Open spatial data platform for visualization and analytics of geospatial data

Bill Simpson-Young
Director, Engineering and Technology Development, NICTA.
Co-founder, Terria.

Geospatial World Forum, 25 May 2015

About this presentation

1. What is NICTA?
2. The Australian National Map initiative
3. TerriaJS™ software
4. Applications using TerriaJS™
5. The future of Terria™

1. What is NICTA?

What is NICTA?

- Australia's Centre of Excellence in ICT Research
- Labs in Sydney, Canberra, Melbourne, Brisbane
- 750 people - **450 staff, 300 PhD students**
- 22 partner universities
- Funded by Australian and state governments and industry plus contributions from universities

What do we do?

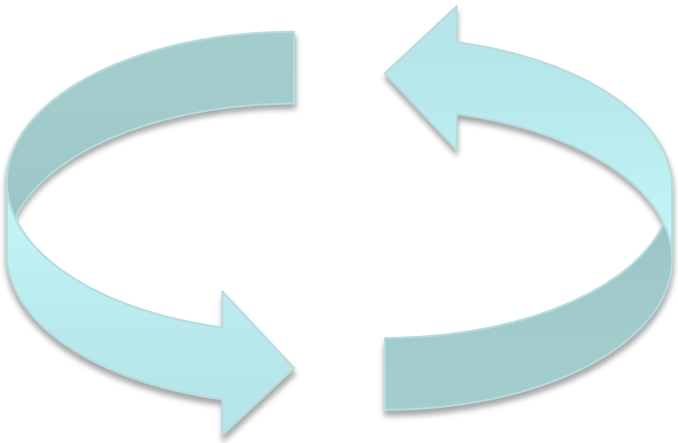
- Research Excellence in ICT
  - ~600 research papers per year
- Engaged with industry and government
  - Collaborative projects
  - Contract R&D and independent advice
  - Licensing of technology (mostly software)
  - Spinning out companies (~4 per year)
- International engagement
  - Collaboration and contracts
  - Research exchanges and student internships
- R&D areas
  - Machine learning
  - Computer vision
  - Optimisation
  - Mobile systems
  - Software systems

2. The Australian National Map initiative

Rationale for the National Map

- Initiative of Australian Government for:
  - Easy access to authoritative spatial data
  - Facilitate opening of data by federal/state/local govt
  - Open framework of spatial data for innovation

More users using data services

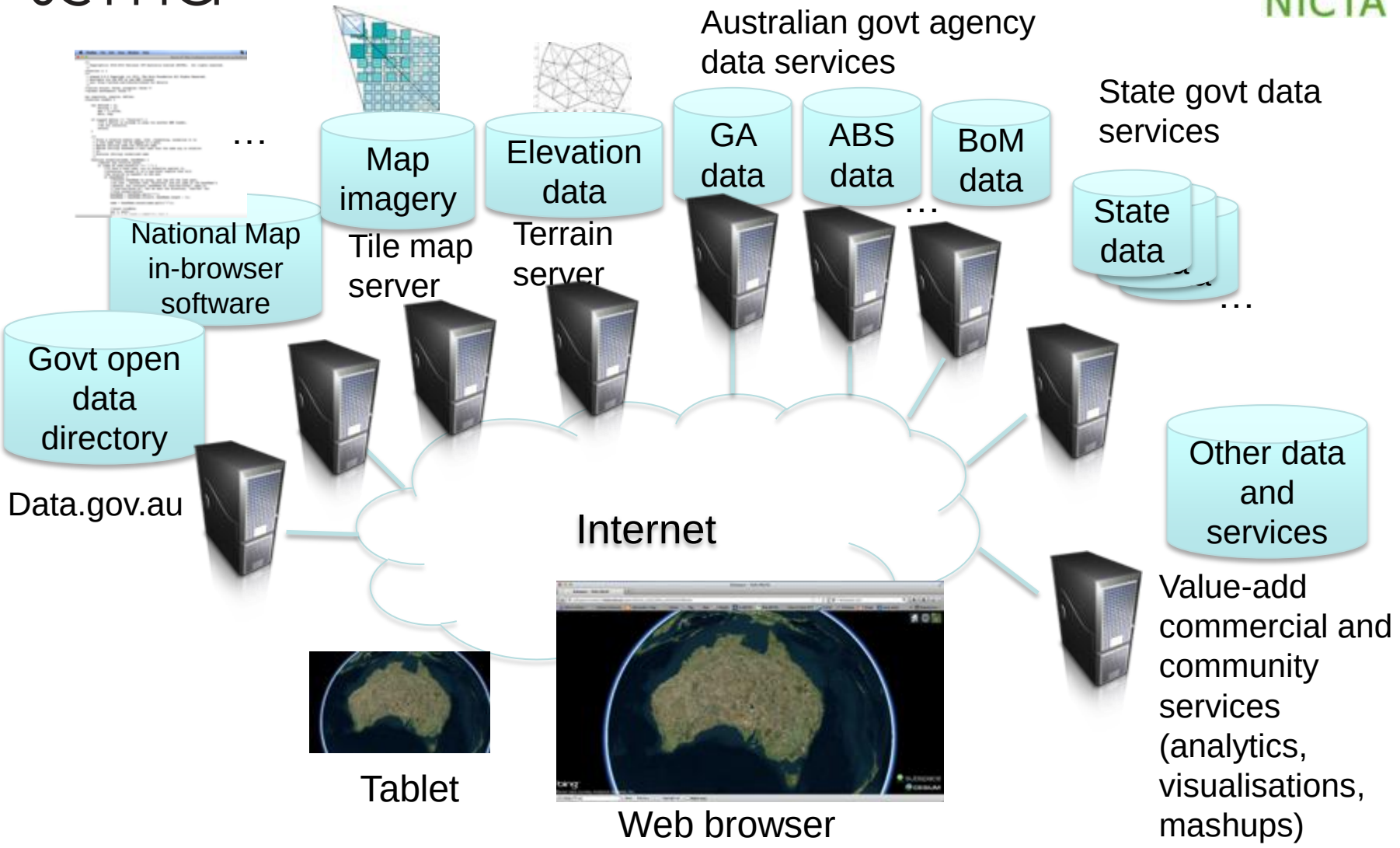


More data services available

Vision: An open national map

1. Authoritative data services
2. Multi-custodian (GA, BoM, ABS, etc)
3. **Direct live access from data custodian**
4. **Multi-jurisdiction (Federal, State, Local)**
5. Open data (direct from data.gov.au etc)
6. Open protocols and data formats
7. **Vendor neutral at back end (no vendor lock-in)**
8. Vendor neutral at front end (browser)
9. Open source software
10. **Platform for commercial, community and agency innovation**

Vision: An open national map



Place in govt open data agenda

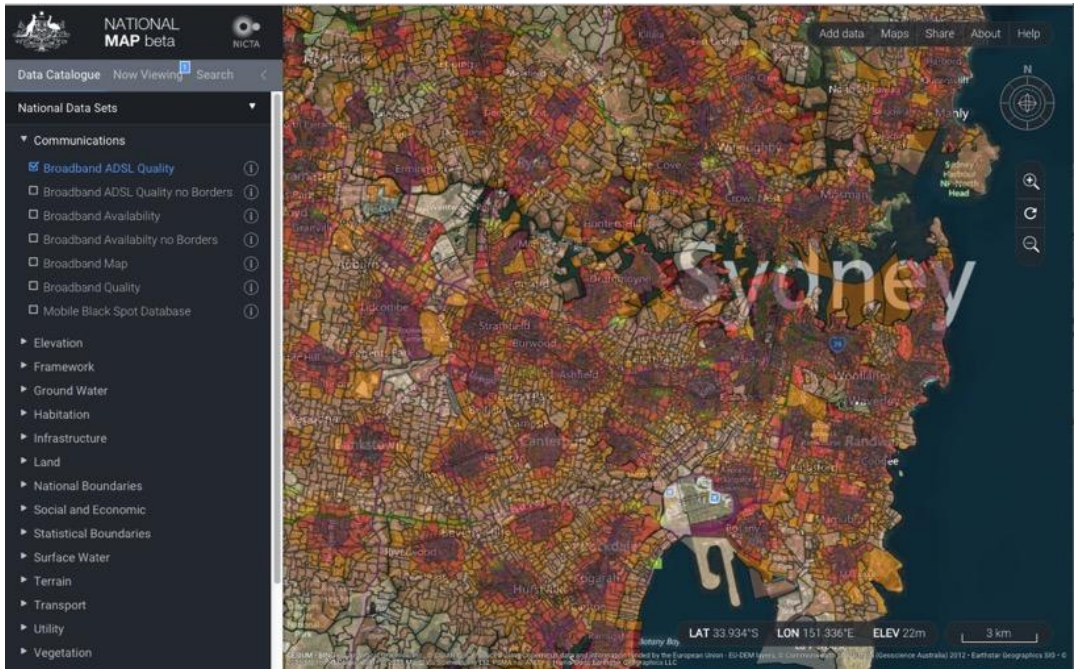
From talk at Locate15 conference by Tim Neal, Australian Dept of Communications

National Map: Current data services

- Federal Government
  - Department of Communications
  - Geoscience Australia
  - Bureau of Meteorology
  - Australian Bureau of Statistics
  - Department of Environment
  - Australian Taxation Office
  - And more…
- State governments
  - All are either available on nationalmap.gov.au or in progress
- Local councils
  - Data from many are available (via data.gov.au)
  - More soon …

National Map demo

http://nationalmap.gov.au



3. TerriaJS™ software

Architecture: In-browser

We developed these

Existing open source software

The Australian National Map

TerriaJS:
Data collection navigation/search
Connects to services: OGC, ESRI, GME, etc
Data loading: URL, drag & drop
Data formats: Geojson, KML, CSV, etc

Cesium:
3D map display

Leaflet:
2D map display

WebGL support

Canvas support

Browser (eg Chrome, Firefox, Internet Explorer, Safari) on desktop and mobile

TerriaJS Features

- Supports all major browsers (Chrome, Firefox, Safari, IE9 and later)
- 3D or 2D views (3D for Chrome, Firefox, Safari, IE 11)
- Open Geospatial Consortium (OGC) standards (WMS, WFS, etc)
- Interoperability with GIS back-end services (eg ESRI, MapInfo, Google Maps Engine, Geoserver, etc)
- Support for spreadsheet data (in CSV files) with points, region codes (such as postal codes, country codes, etc)
- Time-based data and time-based imagery
- User searching of data catalogues
- Integration with CKAN for automated access to open data catalogues
- User can add their own data sets by drag & drop on the browser
- Sharing of map views by email or web
- Maps embeddable in websites

4. Applications using TerriaJS™

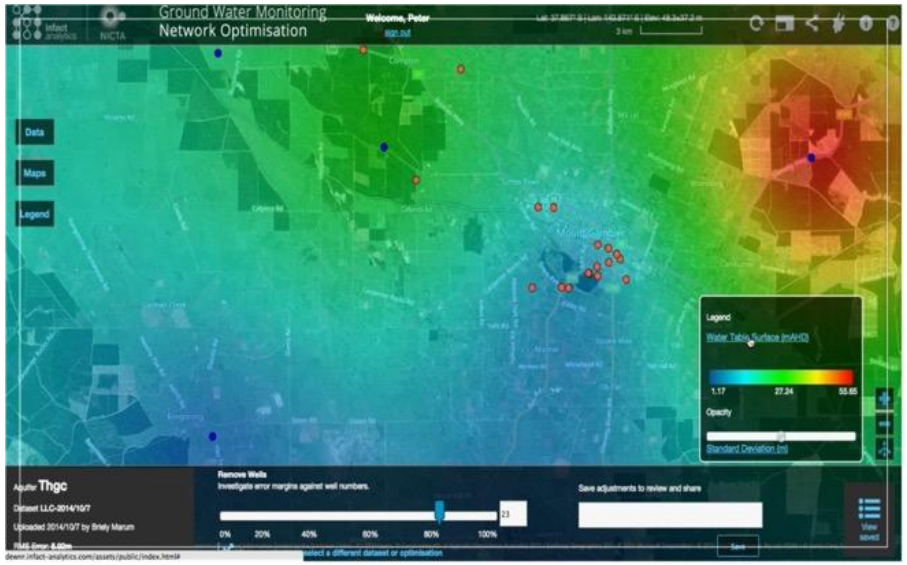
Customised federated maps

Australian Renewable Energy Mapping Infrastructure (for Aust Govt)

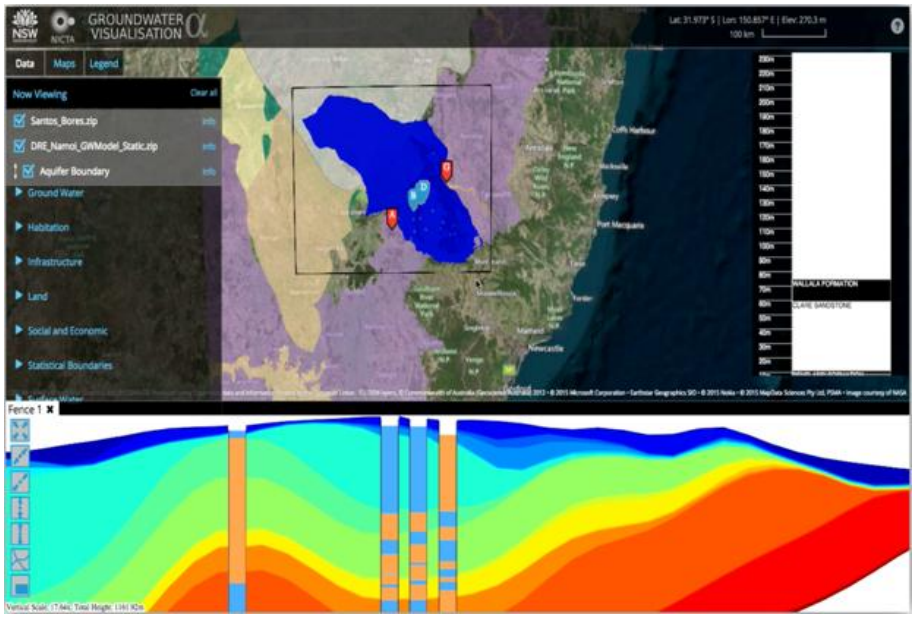
National Environmental Information Infrastructure (for Aust Govt)

Global Risk Map (for UNEPFI and PSI)

Custom applications



Groundwater monitoring
(for South Australian Government)



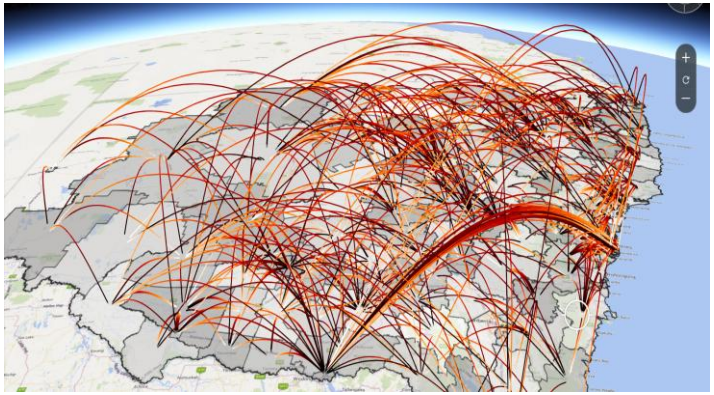
Groundwater assessment
(for NSW Government)

5. The future of Terria™

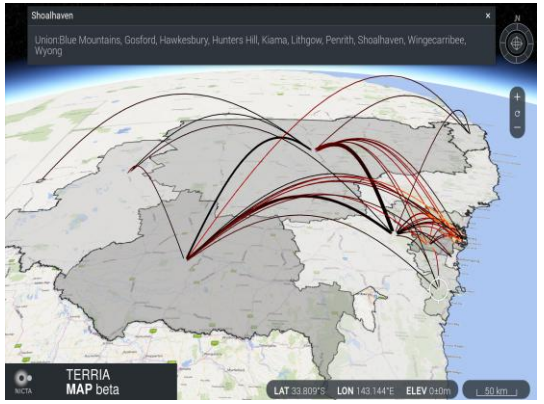
Terria™ Predictive spatial analytics

- For use on a TerriaJS™ maps

Spatial detailing



Spatial community discovery



And much more…

Terria™ services

1. Custom Terria™ maps
   - Federated web-based spatial data exploration
   - For countries, companies and others
2. Custom applications using Terria™
   - Experience in spatial data applications (especially environment, resources, energy)
3. Predictive spatial analytics using Terria™
   - Eg environment, resources, demography

terria.io

bill.simpson-young@nicta.com.au

Talk to us at booth 42

Hear more about our spatial analytics tomorrow:

3pm in Big Data Analytics session (Peter Leihn)

Extra slides

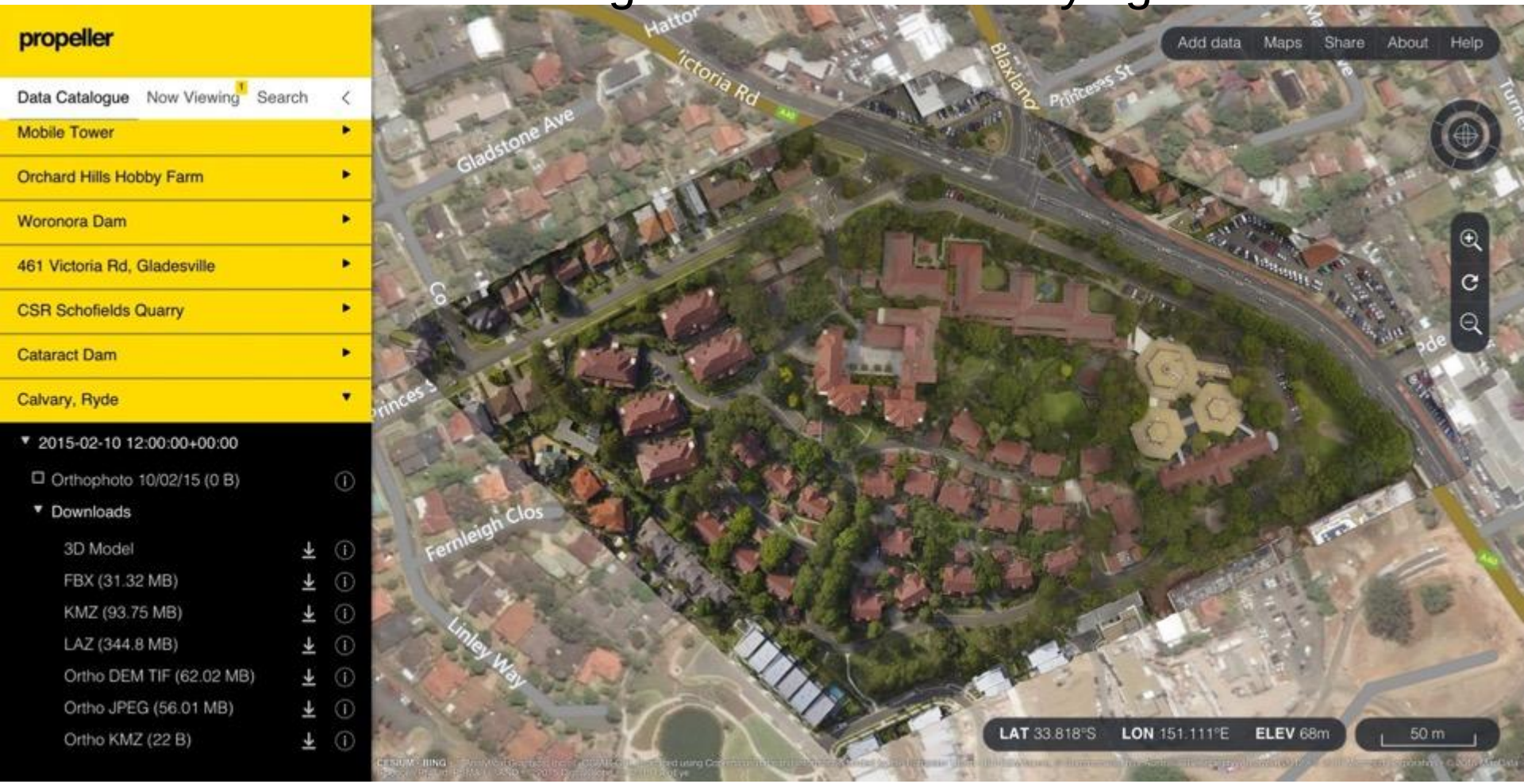
Third-party applications using TerriaJS

Example of third party innovation

- Propeller Aero (Sydney)
- UAV-based 3D model generation for surveying

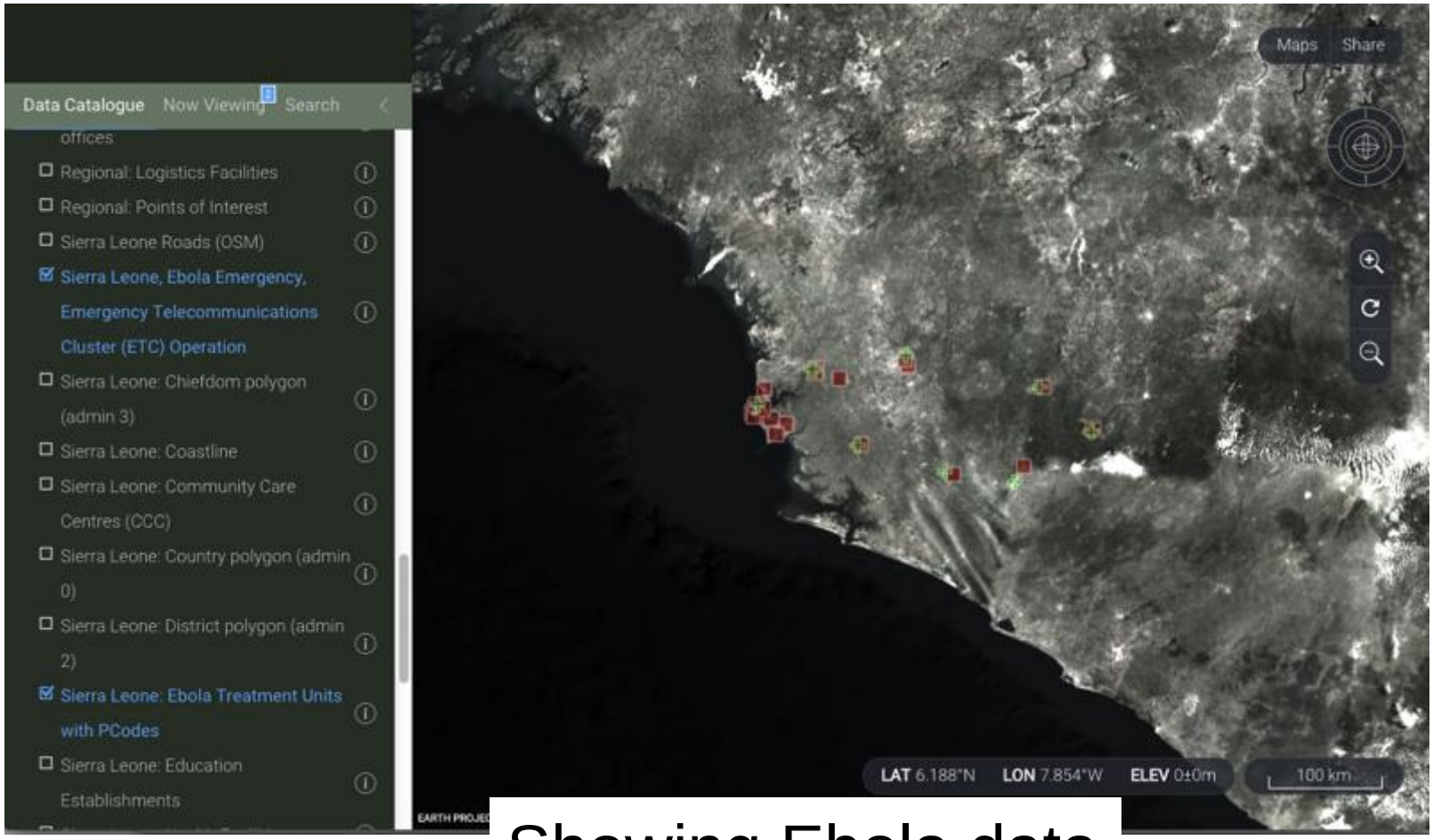
Example of third party innovation

- Propeller Aero (Sydney)
- UAV-based 3D model generation for surveying



Example of third-party innovation

- Earthproject.io - global planning system



Showing Ebola data