Queensland Government Enterprise Architecture

Object identifier standard

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# Introduction

## Purpose

A Queensland Government Enterprise Architecture (QGEA) standard provides information for Queensland Government agencies on the recommended practices for a given topic area. They are intended to help agencies understand the appropriate approach to addressing a particular issue or doing a particular task. Unlike a guideline, which is best practice advice, a standard is enforced by policy.

This standard specifies the schema and governance framework for the use of object identifiers (OIDs) for Queensland Government agencies.

## Audience

This document is primarily intended for enterprise architects and network administrators.

## QGEA domains

## Scope

This standard is mandated under [Object Identifier Registration (OID) policy](https://www.forgov.qld.gov.au/information-and-communication-technology/qgea-policies-standards-and-guidelines/object-identifier-registration-oid-policy) and applies to all Queensland Government departments (as defined by the [Public Service Act 2008](https://www.legislation.qld.gov.au/view/pdf/inforce/current/act-2008-038)). Accountable officers (not already in scope of the Public Service Act 2008) and statutory bodies under the [Financial and Performance Management Standard 2019](https://www.legislation.qld.gov.au/view/pdf/asmade/sl-2019-0182) must have regard to this standard in the context of internal controls, financial information management systems and risk management. Please see the [How to apply the QGEA](https://www.forgov.qld.gov.au/information-and-communication-technology/queensland-government-enterprise-architecture-qgea/how-to-apply-the-qgea) for further information.

## Notational conventions

The keywords ‘must’, ‘shall’, ‘should’, ‘recommended’, and ‘may’ in this document are to be interpreted as described in RFC2119[[1]](#footnote-2).

## Background

The State of Queensland is continually moving towards electronic government in its methods of providing benefits and services to the public as well as in conducting business with the Australian Government, local governments and the private sector. As a result of transitioning from face-to-face to online interactions, security needs to change to ensure identities, authenticity, confidentiality and reliability of digital information.

Many standards, both internal and external to the Queensland Government, define certain objects for which unambiguous identification is required. This is achieved by registration within a documented hierarchical scheme. Registration is the assignment of an object identifier (OID) to an object in a way which makes the assignment available to interested parties. It is carried out by a registration authority.

# Object identifier classification

Object identifiers are a form of worldwide unambiguous identification based on a hierarchical tree structure, and independent hierarchical registration authorities. The OID tree has a root node, arcs beneath that root node, arcs beneath each of those arcs, and so on, to any depth.

* Arcs MUST be identified by non-negative integer values that provide unambiguous identification of an arc within the superior node.
* Arcs MAY also be given names (consisting of one or more lowercase letters, uppercase letters, digits, and hyphens, with an initial lowercase letter, no two adjacent hyphens and no terminating hyphen), but these are subsidiary to the numerical values and are not required.
* An object is identified by the sequence of arc values (numerical, or also for early sequence arcs, arc names) from the root node to the object.

## Object identifier schema

The OID schema is primarily used for uniquely defining distinguished names and object identifiers. This classification schema builds on the joint AU arc of the registration tree established according to CCITT X.660 Recommendation and ISO/IEC 9834-1 Standard.

Under the ISO arc in the registration tree, the Australian Government Information Management Office (2004) has registered sub-authorities, including states. The registration sub-authority for Queensland is the Queensland Government Chief Technology Officer, with the root Queensland arc being 1.2.36.1.3.

The first numeric assignment after 1.2.36.1.3 will identify the branch of government within the state.

01 = Exec branch

02 = Legislative branch

03 = Judicial branch

The following numeric assignment will be for the particular entity:

1.2.36.1.3.1.1 = WoG

1.2.36.1.3.1.2 = Agency A

1.2.36.1.3.1.3 = Agency B

etc.

The following numeric assignment will be for subdivision types of this entity:

1.2.36.1.3.1.1.1 = Service A

Consideration SHOULD be given to the use of the QGEA Business Service Classification Framework to define the services at this point in the arc.

Figures 1 (page 6) and 2 (page 7) illustrate the OID schema within the State of Queensland.



Figure 1: The full root of the Queensland Government arc

Figure 2 (page 7) provides a worked example of the schema, starting with the Queensland Government arc and moving down to specific objects within the executive branch of government. Figure 2 also shows the levels at which the various OID governance roles are defined (see OID governance framework).



Figure 1: The Queensland Government OID schema

## Examples of the use of an OID within the Public key infrastructure framework

A Certificate Policy is developed to reflect the intended use of a digital certificate. The applicable Certificate Policy is indicated by an OID within a certificate as required by AS 4539.1.2. The OID can be used by Relying Parties to identify the specific Certificate Policy that applies to a certificate. The referenced Certificate Policy contains information that should be taken into account when deciding whether or not to rely on a certificate in particular circumstances.

## Example of the use of an OID by a GlobalPlatform compliant smartcard

The personalisation and distribution of a smartcard generally requires the involvement and interaction of many systems (e.g. issuing system, Smartcard Management System, Bureau System). GlobalPlatform is an organisation that has documented a number of industry specifications that attempt to 'standardise' this interaction. GlobalPlatform specify the use of OIDs to represent a number of major data objects. One such use is the identification of a Cardholder within a smartcard scheme; this identifier is abbreviated as the customer reference number (CRN) and is represented as an OID. It is the responsibility of the owner of the CRN to ensure the uniqueness of this number.

The following is an example of a CRN; the example value is represented in hexadecimal format.

Example: 060C2A2401030103020101010101

The following illustrates the example of OID construction for purposes of the CRN:

|  |  |
| --- | --- |
| Object identifier value | Meaning |
| 1. { 1 } | 1. ISO |
| 1. { 1 2 } | 1. ISO member body |
| 1. { 1 2 36 } | 1. Australia |
| 1. { 1 2 36 1 } | 1. Government |
| 1. { 1 2 36 1 3 } | 1. Queensland-government |
| 1. { 1 2 36 1 3 1 } | 1. Executive Branch |
| 1. { 1 2 36 1 3 1 3 } | 1. Queensland Transport |
| 1. { 1 2 36 1 3 1 3 2 } | 1. Technical |
| 1. { 1 2 36 1 3 1 3 2 1 } | 1. System |
| 1. { 1 2 36 1 3 1 3 2 1 1 } | 1. TRAILS |
| 1. { 1 2 36 1 3 1 3 2 1 1 1 } | 1. Identifier |
| 1. { 1 2 36 1 3 1 3 2 1 1 1 1 } | 1. Individual |
| 1. { 1 2 36 1 3 1 3 2 1 1 1 1 000000000001} | 1. John Citizen |

Note that the owner of the CRN has the base of its CRNs as { 1 2 36 1 3 1 3 2 1 1 1 1} and can then provide the CRN numbers in the following range:

1 2 36 1 3 1 3 2 1 1 1 1 000000000001

1 2 36 1 3 1 3 2 1 1 1 1 999999999999

# Object identifier governance framework

The OID governance framework specifies the decision rights and accountability for using OIDs with the Queensland Government.

The schema has been broken into levels for the sole purpose of defining which entity/role is responsible for decisions at that point in the arc.

|  |  |  |
| --- | --- | --- |
| Scope | Responsible entity | Comment |
| 1. Level 0 | 1. Australian Government Information Management Office (AGIMO) |  |
| 1. Level 1 | 1. AGIMO, in consultation with the Queensland Government Chief Information Office (QGCIO) |  |
| 1. Level 2 | 1. QGCIO |  |
| 1. Level 3 | 1. QGCIO |  |
| 1. Level 4 Whole of Queensland Government arc | 1. QGCIO | 1. Includes all child objects in the whole-of-government arc |
| 1. Level 4 Agency arc | 1. Agency chief information officer | 1. Includes all child objects in the agency arc |

## Maintenance of a register

### Agencies

Agencies SHOULD maintain a register for any OIDs allocated within their specific agency arc.

Consideration SHOULD be given to using an existing public register, such as that maintained by France Telecom at <http://www.oid-info.com/index.htm>.

Only registrations for those agency OIDs that are likely to impact on external parties SHOULD be published externally, however agencies MAY choose to publish all OID registrations externally.

The following information, as a minimum, MUST be recorded in the registry:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| OID | Custodian | Description | Date created | Contact details |
| 1. 1.2.36.1.3.1.3.2.1.1 | 1. Queensland Transport | 1. TRAIL system for Queensland Transport | 1. 30/6/200x | 1. John Smith, ex 555 |

### Whole-of-government

Whole-of-government registry MUST be maintained by the QGCIO of any allocated OIDs at levels 2 and 3 of the schema, as well as the whole-of-government arc.

Consideration SHOULD be given to using an existing public register, such as that maintained by France Telecom at <http://www.oid-info.com/index.htm>.

The schema MUST also be maintained in diagrammatic form to at least level 4.

The QGCTO MUST designate an OID Registry Manager. The Registry Manager SHALL undertake the following processes:

* OID registration process
* OID deregistration process
* Adjudication of disputes over OID allocation.

### Process descriptions for levels 2 and 3 of the schema and the whole-of-government arc

#### OID registration process

Registration is the assignment of a name to an object in a way which makes the assignment available to interested parties. It is carried out by a registration authority. Within the Queensland Government, this is the QGCIO.

RECOMMENDED Service Level Agreement (SLA): two business days.

Note: There is no practical way to ensure that the same OID has not been used for more than one object, nor registered by multiple registration authorities. The procedures in this standard will not correct this issue.

#### OID deregistration process

Deregistration is the removal of an object from an OID in the register. This requires the authority of the original registrant.

RECOMMENDED SLA: two business days

Note: There is no practical way to ensure that a deregistered OID has in fact been decommissioned. For this reason, it is RECOMMENDED that deregistered OID not be reassigned to new objects.

#### Adjudication of disputes over OID allocation

In the case that two or more entities use the same OID for different purposes, then the QGCTO shall adjudicate on which entity shall take priority.

RECOMMENDED SLA: 15 business days

1. References

|  |  |
| --- | --- |
| Document | Location |
| 1. MP75—1996, Strategies for the implementation of a Public key Authentication Framework (PKAF) in Australia. | 1. <http://www.saiglobal.com/> |
| 1. MP59-2000, Naming and Addressing in the Australian OSI Environment | 1. <http://www.saiglobal.com/> |
| 1. AS 4539.1.1-2002**,** Information technology - Public Key Authentication Framework (PKAF) related Standards - General - PKAF architecture | 1. <http://www.saiglobal.com/> |
| 1. AS4539.1.2.1-2001, Information technology - Public Key Authentication Framework - General | 1. <http://www.saiglobal.com/> |
| 1. ITU-T X.660-E, SERIES X: DATA NETWORKS AND OPEN SYSTEM COMMUNICATIONS 2. OSI, networking and system aspects – Naming, 3. Addressing and Registration | 1. <http://www.itu.int/ITU-T/studygroups/com17/oid/X.660-E.pdf> |

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1. See: <https://www.oasis-open.org/policies-guidelines/keyword-guidelines> [↑](#footnote-ref-2)