



NAMF NATIONAL ADDRESS MANAGEMENT FRAMEWORK
Your guide to addressing Australia

ADDRESS DATA INTERCHANGE FORMAT

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1 Glossary of Terms

Address	<p>An address is a textual representation of a physical or virtual point for the purposes of either identifying a physical parcel of land on the land surface of the earth or as a communication channel to a recipient. An address may refer to items other than a physical point such as an email address.</p> <p>A single point may have many textual addresses associated with it. These can be different ways of representing the official address or, in the case of Private Estates, a way of addressing the internal structure of the Estate.</p> <p>Many attributes may also be associated with an address. For example, Australian Bureau of Statistics (ABS) Mesh Block/ Collector District, Business or Private use, Electoral district(s), Latitude and Longitude of are also attributes to an address.</p>
Address Consumer	Any organisation or individual requiring accurate addressing data as part of their normal operation.
AMAS	The Address Matching Approval System (AMAS®) is a software approval program that has been developed by Australia Post to improve the quality of addressing. More information can be found on the Australia Post website (www.auspost.com.au).
AGIMO	The Australian Government Information Management Office. See www.finance.gov.au for more information.
ANZLIC	ANZLIC — the Spatial Information Council — is the peak inter-governmental council for the coordination of spatial information policy and strategic issues in Australia and New Zealand. See www.anzlic.org.au for more information.
API	Applications Programming Interface. An interface to a software application for access by other computer systems.
DPID	Delivery Point Identifier (DPID) is an eight-digit number which uniquely identifies a postal delivery point in Australia.
Locational Address	<p>A physical address which would typically include an address label of a real area, which includes street number, road name, locality and state, address site name, centroid, datum point (for rural), link to a real property description, alias address and geo-code that spatially defines the address point. A location address point should be defined in three dimensions, where appropriate.</p> <p>Location addresses are used by many people and applications to provide clear, unambiguous information to common users in order to assist them to identify a point on the earth's surface where a good or service is usually required to be delivered.</p>
Postal Address	<p>A physical or virtual address used by a recipient for the purposes of receiving correspondence.</p> <p>Postal Address is a specific form of location address developed for postal delivery. Australia Post has progressively refined and developed postal address to meet its operational requirements, including the creation of a unique identifier (Delivery Point Identifier, or DPID).</p> <p>Any government agency or business wanting to manage postal</p>

operations efficiently and effectively will be concerned with postal address.

PSMA Australia	PSMA Australia Limited is an unlisted public company wholly owned by the State, Territory and Australian Governments. The core business of PSMA Australia is facilitating the creation of and access to seamless national spatial datasets for government, industry and community use. See www.pdma.com.au for more information.
XML	eXtensible Markup Language. XML is a standards controlled framework for the interchange of data. Its primary purpose is to facilitate the sharing of data across different information systems, particularly via the Internet.
XML Schema	a way to define the structure, content and, to some extent, the semantics of XML documents

2 Introduction

2.1 Purpose of the document

This document provides an overview of current address management issues and a recommendation for a standard Address Data Interchange Format for Australia. Both postal and location address are required to support the business operations of government, the private sector and the community. The recommended approach means both postal and location address capability will be available in a simple, efficient arrangement, to support the full range of required business activities.

2.2 Current Situation

Address data, in all its forms, is vital for the efficient operation of many public and private organisations whilst being a particularly difficult form of data to validate, store and use for purposes such as data matching. These difficulties derive from the unstructured and frequently ad-hoc approach to address storage and dissemination.

Many organisations find that access to high quality address data for address validation, parsing and address capture is difficult and costly. No single source of address truth exists and no formal processes exist to enable a feedback of addressing issues in order to increase address accuracy.

2.3 Scope

Figure 1 shows the supply chain for address data. The creation of addresses and address quality improvement initiatives, that is the supply side shown in the upper part of Figure 1, is *not in scope* of the NAMF.

The processes to make address data available to users such as Government and emergency services organisations, that is the demand side shown in the lower half of Figure 1, is *in scope* of the NAMF.

NAMF is a demand, or user, side strategy. That is, NAMF will provide a framework to make address management and address operations more efficient and effective, principally through the provision of:

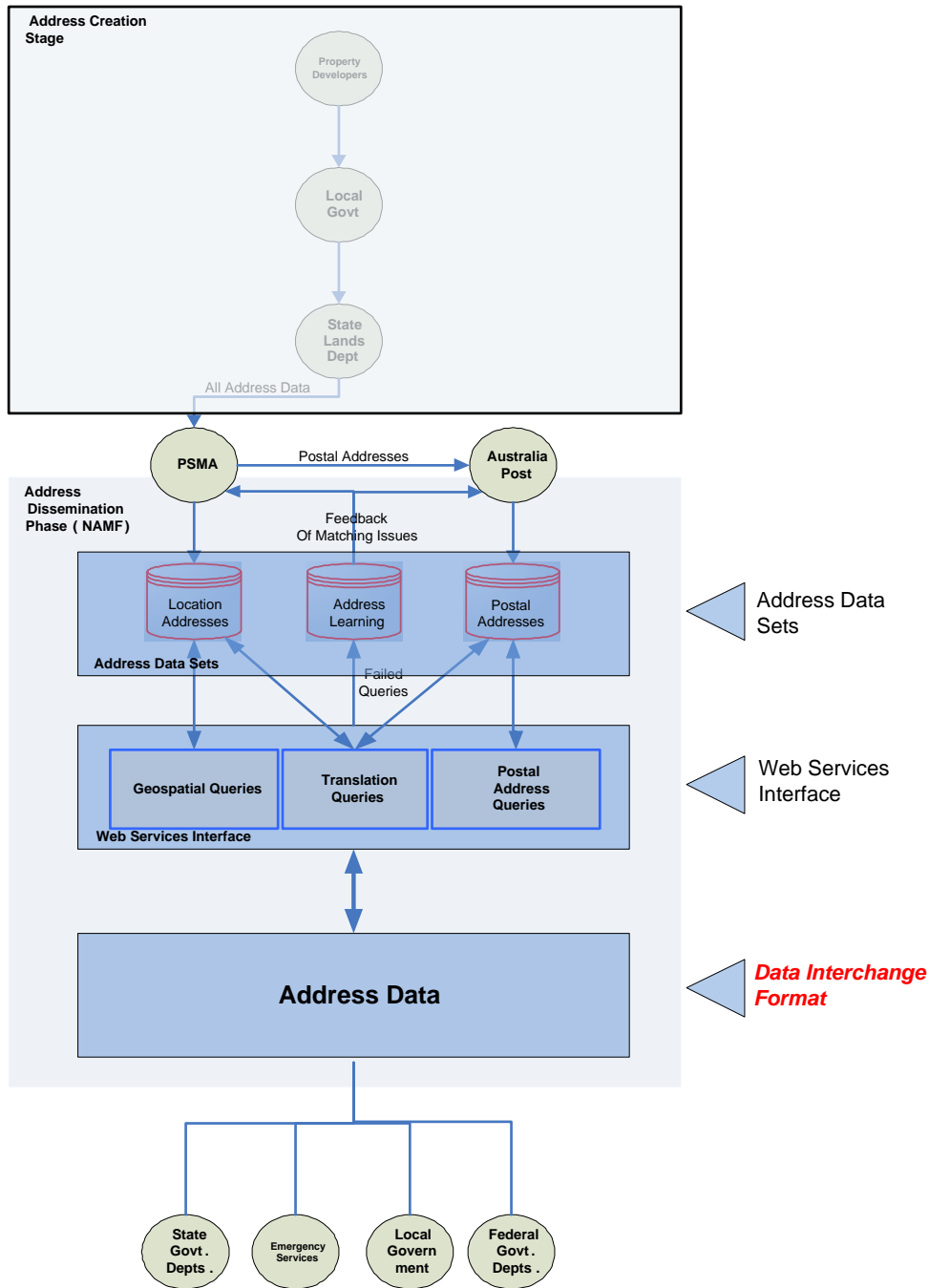
- A single authoritative address data set;
- A national standard for address data storage and interchange; and
- National standards for web services that support common address-related functions (such as address parsing and validation).

These three aspects of NAMF are shown in Figure 1. *The subject of this report is the Address Data Interchange Format.*

NAMF is not a supply side strategy. That is, NAMF will have no direct impact on existing address creation and maintenance processes¹. There is a range of ongoing

¹ While NAMF will not directly alter existing maintenance processes, its implementation will provide the means to significantly improve address quality. The single most important factor will be the automatic, real-time notification (from NAMF address user to address providers) of address parsing, validation and geo-code failures,

address quality (currency, timeliness, completeness, accuracy) improvement initiatives underway in States and Territories, in Australia Post and in many other organisations.



Lack of early advice of address errors or omissions is one of the fundamental deficiencies of existing address creation and maintenance processes.

Figure 1: Address Data Supply Chain

3 Addressing Standards Requirements

This section lists the requirements for addressing that were considered for the NAMF. These requirements were also listed in the report on the Address Data Set.

3.1 Requirements

3.1.1 Accuracy

In addition to the usual client mailing and account information storage requirements, address consumers increasingly use addressing data for sophisticated data matching, business intelligence and to support identity management. This is placing greater demands on the accuracy requirements of address data.

3.1.2 Timeliness

Address data should be made generally available as close to the time of its creation as possible. The delay between address creation and its visibility should be measured in hours or days rather than the current months or, in some cases, years.

3.1.3 Completeness

All addresses likely to be used should be included.

Within the overall address domain there is a range of broadly compatible subsets, delineated by specific user needs and circumstances. For example, the relationship between location addresses and postal addresses is not simple — not all location addresses (such as parks or other public places) have mail delivered to them, and not all postal addresses (such as Post Office boxes and rural mail services correspond directly to a location address. Incomplete administrative and institutional arrangements mean that not all addresses are readily available. For example, addresses in some aboriginal communities, and in some private complexes (nursing homes, retirement villages, private communities) are not readily available.

3.1.4 Availability

Address data should be available in a manner that enables most organisations easy and speedy access. The data should be available in a format that is standards compliant and flexible enough to meet the changing needs of users.

3.1.5 Access

Address users require a single framework that supplies a comprehensive set of services designed to meet their address management needs and reduce the complexity of maintaining their address data.

Conceptually this could be viewed as a single source of address truth accessed via a convenient interface while physically the data may be stored in a distributed manner, and be sourced from one or more providers depending on specific requirements.

3.2 Implications for the Address Data Interchange Format

These requirements, particularly Access, lead to the following additional requirements for the Address Data Interchange Format.

3.2.1 Comprehensiveness

The standard must be capable of holding all Australian address data elements.

3.2.2 Flexible

The standard must enable the representation of all Australian addressing components including geospatial.

3.2.3 Uncomplicated

The standard must be easily implemented and managed.

3.2.4 XML Based

The standard should define an XML schema for the exchange of address data between two parties. It represents the format and content of that exchange not the physical mechanism enabling that exchange to occur. Therefore the standard should make no assumptions about how the data is physically transferred.

4 Addressing Standards

4.1 AS4590 Interchange of Client Information

AS4590 is the Australian standard for interchange of client information. It has been developed with wide industry participation and is targeted specifically at Australia addresses.

The standard includes a comprehensive schema allowing the storage of all Australia addressing elements. Also, due to it being an Australia and New Zealand standard, should it require change to reflect changing requirements this can be accomplished easier than an international standard.

AS4590 is capable of representing some foreign addresses but only to the extent that they are an unformatted address.

See: <http://www.saiglobal.com/shop/Script/Details.asp?DocN=AS0733778216AT>

The standard provides a mechanism by which the broader requirements of the NAMF can be implemented. Specifically it is capable of supporting the interchange of Australian addresses originating from either the GNAF or Australia Post's postal address data and can form the basic mechanism for delivering ubiquitous access to addressing data.

4.1.1 Name and Address XML Schema

AS4590 has been implemented via the AGIMO AS4590 Name and Address XML Schema (2006 version). This schema is available at <http://www.govdex.gov.au/confluence/x/YAc>. This provides the required XML schema for the address data elements defined in AS4590. This XML schema was created more recently than AS4590. AGIMO report that this XML schema has been applied in the implementations of some address management systems.

4.2 Oasis xAL

XML Addressing Language (xAL) is a standard for addressing covering the international domain and is promulgated through the Organisation for the Advancement of Structured Information Standards (OASIS). As it is designed to support address types from anywhere in the world it is necessarily a complex schema. Because xAL is used to represent addresses globally it is of greater use when storing foreign addresses. The down side of this global capability is that xAL is significantly more complex in its implementation.

xAL is however gaining widespread use as an addressing standard due to its adoption by Google for Google Earth and the Google Geolocator API. The use of this standard by Google alone will mean a very significant acceptance moving forward as more and more applications and databases become "Google" aware.

See: <http://xml.coverpages.org/xnal.html>

4.3 Australia Post

Whilst Australia Post does not have official standards they do have standards for the presentation of addresses on mail and they control the AMAS process for enabling access to postal discounts.

The Australia Post formatting standards are effectively contained in AS4590 but, due to their independence from that standard, should always be considered when designing interfaces to address data.

See: <http://www.auspost.com.au/BCP/0,1467,CH2092%257EMO19,00.html>

4.4 Other Standards

Nearly every country has developed or is developing address standards. Most are specific to a particular country and, as such, do not warrant further consideration.

The European Committee for Standardisation (CEN) is developing many European standards involving addressing. These standards are mainly focusing on the interchange of data between Postal organisations under the auspices of the Universal Postal Union (UPU). These standards are emerging currently and starting to be implemented by postal organisations. Australia Post's current Recognition Upgrade project will be based on the CEN TS1544 interface standards.

4.5 Vendor Support

The NAMF Address Data Set report recommended that the GNAF data set from PSMA Australia and, via AMAS accredited providers, postal delivery data from Australia Post, be used for the NAMF. These data sets are available from a number of third-party vendors. Some of these vendors also sell address management software that may be applicable to the implementation of NAMF-compliant systems.

The PMSA Australia website lists resellers of their G-NAF data set. A number of these vendors also sell software for address data management. See <http://www.pdma.com.au/resellers>. The Australia Post website has a list of vendors of AMAS certified software (see <http://www.auspost.com.au>).

A survey was conducted of the vendors listed by PSMA Australia and Australia Post, to determine the support in their software products for addressing standards. Of those that replied to the survey a number of vendors indicated support for AS4590² and none indicated support for any other address data interchange standard.³

² Department of Finance and Deregulation's XML representation of AS4590 is not necessarily supported by the vendors as yet, as the XML representation is newer than the AS4590 standard.

³ Note that it is possible that some of the vendors do support other address data interchange format standards, but this was not mentioned in the responses to the survey.

5 Findings

There are a large number of standards available that define address data. Standards fall into one of two categories, either generic that can accommodate addresses from any country or specific to a single country.

AS4590 is specific to Australian addressing needs and has gained acceptance from address users and matching software vendors.

AS4590 Interchange of Client Information is a good fit for the requirements of Australian addressing: it meets all the criteria for an interchange standard and, being an Australian standard, is capable of change to meet the evolution of address data interchange requirements.

The Name and Address XML Schema derived from AS4590 is suitable for the NAMF. However there are some changes that should be made to the XML schema. These are presented in Attachment A, and are also included in the NAMF Web Services report.

6 Recommendations

1. The NAMF Standard for address exchange should be AS4590 Interchange of Client Information.

AS4590 Interchange of Client Information is a good fit for the requirements of Australian addressing. AS4590 meets all the criteria for an interchange standard and, being an Australian standard, is capable of change to meet the evolution of address data interchange requirements.

The standard provides a mechanism by which the broader requirements of the NAMF can be implemented. Specifically it is capable of supporting the interchange of Australian addresses originating from either the GNAF or postal address data sets and can form the basic mechanism for delivering ubiquitous access to addressing data.

2. The AS4590 Name and Address XML Schema should be incorporated as part of the standard for storage and exchange.

The application of this XML schema will allow software systems to exchange address data according to a defined, machine readable, standard.

3. The suggested enhancements to the AS4590 Name and Address XML Schema should be considered. A discussion of these is in Attachment A.

Attachment A: Name and Address XML Schema

The following issues were found with the Name and Address XML Schema created from AS4590. The table contains suggested modifications to the schema.

Field	Issue	Description
addressIdentifier	There is no unique identifier for an address	<p>It would be useful to have an identifier that uniquely represents a physical address. This is roughly equivalent to the G-NAF <i>gnaf_pid</i> field. It should ultimately represent a unique identifier that can be used to access all G-NAF and Australia Post data (and through acting as a unique key, any other associated data) linked to the same physical address.</p> <p>The <i>addressIdentifier</i> would normally be returned as the result of an address validation query. The <i>addressIdentifier</i> then becomes a unique "handle" which can act as a short-hand (and more efficient) representation of the address. It would also be useful when referencing a particular address for notification and/or editing purposes.</p>
PostalDeliveryNumber	PostalDeliveryNumber is Mandatory	The PostalDeliveryNumber is mandatory but not all addresses will populate or use it. This field should not be mandatory in the Name Address XML Schema
clientCurrency	Client Currency field is Mandatory	The Client Currency field is mandatory in the schema but is concerned with a client living at an address rather than the address itself. It should not be mandatory as Client information is outside the NAMF scope.
cadastralIdentifier	Lack of field to hold Cadastral Parcel information	The report on the NAMF Web Services specification proposes an alphanumeric field called <i>cadastralIdentifier</i> which can hold information uniquely identifying a cadastral parcel within a particular cadastral dataset. Practically, this is equivalent to the G-NAF <i>property_pid</i> field in the ADDRESS_DETAILS table. It is only unique within a Cadastral dataset of which there are one for each of the States and Territories. It is assumed that the <i>cadastralIdentifier</i> will be meaningful to users of the relevant state or territory cadastral dataset.
propertyIdentifier	Lack of field to hold Property information	Cadastral parcel and property are entirely separate entities with entirely separate attributes and uses. Cadastral parcels relate to land ownership (titling) information, usually maintained in State government land

Field	Issue	Description
		titling/registry systems. Property relates to land use and valuation, usually maintained in local government rating/valuation systems. A property identifier attribute should be maintained in parallel with the cadastral parcel identifier, and existing terminology, which often confuses the two, rationalised and defined.
latitude longitude	Field names are only accurate for a single projection.	Both G-NAF and AS 4590 use latitude and longitude to hold spatial coordinates. These names are only accurate if the values are those of a Geographic projection system. If users wish to receive coordinates in another Spatial Reference System then these field names are potentially misleading. For example, an address management system may require the ability to return coordinates based on the MGA (Map Grid of Australia) format in which the coordinate equivalents to latitude and longitude are Northing and Easting respectively. Better field names to hold these values are <i>geoNorthSouthCoordinate</i> (for latitude and Northing) and <i>geoEastWestCoordinate</i> (for longitude and Easting).
coordinateReferenceSystem	no support for Coordinate Reference System (CRS)	The G-NAF and, AS4590 have a geographic datum field (<i>geoDatum</i>) which currently supports the single value of GDA94 (The current Australian Geographic Standard). The NAMF should support other recognised and currently used Australian standards such as the UTM-based Map Grid of Australia (MGA) as well as the main international standard WGS84. The <i>geoDatum</i> field can be used for specifying other Coordinate Reference Systems Fortunately, CRSs can be referred to more simply using an EPSG code (European Petroleum Survey Group - now absorbed into OGP (Oil and Gas Producers). For example, GDA94 is EPSG:4283, WGS84 is EPSG:4326, MGA Zone 50 is EPSG:28350 etc. It is proposed that the NWS <i>geoDatum</i> field initially only support EPSG codes relevant to Australia plus WGS84 / EPSG:4326
purpose	Redundant field	The Name and Address XML Schema contains fields for both Usage and Purpose whereas AS4590 has Address Purpose Code as a synonym for Address Usage Code (5.1). The purpose field should be removed.