VanuaGIS

A Geospatial Response to Cyclone Winston

July 2017
Introductions

CoreLogic New Zealand

- CoreLogic New Zealand (CLNZ)
  - Part of the wider CoreLogic family, CLNZ was established in 2014 by bringing two NZ companies, Terralink NZ and PropertyIQ together
  - Leading property information, analytics and services provider in the United States, Australia and New Zealand
  - Provide clients with leading property information, platforms and predictive analytics that allow them to acquire more customers, keep them longer and sell more
  - Clients in Banking & Finance, Insurance, Agriculture & Primary Industries, Real Estate, Property, Utilities and general commercial segments

- **Revenue:** $1.5 billion
- **Operations:** 8 countries
- **Employees:** 5,000+
- **Data Investment:** $100M+ P/A
- **Headquarters:** Irvine, CA, USA

Introductions

CoreLogic – International Areas of Focus

- Offices and Operations
- Formal Alliances
- Established Relationships
- Developing
Introductions

Fiji Ministry of Lands and Mineral Resources

“For the vibrant, equitable and dynamic management of our lands and mineral resources for a sustainable environment and economic future.”

- Fiji’s Ministry of Lands & Mineral Resources (MLMR)
  - 6 Primary Functions:
    - Surveying
    - Valuation
    - State Land Administration and Management
    - Land Use
    - Geospatial Analytics and Services
CoreLogic New Zealand & Fiji’s Ministry for Land and Mineral Resources

...a short history

▪ VanuaView
  ▪ Media based Property/Land Information application
  ▪ Hardware locked
  ▪ Used primarily by:
    ▪ Property Developers
    ▪ Real Estate Agencies
    ▪ Surveyors

▪ VanuaGIS
  ▪ Web based Property/Land Information application
  ▪ Government Spatial Data Portal
  ▪ Used within all Ministries to view Government Spatial Assets
  ▪ Architecture investment led to significant productivity gains
  ▪ Will be made commercially available soon to:
    ▪ Property Developers
    ▪ Real Estate Agencies
    ▪ Surveyors
Architecture

Designed for with disaster in mind (not necessarily cyclones)…

- High Availability Configuration
  - 2x Esri Application Servers
  - 2x Microsoft SQL Database Servers
  - ArcGIS Online
  - F5 Load Balancer
VanuaGIS
Government Spatial Data Portal

- Cadastre
- State Land
- Tenements/ Mining
- Soil
- Climate
- Points of Interest

- Roads
- Land Classification
- Land Use
- Geology
- Administration
February 20th 2016
Saturday

Severe Tropical Cyclone, Winston

MODIS image captured by NASA’s Aqua satellite - Rapid Response – LANCE - 1:30pm 20th February 2016
Severe Tropical Cyclone, Winston
…largest cyclone to make landfall in the South Pacific

- Formed in the Pacific near Port Vila, Vanuatu on February 7th 2016
- Made landfall in Fiji, February 20th 2016
- Winds up to 230 km/h (145mph)
- est. $1.4b (USD) damage to property and infrastructure
- 44 people killed

- Affected Countries:
  - Australia
  - Fiji
  - Nuie
  - Vanuatu
...Monday

Initial challenges and issues

- Ad-hoc Mapping
  - Numerous requests for maps
  - Limited management
  - Multiple organisations with varying priorities

- Data Quality
  - Incomplete, inaccurate and out of date
  - Data collection methods varied
  - No defined attribution

- Operations
  - NDMO uninformed of role GIS could play in response and recovery
  - Uncoordinated requests for mapping

NDMO, Monday 22nd February 2016
Priority Data
Critical Datasets

- Schools
  - Used as Evacuation Sites and to estimate village & town population size

- Churches, Temples and Community Centres
  - Used as Evacuation Sites

- Medical Facilities
  - Provided aid where possible

- Buildings
  - Attributed with condition status in worst hit areas

- Roads
  - Attributed with condition and access
VanuaGIS for Cyclone Winston
Pulling it all together
VanuaGIS for Cyclone Winston

Pulling it all together

VanuaGIS – Jetty Status
VanuaGIS for Cyclone Winston

Pulling it all together

VanuaGIS – Red Cross Aid to Tavuki Village
End Users
Responding agencies

- **UNICEF**
  - Utilised school data to estimate village sizes and coordinate response

- **Relief Tracking**
  - Hosted aid tracking data from:
    - *Red Cross*
    - *French Casa*
    - *NDMO*
    - *RFMF*
    - *NZDF and ADF*
    - *PIA*

- **National Disaster Management Office (NDMO)**
  - Communication tool
Lessons Learnt

…it wasn’t perfect but we learnt a lot

- Centralising relief activities was important
  - Limited duplication of effort
  - Provided consistency and clarity of information
  - Limited need for paper outputs

- Education
  - Need for responding agencies to be informed of Situational Awareness applications
  - Coordinate activities between responding geospatial experts

- Technology
  - Build infrastructure as resilient as possible

…it wasn’t perfect but we learnt a lot