

TerraCode™

Product Suite Whitepaper

Developed by

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Executive Summary

The Geocoded National Address File (G-NAF) is Australia 's first authoritative index of locality, street, number and geographic coordinate (geocode). G-NAF links textual and spatial data to verify the existence of Australian addresses and identify each one's unique coordinates, or its geocode. G-NAF was developed by PSMA (Public Sector Mapping Agencies) Australia Limited in collaboration with the mapping agencies and land registries of the State, Territory and Commonwealth Governments, Australia Post, the Electoral Council of Australia and the Australian Electoral Commission.

TerraPages is developing and commercially marketing interactive products (based on the G_NAF data set) called TerraCode™. These products are delivered as web services that can be easily embedded into web based applications and are provided under commercial contract based either on transaction or monthly subscription charges. TerraPages will be developing several standard application products that are described here as the TerraCode Suite of Products.

These products include:

- *TerraCode Address Helper™*
- *TerraCode Geocoder™*
- *TerraCode Reverse Geocoder™*
- *TerraCode Scrubber™*

1 Overview

The G_NAF data set is unique in that it represents the only governmentally approved national address file that also includes a geocode or geographic location for each address. This data set can be used in many different applications that may or may not require the included geospatial information. For example, any web application that collects address information may require that the address being entered is an actual address rather than a bogus or erroneous address. To ensure that the address actually exists, an input address needs to be validated against an official list of addresses. G_NAF can be readily used for online address validation purposes.

In addition, G_NAF was established as a geocoded file which means that each address has an assigned geographic coordinate or location (latitude & longitude). This is often used to undertake geospatial analysis of, for example, customer buying behaviour etc where the location of customers, correlated with customer behaviour, becomes relevant. Geocoding or adding a geographic location to each address in a customer contact database is a process that can be undertaken with a G_NAF geocoding service.

TerraPages is building a range of web services based on the G_NAF data set. These standard web services products are easily integrated into any web application. This document outlines the existing and proposed TerraCode web services products developed by TerraPages.

2 Products

2.1 Address Helper

2.1.1 Description



TerraCode Address Helper™ is an online wizard that guides a user through the process of entering an Australian address that must reside within the G_NAF database. The TerraCode Address Helper™ web service consists of an online data entry form containing several address element fields that are required to be completed. Each field on the form automatically loads valid G_NAF pick lists containing the appropriate selectable choices. The user only needs to select the appropriate data element in each case. This is made very easy by either scrolling through the lists to the appropriate selection or by keying in each letter of the selection which is followed by an immediate relocation within the sorted pick list to the nearest match.

2.1.2 Use Case

Any web developer that builds applications designed to collect address elements from an interactive web user can embed this service into their application either as an element within a specified frame or via a separate popup window. Rather than entering an address that could be either in error or non-existent, the end user selects a valid G_NAF address from the supplied pick lists. This is crucial for applications that depend on the input of a correct or real government recognised address.

2.1.3 Application Integration and Programming Interface

TerraCode Address Helper™ offers a web based user interface that can be invoked as a wizard that submits the final result to a given web application via a HTTP request, or by javascript call backs to a parent window on the client browser.

2.2 Geocoder

2.2.1 Description



TerraCode Geocoder™ is a tool to 'geocode' or geographically locate an Australian address by adding a geographic coordinate (latitude & longitude) to an existing customer address. This is a web service that requires a valid Australian address to generate a G_NAF geocode. The user is required to collect all the elements of an address, package these into the required interface format and submit to the TerraCode Geocoder™ web service. The service will search the indexed database of addresses to find either the actual address or to return with a selection of addresses that could be candidates for an address match. Each record returned will also be accompanied by the associated geocode and its accuracy indicator as supplied from G_NAF.

2.2.2 Use Case

Any application that needs to locate a valid Australian address on a map or within a location based services application can use this service to generate a geographic coordinate (latitude & longitude). The user can elect to store the resultant geocode in their own database for that address along with the G_NAF accuracy indicator. The use of geocodes in business applications is virtually un-bounded.

2.2.3 Application Integration and Programming Interface

TerraCode Geocoder™ can be invoked as a web service based on the OGC OpenLS specification, or via customised batch interfaces:

- The OpenLS interface allows requests to be made over HTTP by submitting a XML for Location Services (XLS) document, or encoding the requests as HTTP parameters. The result is a XLS xml document.
- The custom batch interface allows submissions of comma delimited files, and return the same with validated address elements.

2.3 Reverse Geocoder

2.3.1 Description



TerraCode Reverse Geocoder™ is a tool to list any Australian addresses that are near a geographic location. The web service requires a geographic location (latitude & Longitude) plus an optional search area of interest and will return a list of G_NAF addresses within the search area centred around the entered location. The returned list is sorted by proximity such that the closest address to the entered location is the first address in the list. TerraCode Reverse Geocoder™ will also return any alias addresses connected to each primary address.

2.3.2 Use Case

Any application that generates or harvests geographic locations (latitude & longitude) and also has a need to find the nearest G_NAF address to these locations can use this service. For example, in a tracking/LBS system that collects geographic locations of mobile users/assets via any type of tracking system, the user may wish to interpret the location of the asset in terms of a street address. The TerraCode Reverse Geocoder™ will enable the end user to undertake this reverse geocode translation and make use of or store the results in their own database/system.

2.3.3 Application Integration and Programming Interface

The TerraCode Reverse Geocoder™ can be invoked as a web service based on the OGC OpenLS specification, or via customised batch interfaces:

- The OpenLS interface allows requests to be made over HTTP by submitting a XML for Location Services (XLS) document, or encoding the requests as HTTP parameters. The result is a XLS xml document.

- The custom batch interface allows submissions of comma delimited files, and return the same with validated address elements.

2.4 Address Scrubber

2.4.1 Description



TerraCode Address Scrubber™ is a tool that is used to provide options for correcting or editing Australian addresses already captured and stored in a database. This is a web service that requires a list of Australian addresses that are each matched against the G_NAF data base including alias addresses. The service will return a list of addresses plus their G_NAF matched address and or any related alias addresses.

2.4.2 Use Case

Any application that is used to validate and correct address entries can connect to this service to run as an online batch process that will provide valid G_NAF addresses. This could be a one time process with new entries being validated via our address helper as described above.

2.4.3 Application Integration and Programming Interface

The TerraCode Address Scrubber™ can be invoked as a web service based on the OGC OpenLS specification, or via customised batch interfaces:

- The OpenLS interface allows requests to be made over HTTP by submitting a XML for Location Services (XLS) document, or encoding the requests as HTTP parameters. The result is a XLS xml document.
- The custom batch interface allows submissions of comma delimited files, and return the same with validated address elements.

3 TerraCode Services

TerraPages is a member of the Ardec International group of companies and provides managed services including the access to these web services and the dependent data sets. As an operational company, we also provide the hardware and software infrastructure with redundant servers in Adelaide and Sydney.

In addition and in conjunction with our sister company LISAsoft, we can also provide implementation & integration services to assist customers integrate these services into their own commercial offerings. Should clients also wish to modify or enhance these products in anyway our LISAsoft software engineers can be engaged on a consulting basis.

LISAsoft software engineers were used to design and develop these web services and can also be engaged to scope, design, develop and support any new G_NAF based web services.

4 Pricing Model

Typically, TerraPages provides these products on either a monthly subscription basis (with a usage cap limit) or based on a transaction model with volume discounts.

For more information about pricing please contact Grantly Aplin via 0433 825 111 or via grantly.aplin@terrapages.com