

Toitū Te Whenua
Land Information
New Zealand

Development and use of an electronic gazetteer with open-source technologies

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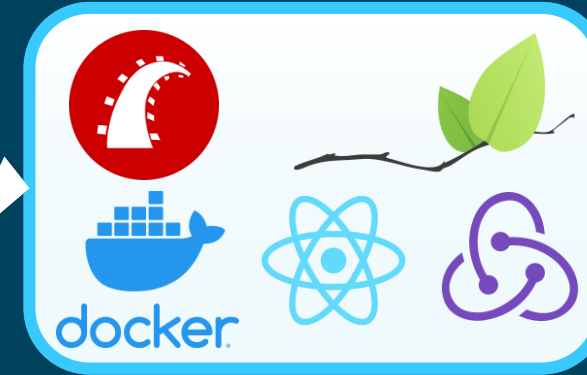
10 May 2022

Welcome

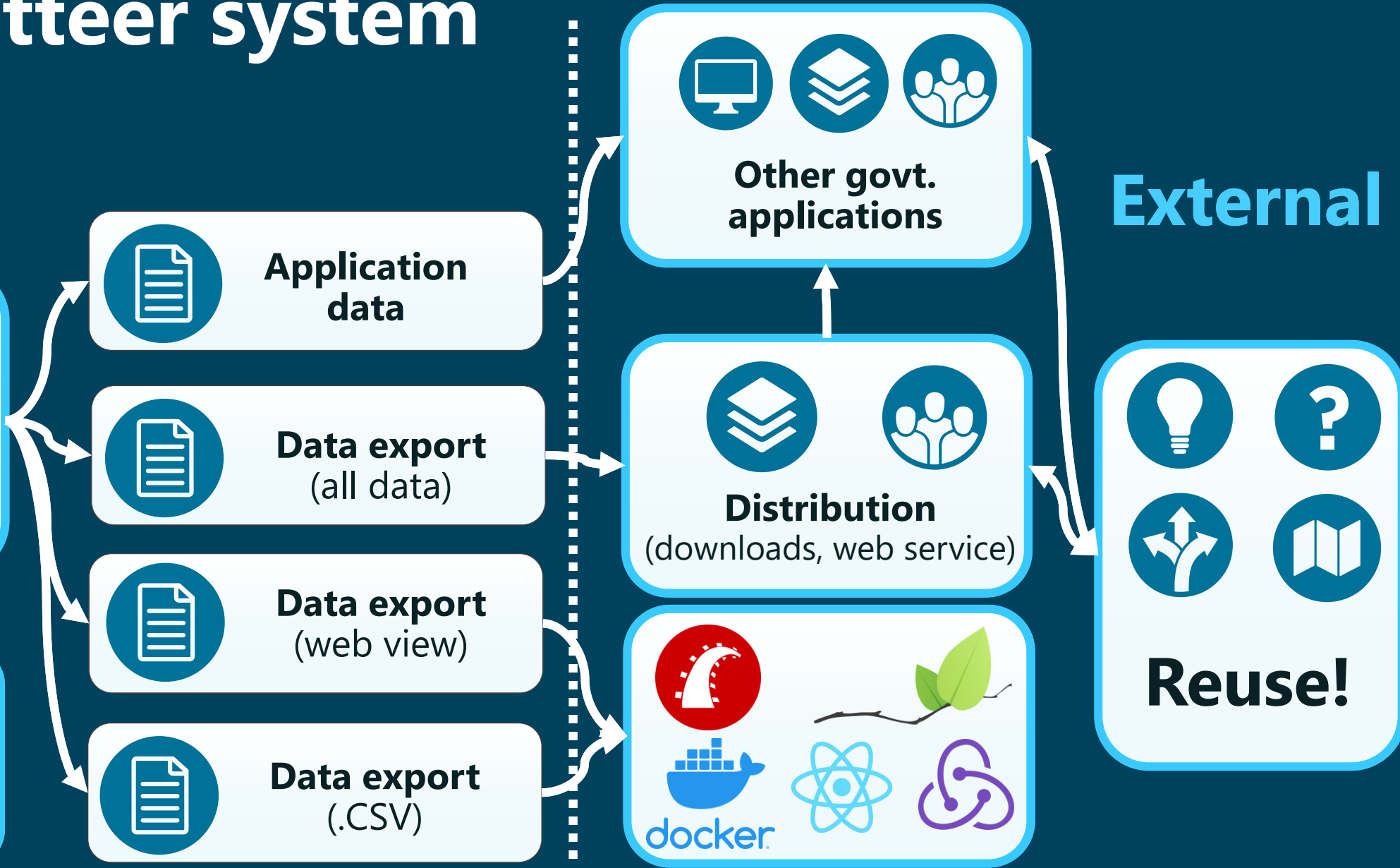
- **Background**
 - New Zealand Geographic Board supported by Land Information New Zealand
 - Government supports open data and open-source technology
 - Legal requirement to publish official place name decisions
- **The Gazetteer system**
- **Database and servers**
- **QGIS and Plugin**
- **Gazetteer webapp**
- **Distribution**
- **Lessons learned**
- **Next Steps**
- **Questions**

A Gazetteer system

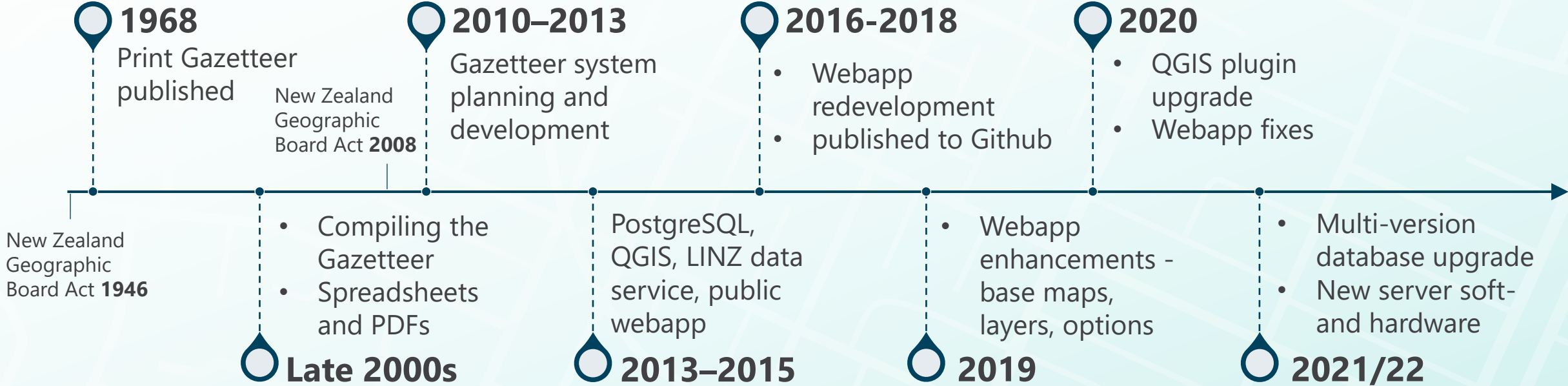
Internal



External



Timeline



Database and servers



- PostgreSQL database with PostGIS for spatial objects
- Synchronised independent disaster recovery server and database
- Separate test server and database
- Connection via PGAdmin for direct query, bulk updates, etc
- Recently completed a multi-version update to server and database software, new server hardware

QGIS and plugin



The screenshot displays the QGIS desktop environment. The main map window shows a topographic map of Mount Marwick with a color-coded elevation overlay. The interface includes a menu bar (Project, Edit, View, Layer, Settings, Plugins, Vector, Raster, Database, Web, Mesh, Processing, Help), a toolbar, and a layers panel on the left. The layers panel shows a list of layers, including 'Gazetteer feature', 'marwick', and 'Google Satellite'. The 'Gazetteer editor' window is open, displaying details for 'Mount Marwick' (ID: 49310/33683). The editor shows the feature type as 'Hill (NZ - Relief)', a description, and various annotations and events. The coordinate capture tool is active, showing the coordinates 162.80115, -71.03916. The status bar at the bottom indicates the current coordinate (4364583,3026770), scale (1:89176), and magnification (100%).

Gazetteer editor
Mount Marwick

Mount Marwick 49310/33683 [Edit] [Star]

Process: Validation Antarctica
Status: Validated

Other names
There are no other names for this feature.

Feature information
Feature type: Hill (NZ - Relief)
Description: A high peak in the Explorers Range, Bowers Mountains, rising to 2590m at the head of Morley Glacier, 16km northeast of Mount Soza.
Longitude/latitude: 162 48 04.3E 71 02 20.1S (162.801190 -71.038920)

Feature annotations
Coordinate review: Reviewed in 2017 and 2019

Events
NZGB Gazetteal (22-Jun-2017): 2017-In3098
Notes: Corrigendum 2019-In5815 published 2019-12-19; improved/corrected coordinates.
Antarctic Approval (27-Jan-1983): APNC Meeting 27/01/1983
Notes: Date inferred from prior minutes and later correspondence. Refer File 17/357 Vol.5 f.69-76. Minutes have not been located.

Name annotations
History/origin/meaning: Named by the NZ-APC in 1982 after John Marwick (1891-1978), Chief Palaeontologist, New Zealand Geological Survey.
Note: Shown on NZ 250000 map Not shown on Mount Soza (NZ) map, SR 57-58/15. Shown on US 250000 Mount Soza, SR 57-58/15.
SCAR id: 9095
SCAR recorder: NZ, USA
SCAR height: 2590
Data migration source: Antarctic Collected Names without Source - don't use for migration.xls (line 185)

Search Help Mount Marwick

Coordinate 4364583,3026770 Scale 1:89176 Magnifier 100% Rotation 0.0° Render USER:100000

QGIS and plugin



- For QGIS 3.xx – plugin essentially GUI (graphical user interface) to database
- Direct database connection. Can edit tables and geometry and manage administration in the database such as valid users
- Migration of plugin from QGIS 2->3 and Python 2->3 in 2020
- Built on Python 3 and JSON (JavaScript Object Notation)
- Code managed, made open and shared on Github

Gazetteer webapp



Search interface for the Gazetteer webapp. The search bar contains the text "motu". Below the search bar are several filter dropdowns: Status: Any, Land District: Any, Region: Any, Territorial Authority: Any, Feature class/type: Any, and Any. A "Clear Search" button is located to the right of the dropdowns. The main map area shows a topographic map of the Motueka region in New Zealand. A pink line highlights the Motueka River, and several blue dots are scattered across the map. An inset map in the bottom right corner shows the location of the main map area within New Zealand, labeled "NZ-Colour Basemap".

How to Use

Matches Found 20

* Official names are shown in bold.

- [Motuanauru Island](#)
- [Motuanauru Scenic Rese...](#)
- [Motuareronui / Adele Isl...](#)
- [Motueka](#)
- [Motueka Bay](#)
- [Motueka Forest](#)
- [Motueka River](#)
- [Motueka River Left Branch](#)
- [Motueka River Right Bra...](#)
- [Motueka Sandspit](#)
- [Motu Island](#)
- [Motupiko](#)
- [Motupiko River](#)
- [Motupipi](#)

Show all results on map

User Settings

Gazetteer webapp



- The public / general audience facing piece of the system
- Rebuilt 2016-18 on its own website, replacing a very basic search/view window, embeded on the LINZ website
- Built with open-source React and Redux JavaScript on the Leaflet platform
- Ruby on Rails backend, connects to database with Docker
- Source code freely available (part of contract with developers)
- Big enhancements 2019, smaller ongoing bug-fixes

Distribution

The screenshot displays the LINZ DATA SERVICE interface. At the top left, the logo for Toitū Te Whenua Land Information New Zealand is visible. The search bar contains 'nzgb' and shows 10 results. The results list includes:

- NZ Place Names (NZGB) - NZ Gazetteer (Updated 21 Feb 2022)
- NZ Place Names - Polygons (NZGB) - NZ Gazetteer (Updated 21 Feb 2022)
- NZ Place Names - Lines (NZGB) - NZ Gazetteer (Updated 15 Feb 2022)
- NZ Localities - NZGB Compliant Names - Fire and Emergency NZ (Updated 07 Oct 2021)
- NZGB gazetteer application labels WFS layer - NZ Gazetteer (Updated 26 Nov 2021)
- NZ Addresses (Pilot)

The map on the right shows New Zealand with several layers overlaid: NZ Place Names - Lines (NZGB) in red, NZ Place Names (NZGB) in green, and NZ Place Names - Polygons (NZGB) in blue. The map also shows major cities like Port Vila, Suva, Nuku'alofa, Brisbane, Newcastle, and Canberra. A scale bar indicates 500 km.

Distribution

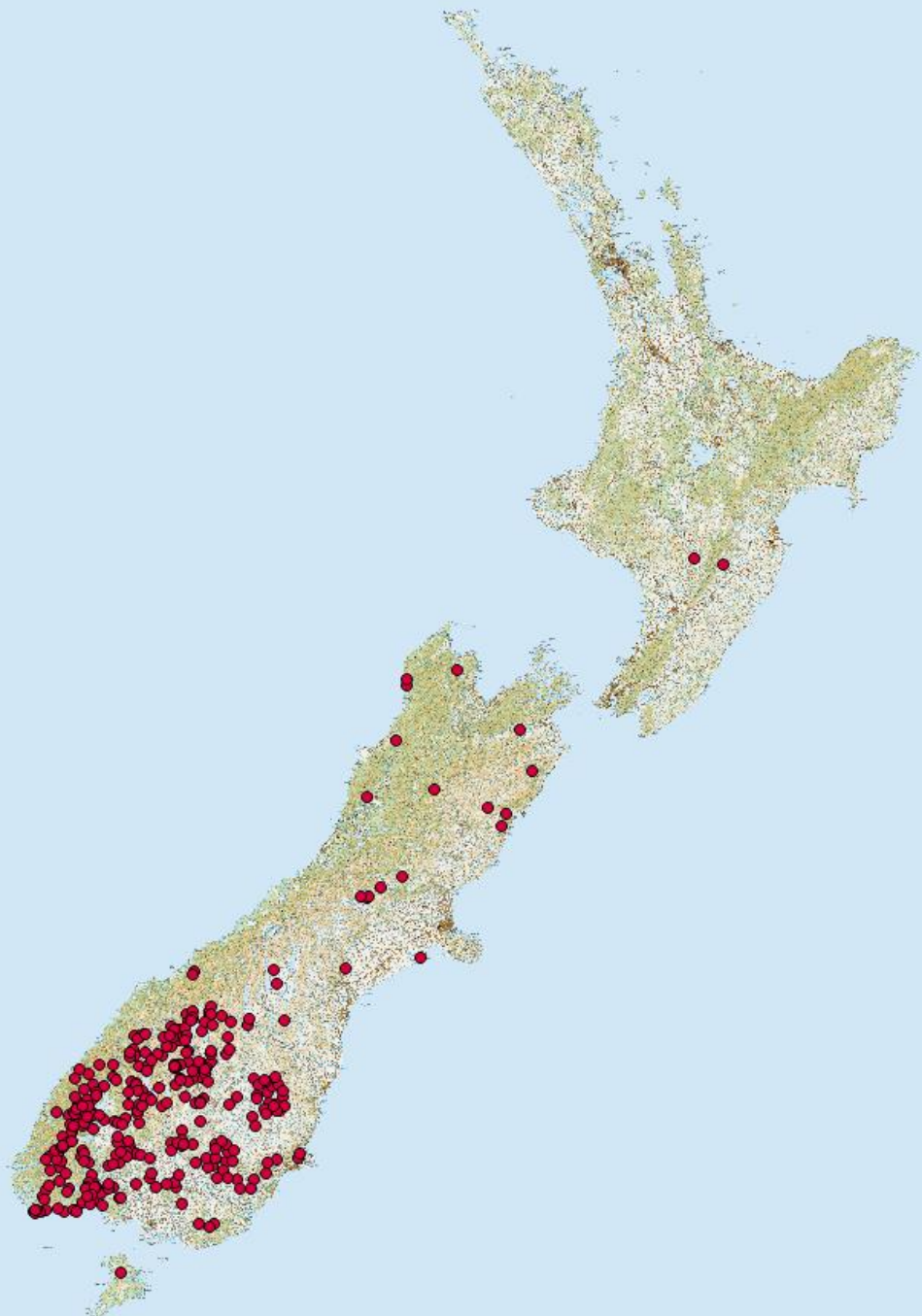
- Published Gazetteer data available from the LINZ Data Service (data.linz.govt.nz) in many projections and various formats - both open (eg Geopackage) and proprietary (eg the common Shape file)
- Management of the ISO 19115/ANZLIC metadata standards and Open Geospatial Consortium standards handled through the platform
- WFS services and changeset services available for linked data
- Freely available under a CC BY 4.0 licence
- Basic .CSV downloads also available from the web application, including one for macrons, diacritics mark in te reo Māori

Lessons learned

- Keeping current is key – ensure support arrangements are in place from the start
- Cost of system– while software is free, building the system, maintaining servers and ongoing support is not. A modular system could mean more overheads
- Upskilling – new skills for new systems

Who uses Gazetteer data?

- Official documents such as maps charts, and signs are legally required to use official names.
- Other uses include:
 - Compliant search functionality for LINZ applications
 - Reference sources for Wikipedia
 - Spatially referencing against authoritative names, eg Antarctica New Zealand's image library
 - Third party cartography and digital mapmaking
 - Researchers – eg historians, linguists



Next steps

- Ongoing support
- New base maps from Toitū Te Whenua LINZ
- Second rebuild of the web application
- APIs and embedding?
- A cloud-based system?
- Emphasis on promoting the Gazetteer, greater integration across government, Crown agencies - and perhaps the GLAM* sector too?

***GLAM – Galleries, Libraries, Archives, Museums**

Questions



📷 Credit: New A.A. sign of longest Maori place name, Hawkes Bay. Archives New Zealand: J. Waddington. (R24808388), 1973