Queensland Government Enterprise Architecture

Information asset lifecycle guideline

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*Information asset lifecycle 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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# Introduction

## Purpose

1. A Queensland Government Enterprise Architecture (QGEA) guideline provides information for Queensland Government agencies on the recommended practices for a given topic area. Guidelines are generally for information only and agencies are not required to comply. They are intended to help agencies understand the appropriate approach to addressing a particular issue or doing a particular task.
2. This document describes typical phases of an asset lifecycle as well as a recommended approach for managing information, application and technology assets throughout the life of each asset or group of assets. This guideline describes details of typical activities that an agency may need to consider to effectively manage their ICT assets.
3. The intent of this document is to establish a point of reference from which agencies can formally develop specific policies, standards and procedures relating to the lifecycle of ICT assets and the management of those assets throughout the lifecycle.

The use of the word ‘asset’ within the context of this document should be read as ’ICT or information asset’.

## Audience

1. This document is primarily intended for:

* chief information officer (CIO)
* information management directors
* information asset custodians and information asset owners
* data managers
* application and technology asset custodians and owners
* ICT managers
* enterprise architects
* business analysts
* systems analysts
* ICT infrastructure managers.

## Scope

### In scope

This guideline relates to all of the domains within the information, application and technology layers of the QGEA. This guideline applies to all Queensland Government departments.

### Out of scope

The following are out of scope of the current guideline:

* the financial management and financial reporting aspects of managing assets throughout the lifecycle, including the recognition of assets for financial reporting purposes, capitalisation of assets, depreciation of assets and asset revaluations are not addressed in this guideline – refer to the Asset Management Framework published by Queensland Treasury at [www.treasury.qld.gov.au](http://www.treasury.qld.gov.au) for further assistance
* this guideline does not provide recommendations regarding the expected useful life of assets.

# Background

1. A principle of information asset custodianship is the effective management of assets throughout the information asset lifecycle. Good business practice requires that information assets be appropriately secured and maintained, used for the purposes intended, periodically accounted for, assessed to ensure their continued value to the organisation and properly disposed of.
2. This guideline has been developed to assist agencies to develop and implement processes to track and manage information assets over their lifecycle.

# What is an asset?

1. An asset is defined as a future economic benefit that is controlled by an agency, as a result of a past transaction or event, which can be reliably measured. An asset can be either tangible or intangible.
2. ICT and information assets refer to the information, business applications, software and technology resources controlled by an agency for the purpose of deriving economic benefits. ICT assets such as hardware and technology infrastructure are commonly referred to as tangible or physical assets. Electronically held information resources and software are typically considered to be intangible assets in that they have no individual physical presence.

# The information asset lifecycle

## Overview of the information asset lifecycle

1. The management of an information asset throughout its lifecycle includes planning and support for the investment decision, acquisition, access and ongoing maintenance, through to replacement or retirement planning. The objective of information asset lifecycle management is to optimise information asset acquisition, maximise the use of the information asset and reduce associated service and operational costs resulting in increased information asset performance and a lower total cost of ownership.
2. The asset lifecycle in figure 1 demonstrates typical phases and management objectives in the information asset lifecycle, from planning the investment decision through to retirement or replacement of the information asset.
3. 

Figure 1 – Information asset lifecycle

## Lifecycle phases

1. An overview of the management activities conducted in each phase of the lifecycle is described in Table 1. These activities can be applied to all ICT and information assets. How each of the management activities are applied to each type of ICT asset is discussed in appendix A – Information asset lifecycle management.

|  |  |
| --- | --- |
| 1. Phase | 1. Description |
| 1. Plan | * Develop requirements including:   business requirements  technical requirements  operational and support requirements  security requirements.   * Identify users and support roles and responsibilities. * Identify risks and barriers regarding use of the information asset. * Develop strategies to mitigate risks including backup and recovery plans. * Establish training needs. * Establish the context for use of the information asset. * Specify the design. * Source suppliers. |
| 1. Construct, create, acquire | * Build, create or acquire the information asset. * Monitor the quality of the implementation or installation. |
| 1. Commission, organise, store | * Test the information asset against the requirements. * Prepare the information asset for use. * Classify the information asset and establish metadata and supporting documentation about the asset and its use. * Ensure that information about the information asset and its location can be easily retrieved by endorsed parties. * Ensure information assets are stored in secure organisational repositories. * Ensure mobile physical assets are stored in secure facilities. |
| 1. Access | * Ensure authorised users can access the information asset. * Ensure security requirements are met. * Establish protocols so that the asset can be safely shared or re-used. |
| 1. Use | * Provide support and training to users of the information asset. * Monitor usage and utilisation of the asset. Refer to table 1 – Phases of the asset lifecycle and section 5 of this document for more information. |
| 1. Assess | * Assess the condition of the information asset. * Assess the cost of maintaining the information asset. * Assess opportunities for extending the use of the information asset. * Assess the current business value of the information asset. * Assess the current and asset management strategy. |
| 1. Maintain | 1. Based on the assessments, apply appropriate management strategies. These include: 2. Optimise – Invest to address or maintain the technical condition maintained while rationalising the operational costs if possible. Maximise the use of the information asset with the intent to create a flagship asset. 3. Rationalise – Invest to upgrade the asset to improve its technical condition and reduce operational costs. Consider lower cost alternatives. 4. Enhance – Ensure sufficient funding to ensure the future technical condition of the asset and promote re-use of the asset to maximise the future value of the asset. 5. Replace – Maintain the technical condition of the asset in the short term until the dependencies have been migrated to an alternative more stable solution. 6. Research and explore – Assess the function of asset against the requirement and identify alternative uses for the asset and the potential to deliver additional business value. Promote the availability and use of the asset. 7. Decommission – Retire the asset. |
| 1. Retire | * The business requirement for using the information asset has significantly evolved or no longer exists. * The asset has reached the end of its useful life and is decommissioned. |

Table 1 – Phases of the information asset lifecycle

# Information asset utilisation

Utilisation refers to the extent to which the potential access and use of an information asset is realised. Information, applications and technologies will typically experience periods of growth and decline in utilisation during its life. The QGCIO has identified four typical stages of growth characterised by the usage and maturity of the information asset. These stages include:

* initial release
* growth
* maximum potential
* decline.

1. The phases of growth and decline in an information assets access and use are described in Figure 2 on page 9 of this document.
2. 

Figure 2 – information asset utilisation

1. Following the commissioning of an information asset, its utilisation will increase to a point where the information asset reaches the maximum utility. information asset utilisation will then stabilise or the asset may experience further periods of growth before eventually declining to a point where the asset no longer meets requirements or is no longer required.
2. An information asset may experience a number of periods of growth depending on business requirements and how the asset is managed. Some information assets may never reach the expected full potential, which may influence future management strategies and investment decisions. For example, further investment may assist the information asset to reach its full utilisation potential. Other alternatives may need to be investigated that will meet the current demand for the information asset and satisfy the current business requirements. These management strategies need to be considered during the Maintain phase of the information asset lifecycle. The characteristics of each stage of utilisation and appropriate asset management strategies for each stage are described in table 2 on page 10 of this document.

|  |  |  |
| --- | --- | --- |
| 1. Stage | 1. Description | 1. Management strategy |
| 1. Initial release | 1. The information asset has been released for use by the organisation. This may be in the form of a prototype or proof of concept which involves limited and controlled use of the asset. The potential long term use is still being determined. This stage could be marked by considerable capital outlay to initially ‘develop’ the asset. | 1. Research and explore |
| 1. Growth | 1. The growth stage indicates a higher level of uptake with one or two business units now using the information asset. Awareness and acceptance of the information asset is growing and potential for re-use has been identified. Exposure of the information asset within the agency is creating interest and a subsequent growing need. This interest is showing a high potential for greater growth and raising the level of importance to the business. Risk management is also implemented. Capital outlay continues with ongoing maintenance and functional improvement. Growing the information asset with additional features and services is high. | 1. Optimise |
| 1. Maximum potential | 1. When the information asset has reached its maximum potential there is widespread uptake of the information asset across the agency. Business units indicate a high-dependence on the asset and optimising performance of the asset is critical to meeting corporate goals. Strategies are in place for sharing at cross-agency level and possible further exploitation. Management requires a well-defined management strategy with capital outlay stabilising. There is potential for cost recovery through licensing, for example. The information asset may represent a ‘flagship’ asset to the organisation. | 1. Enhance |
| 1. Decline | 1. An information asset is in the decline stage when, for a variety of business decisions, use of the asset (in its current state) wanes over time and the level of dependency is reduced. | 1. Rationalise/ decommission |

Table 2 - Managing information assets

# Effective lifecycle management

1. The discussion in section 4 of this guideline highlights how the maturity and growth in the use of information assets can affect the subsequent management strategy in the maintain phase of the information asset lifecycle. While maintenance of assets is important, the overall objective of information asset lifecycle management is to maximise the value of the agencies information asset base by:

* optimising acquisition costs through strategic sourcing and effective evaluation of options
* optimising maintenance costs through effective management strategies that are appropriate to overall utilisation of the information asset at points in time
* actively seeking re-use opportunities thus leveraging existing information assets
* actively planning for the retirement or replacement of information assets.

1. Agencies should develop formal processes and procedures and training to ensure that effective ICT information asset lifecycle management can be undertaken. Appendix A discusses typical activities required to manage information assets throughout the lifecycle as they relate to information assets, business applications and technologies.
2. Information asset lifecycle management
3. Table 3 contains typical activities required to manage information assets throughout the lifecycle. These activities are discussed in the context of information assets, business applications and technologies. Effective management of information assets during their lifecycle depends on a clear understanding of the ways in which these elements interact.

Table 3 – Information asset lifecycle management activities

| 1. **Lifecycle phase/ asset type** | 1. **Information** | 1. **Application** | 1. **Technology** |
| --- | --- | --- | --- |
| 1. Plan | 1. Develop stakeholder requirements to answer the following:  * What information will be captured? * Identify the sources of information? * Who will have access to the information? * When and how will information be accessed? * When and how existing information should/could be used? * When and how will information be acquired from other sources? * How will information be stored and maintained for ongoing use? | * Develop requirements and address the business case to answer the following:   + What are the business requirements?   + What are the functional requirements?   + What are the non-functional requirements including:     - 1. manageability requirements       2. usability requirements       3. architectural requirements       4. interface requirements       5. service level requirements.   + Who will have access to the application and what are the security requirements?   + How often will the application be accessed? * Determine whether existing applications exist or are available that will address the requirements. * Develop the business case for addressing the problem. * Determine the implementation approach. * Determine the sourcing strategy for sourcing external products as well as implementation and support resources. Sourcing options may include:   + buying   + leasing   + renting   + collaborating and sharing with other agencies. | * Develop technical requirements and address the business case to answer the following:   + What are the functional requirements?   + What are the non-functional requirements including:     1. manageability requirements     2. usability requirements     3. architectural requirements     4. interface requirements     5. integration requirements     6. service level requirements   + Who will have access to the technology and what are the security requirements?   + How often will the technology be accessed? * Determine whether existing technologies exist or are available that will address the requirements. * Develop the business case for implementing the technology. * Determine the implementation approach. * Determine the sourcing strategy for sourcing external products as well as implementation and support resources. Sourcing options may include:   + buying   + leasing   + renting   + collaborating and sharing with other agencies. |
| 1. Construct, create, acquire | * Establish information repositories. * Monitor and manage the collection of information to ensure that it is secure, accurate, and accessible and meets the requirements of the users. * Develop standard concepts and definitions for recording information and items so that information can be compared. * Identify single sources of truth for similar information assets. * Identify and consider risks and issues for why information cannot be shared. | * Design the business application solution. * Configure, code or integrate the business application components. * Construct the environments. * Test the business application and supporting technology components. * Test the operational model. | * Design the technical solution. * Install, configure and integrate the technology components. * Test the technology components. * Test the operational model. |
| 1. Commission, organise, store | * Establish an information asset register. * Classify information assets including the assignment of appropriate security classifications. Queensland Government Information Security Classification Framework and QGEA Information Classification Framework. * Develop practices, organise and store information in a manner that is easily accessible and where common requests for information can be executed efficiently. * Ensure that applied metadata enables information to be discovered easily and efficiently by users. * Assign information asset custodians. | * Establish information asset registers and maintain relevant configuration item information. * Classify application assets. * Assign application custodians. * Deploy the business application. * Deploy the operational model. * Conduct post implementation support. * Conduct user training. | * Establish information asset registers and maintain relevant configuration item information. * Classify technology assets. * Assign technology custodians. * Deploy the technology. * Deploy the operational model. * Conduct post implementation support. * Conduct user training. |
| 1. Access | * Establish protocols and conditions relating to the sharing of information. * Consider special access protocols. * Apply protocols to ensure that secure access to sensitive information by external parties is appropriate. * Document and publish conditions of access and use that will apply to information assets. * Document and publish points of contact for information requests. * Document processes for how to respond to information requests. * Establish business rules to ensure that privacy, confidentiality, security and other legislative obligations are met when responding to information requests. * Grant access to authorised users of the information asset. | * Establish protocols and conditions relating to access to the application as part of the operational model. * Grant access to authorised users of the applications asset. * Deploy the operational model and publish the support procedures and points of contact. | * Establish protocols and conditions relating to access to the technologies as part of the operational model. * Deploy the operational model and publish the support procedures and points of contact. |
| 1. Use | * Apply supply agreements and information sharing protocols. * Provide support and education to users. * Monitor the growth in use of the information assets. | * Apply user access protocols. * Use the business applications as part of delivering an overall service. * Provide support to users. * Monitor the growth in use of the application assets. | * Apply user access protocols. * Use the technology assets as part of delivering an overall service. * Provide support to users. * Monitor the growth in use of the application assets. |
| 1. Assess | * Assess the technical condition of the information asset. * Assess the cost of maintaining the information assets. * Assess the future business value of the information assets and consider opportunities for extending the use of the assets or alternative uses for the assets. * Assess the current business value of the information assets. * Consider the above assessment in conjunction with usage and determine an information asset management strategy. | * Assess the operational performance of the application assets as part of the overall service in meeting service levels and addressing business drivers. * Assess the technical condition of the application assets. * Assess the cost of maintaining the application assets. * Assess the future business value of the application assets and consider opportunities for extending the use of the assets or alternative uses for the assets. * Assess the current business value of the application assets. * Consider the above assessment in conjunction with usage and determine an asset management strategy. | * Assess the operational performance of the technology assets as part of the overall service in meeting service levels. * Assess the technical condition of the technology application assets. * Assess the cost of maintaining the technology assets. * Assess the future business value of the technology assets and consider opportunities for extending the use of the assets or alternative uses for the assets. * Assess the current business value of the technology assets. * Consider the above assessment in conjunction with usage and determine an asset management strategy. |
| 1. Maintain | * Apply information asset management strategies to assets or groups of assets. * Liaise with information users and other stakeholders when considering changing or enhancing information assets. * Conduct audits and reviews of security, quality, accessibility and compliance with access and use conditions. | * Apply asset management strategies to assets or groups of assets. * Liaise with application users, technical and support staff and other stakeholders when considering changing or enhancing applications assets. * Conduct audits and reviews of security, accessibility and compliance with access and use conditions. | * Apply asset management strategies to assets or groups of assets. * Liaise with application users, technical and support staff and other stakeholders when considering changing or enhancing applications assets. * Conduct audits and reviews of security, accessibility and compliance with access and use conditions. |
| 1. Retire | * Assess the impact of decommissioning the information assets and develop a transition strategy to any replacement assets, if required. * Liaise with information users and other stakeholders when considering terminating or disposing of information assets. * Ensure that disposal of information assets complies with legislation relating to the disposal of information contained in the[Public Records Act 2002](http://www.legislation.qld.gov.au/Acts_SLs/Acts_SL_P.htm),[IS31 – Retention and Disposal of Public Records](http://qgciostage/qgcio/architectureandstandards/qgea2.0/Pages/Information.aspx) and approved retention and disposal schedules*.* | * Assess the impact of decommissioning the applications assets and develop a transition strategy to any replacement assets if required. * Plan for the decommissioning of application assets including the transfer of any business dependencies and the migration or disposal of any related information assets and resources. * Ensure the disposal of application assets complies with the principles of [IS13 – Procurement and disposal of ICT products and services](http://www.qgcio.qld.gov.au/qgcio/architectureandstandards/qgea2.0/Pages/Business.aspx). | * Assess the impact of decommissioning the technology assets and develop a transition strategy to any replacement assets if required. Consider the impact on any supported applications and other business dependencies. * Plan for the decommissioning of technology assets including the transfer of any application asset dependencies and the migration of any business dependencies. * Ensure the disposal of technology assets complies with the principles of [IS13](http://www.qgcio.qld.gov.au/qgcio/architectureandstandards/qgea2.0/Pages/Business.aspx) and [IS18](http://www.qgcio.qld.gov.au/qgcio/architectureandstandards/Pages/security.aspx). |