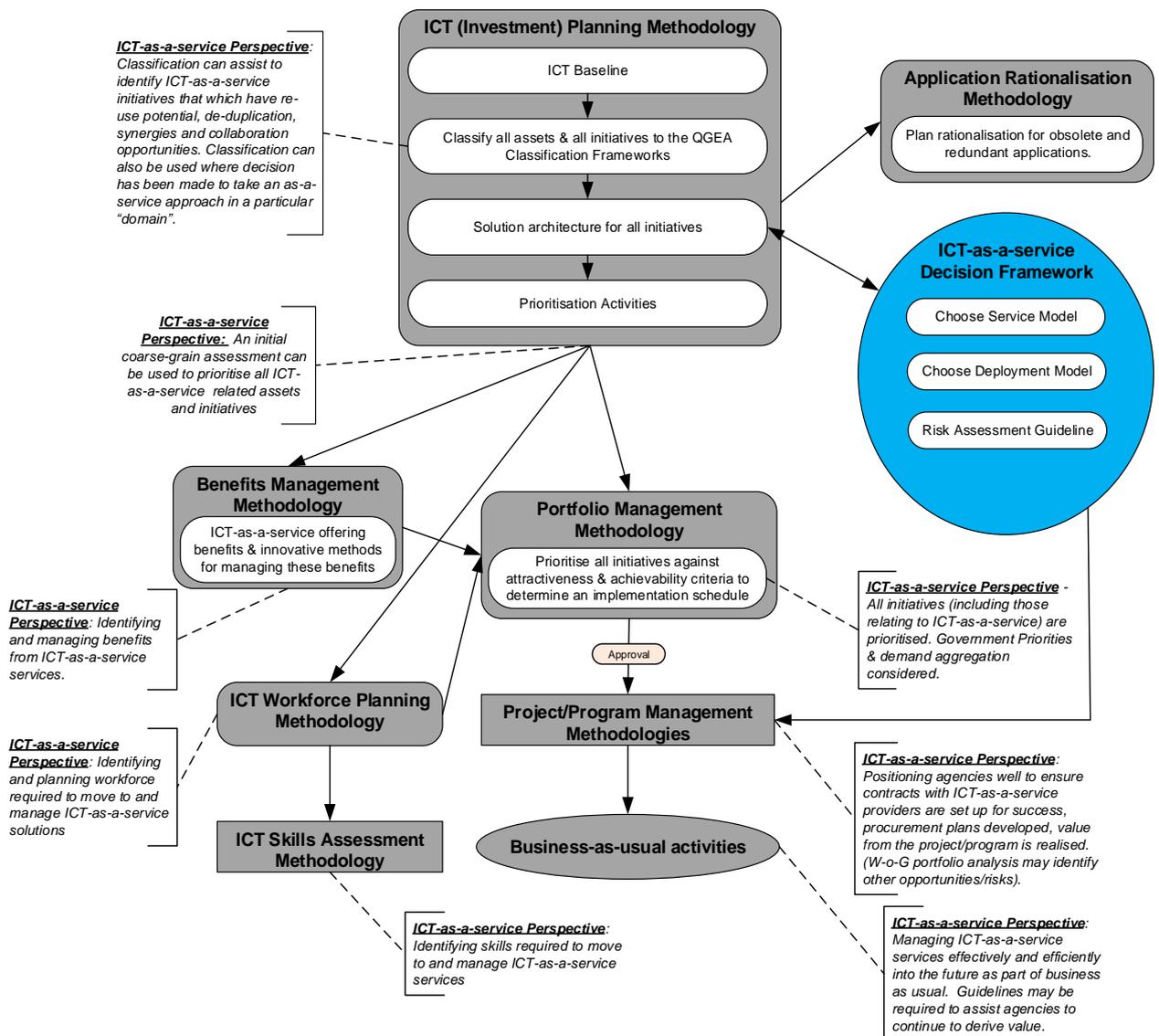


Figure 2: ICT-as-a-service considerations within the Queensland Government methodologies

3 Process overview

Prior to using the ICT-as-a-service Decision Framework, agencies must have clearly defined the business requirements for the ICT workload to be examined using the framework. There are three key process components of the framework:

1. Choosing a service model

This process component assists in the choice of an appropriate service model (e.g. SaaS, PaaS, IaaS etc.). In circumstances where an agency has already identified a preferred service model they should still validate their choice during this stage.

2. Choosing a deployment model

This component examines the appropriate deployment model for the workload (e.g. public, private, community cloud etc.). In circumstances where an agency has already identified a preferred deployment model they should still validate their choice during this stage.

3. Risk assessment

Using a risk assessment approach, determine whether or not an ICT-as-a-service cloud solution is appropriate for the ICT workload. This step also considers whether product offerings already exist that are suitable and can be re-used.

Informing all of these process components are the [ICT-as-a-service policy](#) and [ICT as-a-service offshore data storage and processing policy](#). Also supporting the process outlined by the *ICT-as-a-service Decision Framework* are the Queensland Procurement Policies and other Queensland Government standard, policies and procedures.

The outcome from using the *ICT-as-a-service Decision Framework* is a decision about how the business requirements will be met by suitable cloud computing or alternative services. It is expected that the Queensland Government will initially have mixture of cloud services and some traditional ICT. This is referred to as a hybrid IT environment.

Figure 3 below depicts the primary artefacts and process flows of the *ICT-as-a-service Decision Framework*:

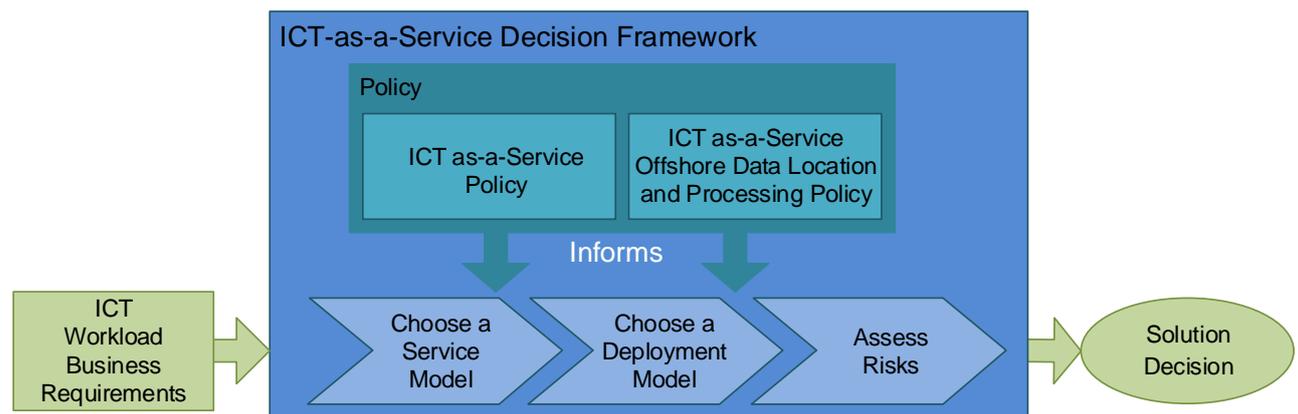


Figure 3: ICT-as-a-service Decision Framework Process

3.1 Artefacts

The artefacts that make up the *ICT-as-a-service Decision Framework* are outlined below:

Artefact	Purpose
ICT-as-a-service Decision Framework – Overview (this document)	This document provides an overview of the <i>ICT-as-a-service Decision Framework</i> . It covers the following: <ul style="list-style-type: none"> • ICT-as-a-service background and drivers • Framework context • Key artefacts and processes.
ICT-as-a-service service model selection (under development)	This artefact is designed to help an agency determine the likely service model for a particular ICT workload. This may be particularly useful for existing ICT workloads where the most appropriate level of transformation to migrate the business function to the cloud is not immediately obvious. <p>Service model options include:</p> <ul style="list-style-type: none"> • SaaS • PaaS • IaaS • Other e.g. Business-Process-as-a-Service. <p>In many situations, agencies will have a preferred service model they wish to proceed with, and in some cases they may even have a preferred solution identified. In those circumstances this artefact can still be used by the agency to validate their proposed approach prior to proceeding further.</p>
ICT-as-a-service deployment model selection	This artefact is designed to help an agency determine the likely deployment for a particular ICT workload. <p>Deployment model options include:</p> <ul style="list-style-type: none"> • public cloud (onshore/offshore) • community cloud • private cloud • traditional IT • a combination of the above. <p>In many situations, agencies will have a preferred cloud deployment model they wish to proceed with, and in some cases they may even have a preferred solution identified. In those circumstances this artefact can still be used by the agency to validate their proposed approach prior to proceeding further.</p>
ICT-as-a-service risk assessment guideline and Guideline annexe – risks/considerations	These two artefacts aim to assist agencies in developing a risk assessment when considering the use of ICT-as-a-service solutions. The focus is on enabling an agency in making informed and evidence-based decision to either transition an ICT workload (system/application/data) to an as-a-service model (cloud, managed service) or to deliver via an in-house traditional approach.

Artefact	Purpose
	<p>The <i>guideline</i> outlines the key cloud computing considerations/risks that agencies should address as part of their existing risk management processes.</p> <p>The <i>Guideline annexe – risk considerations</i> provides supporting detail for the <i>Cloud computing guideline</i>. It is not intended to be read as a ‘standalone’ document - it is intended as a companion to the guideline and is focussed on providing further details regarding key risks that agencies should consider during their risk assessment of ICT-as-a-service options</p>
<p>ICT as-a-service offshore data storage and processing policy</p>	<p>Based on a sliding scale of risk and community expectations, this policy establishes a whole-of-government approach to how different categories of information are treated when considering offshore of outsourced ICT arrangements.</p> <p>As depicted in Figure 3 (page 10 of this document), this policy informs decisions made throughout the as-a-service decision making process.</p>
<p>ICT as-a-service policy</p>	<p>This policy ensures that departments include externally provisioned ICT services when making decisions associated with ICT solution sourcing.</p> <p>For the purposes of this policy, ICT-as-a-service includes managed services or cloud computing as-a-service product offerings. For example; business process, software, platform and/or infrastructure as-a-service.</p>

3.2 Related documents

Agencies are responsible for knowing which legislation, regulations and standard requirements they need to comply with when making decisions regarding ICT-as-a-service procurement. These requirements may influence the decision making process. Key areas to consider are outlined below:

3.2.1 Legislation and regulatory requirements

There are a number of areas of policy and legislation that agencies will need to consider as part of their cloud decision making process. These include:

1. Office of the Information Commissioner – [Cloud Computing and the Privacy Principles](#)
2. Queensland Government Procurement Instruments e.g. State Purchasing Policy, GITC
3. State/Federal Statutory/Legislative Requirements e.g. *Public Records Act 2002, Information Privacy Act 2009*
4. Legislative and regulatory requirements in other geographic regions e.g. the *US Government’s Patriot Act*.

Certain legislation and regulatory instruments may need to be adjusted to explicitly support the use of externally sourced services such as cloud computing and the circumstances where such services are appropriate for use. The Queensland Government may need to influence these legislations where appropriate. A review of applicable legislation and regulatory requirements will identify any areas where changes need to occur.

The *ICT-as-a-service Decision Framework* Release 1 outlines **initial** guidance to agencies on how to ensure compliance with these policy/legislative instruments in their current form. This

guidance may however need to be updated if the requirements specified in the related legislation and regulatory instruments are modified.

3.2.2 Queensland Government information standards/frameworks

Key artefacts include the following:

1. [Queensland Government information security classification framework \(QGISCF\)](#)
2. [IS13 – Procurement and disposal of ICT products and services](#)
3. [IS18 – Information security](#)
4. [IS31 – Retention and disposal of public records](#)
5. [IS40 – Recordkeeping](#)
6. Queensland State Archives - [Managing the Recordkeeping Risks Associated with Cloud Computing](#)
7. [IS44 – Information asset custodianship](#).

The existing Queensland Government information standards and policies support the traditional ICT delivery approach. They will need to be adjusted to support the new ICT-as-a-service model. This is particularly important in the areas of security/privacy and recordkeeping.

Much of the information that agencies have traditionally been able to protect within the perimeter of their own networks will be shifted to the cloud. The Queensland Government will need to ensure that QGEA information security related policies and standards (e.g. IS18, IS33) adequately address new security and recordkeeping considerations relating to ICT-as-a-service environments, and agencies will in turn need to ensure the service provider's data security measures meet the mandatory requirements outlined in these policies and standards.

Whilst these areas have been considered in the development of release 1 of the *ICT-as-a-service Decision Framework*, there will be a 'deeper dive' required in order to update the information standards. Changes to information standards resulting from that review may drive changes to the advice provided in the *ICT-as-a-service Decision Framework*.