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From Silos to Networks – Will Users Drive Spatial Data Infrastructures in the Future?
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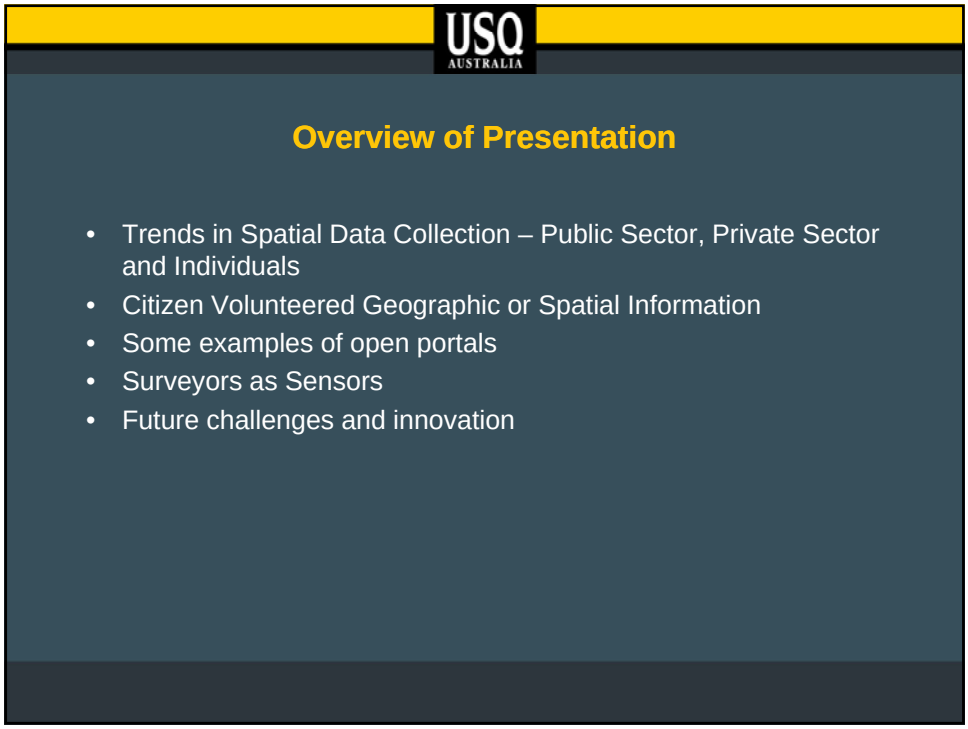
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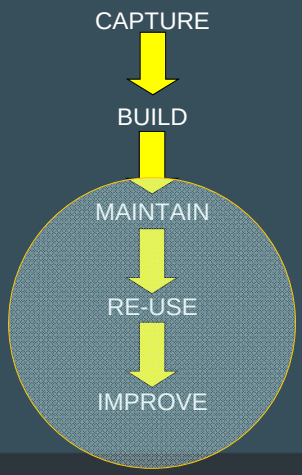
Overview of Presentation
• Trends in Spatial Data Collection – Public Sector, Private Sector and Individuals
• Citizen Volunteered Geographic or Spatial Information
• Some examples of open portals
• Surveyors as Sensors
• Future challenges and innovation

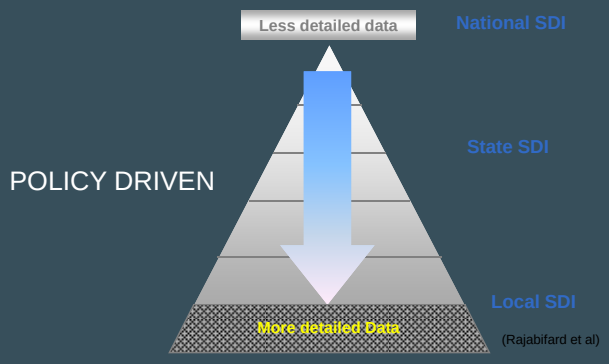
Trends in Spatial Data Utilisation



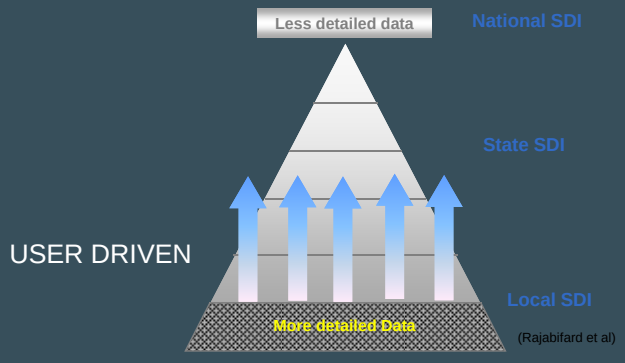
Spatial Data Infrastructure (SDI) Trends and Issues

- Established by governments, primarily at national and state levels
- Policy direction through National Mapping Agencies and state government spatial information council (co-ordination roles)
- Increased focus on local government and private data holdings, particularly for emergency response management
- Capacity of state and federal governments to build SDI is limited

Traditional Top Down SDI
National Policy and Producer Driven



Bottom Up SDI
User Driven



So – What Does This Mean?

- We need to recognise that current systems/institutional processes are/were not designed for a dynamic and demanding information environment
- Government bureaucracies are still the warehouse/custodian of much of our fundamental data – but have a significant degree of institutional inertia
- May not necessarily be models of innovation or more responsive information management
- ***Users now more interactive and often driving change***

Spatial Data Now Ubiquitous

- Since 2005/6 – access to user-friendly web based spatial information portals has increased dramatically
- Google Earth and Google Maps is probably the most significant development in access to spatial information for the public
- Yahoo maps

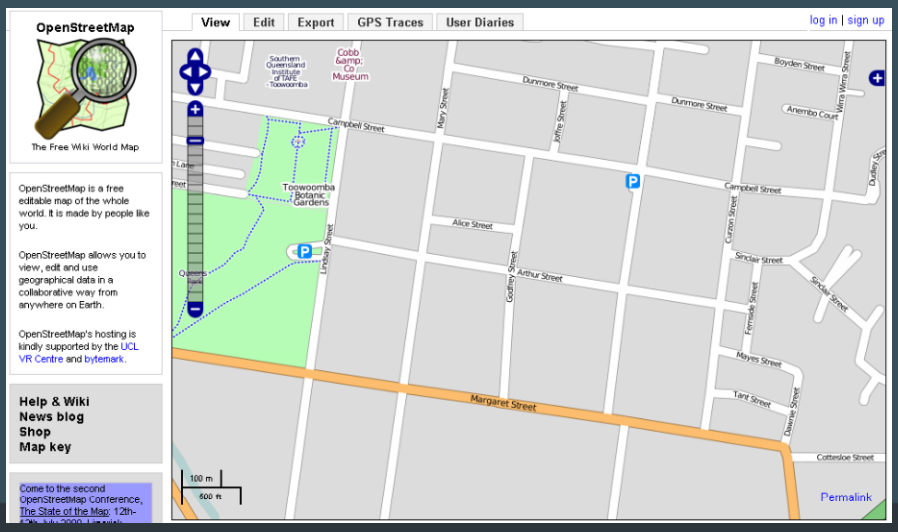
Citizen or User Volunteered Spatial Information

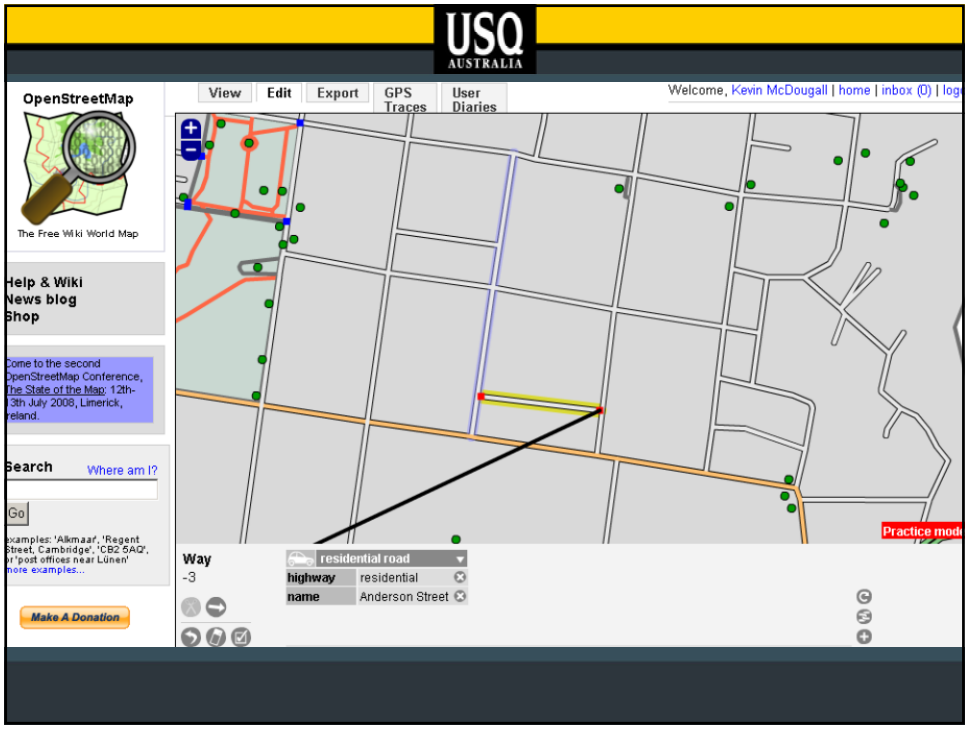
- Coined Volunteered Geographic Information (VGI) by Mike Goodchild and others
- Examples include
  - Wikimapia
  - Open Streetmaps
  - GeoCommons
- Ordinary people become spatial sensors or reporters
- Millions of potential sensors

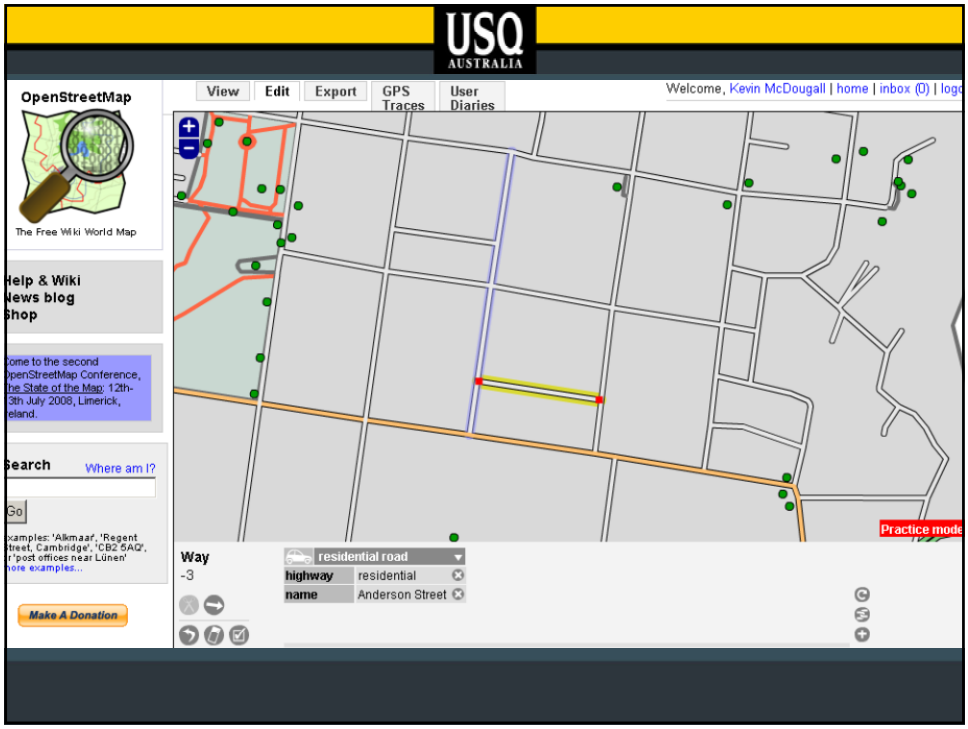
What is OpenStreetmap?

- **OpenStreetMap** (**OSM**) is a collaborative project to create a free editable map of the world's streets
- OpenStreetMap is dedicated to providing a free, open digital map of the planet as a patchwork of contributions by individual volunteers – Volunteered Geographic Information
- The maps are created using data from portable GPS devices and other free sources.
- Users can also create new routes or update existing ones using the given editing tools.

OpenStreetMap



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OpenStreetMap
The Free Wiki World Map
View
Edit
Export
GPS Traces
User Diaries
Welcome, Kevin McDougall | home | inbox (0) |
Search
Where am I?
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Make A Donation
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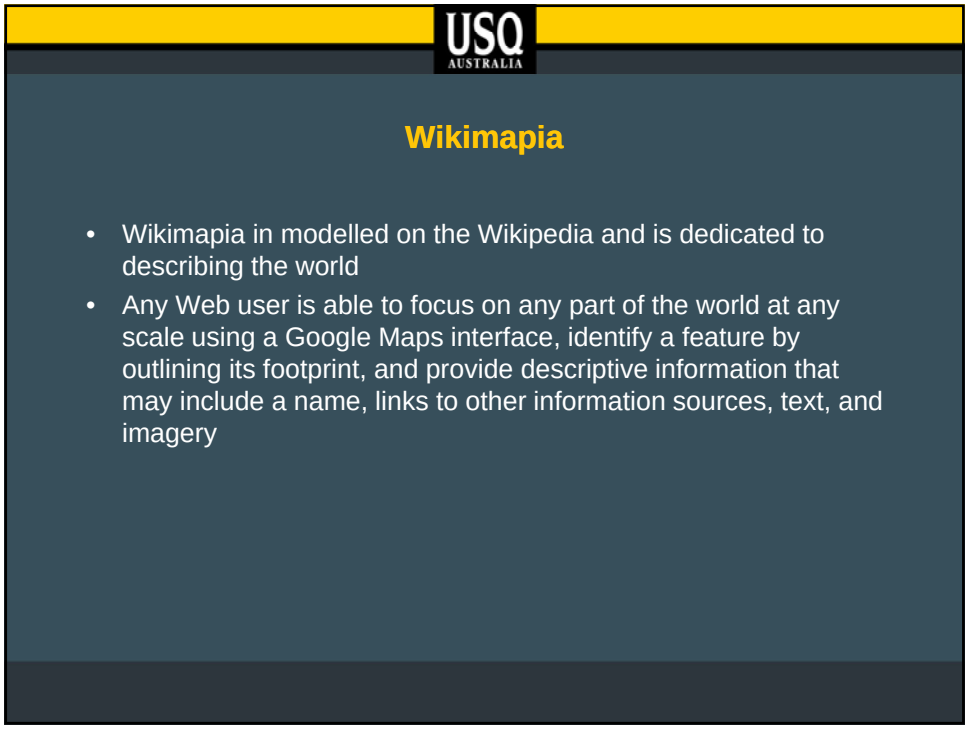
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Wikimapia
• Wikimapia in modelled on the Wikipedia and is dedicated to describing the world
• Any Web user is able to focus on any part of the world at any scale using a Google Maps interface, identify a feature by outlining its footprint, and provide descriptive information that may include a name, links to other information sources, text, and imagery

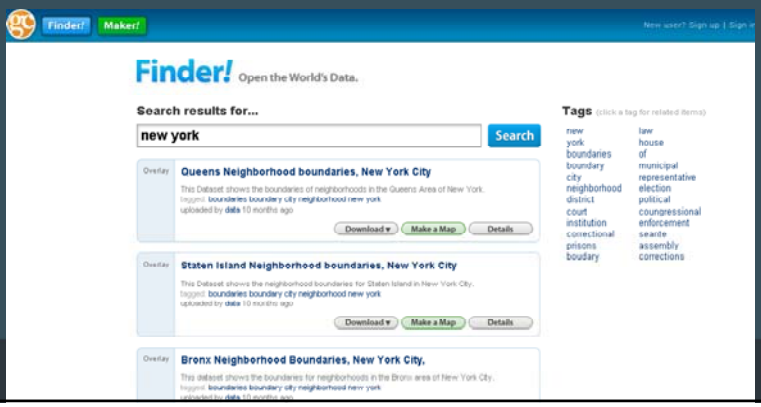
Wikimapia

Wikimapia

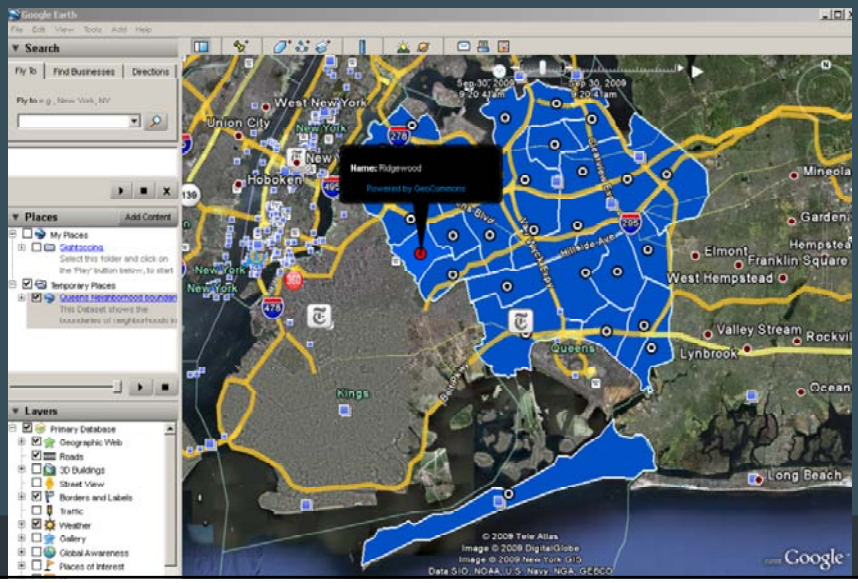
- Wikimapia at present provides over 10 million descriptions of features ranging from whole continents to individual houses or features
- Approximately one new place for every 2-3 seconds
- Bounding limits often bear no relation to actual extents of features

GeoCommons

- Create and share maps
- Different themes and topics – community, educations, business etc
- Download Geodata in common formats CSV, Shape or KML



GeoCommons



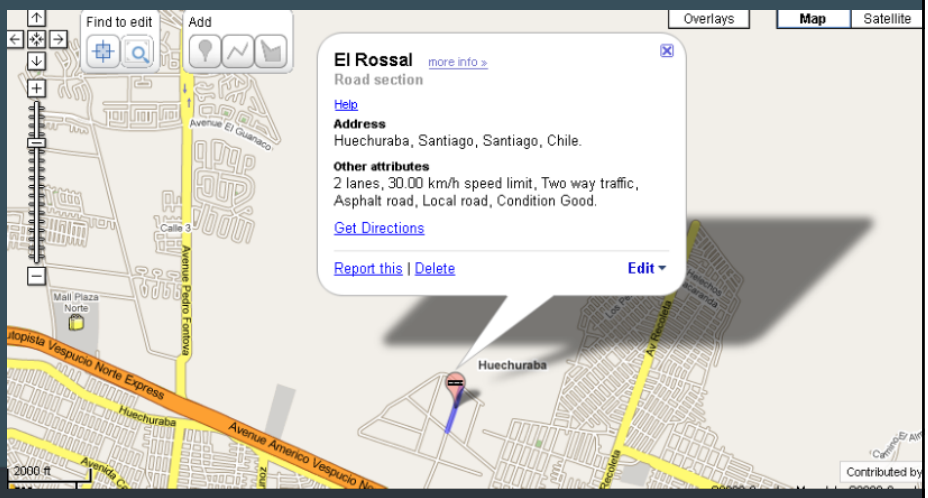
Move to Open Up SDI
Ordnance Survey (OS) OpenSpace

- Initiative to encourage and promote use of public managed spatial information
- Free for non-commercial and private individual use
- API based on Open Layers
- OS will support development and commercialisation
- Ideal for community activities, developers and open government

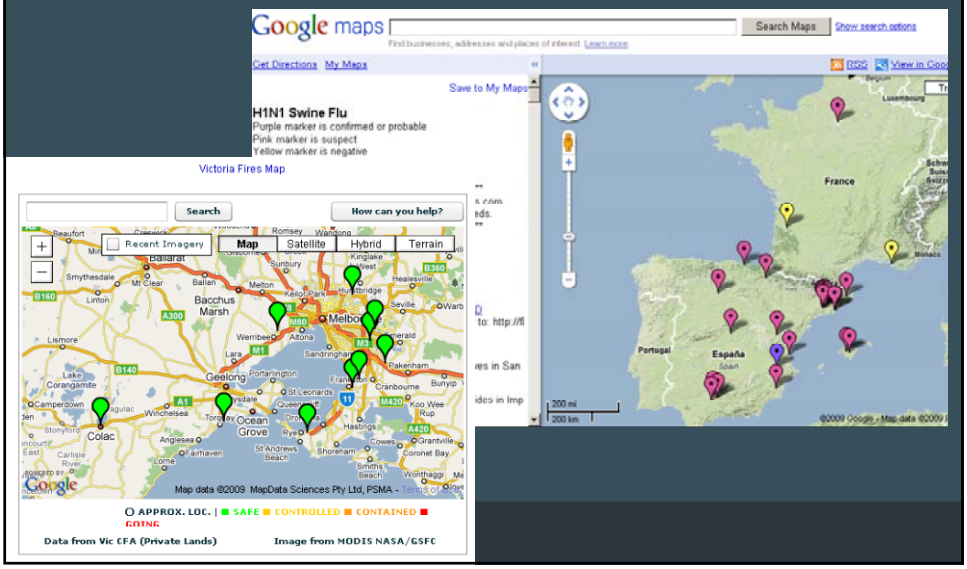
Example of OS OpenSpace API displaying Ordnance Survey data

Google Map Maker

Google Map Maker



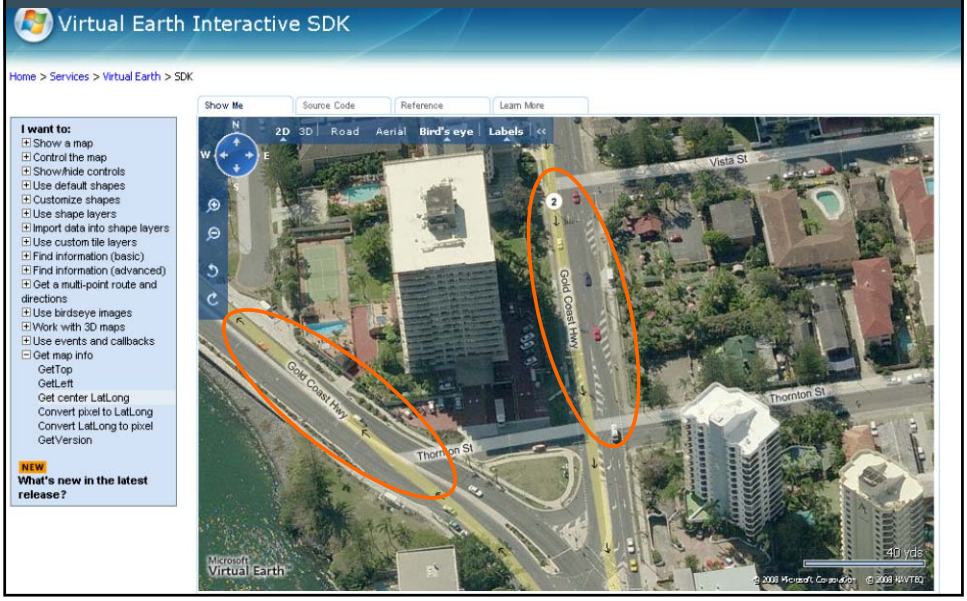
Mashups



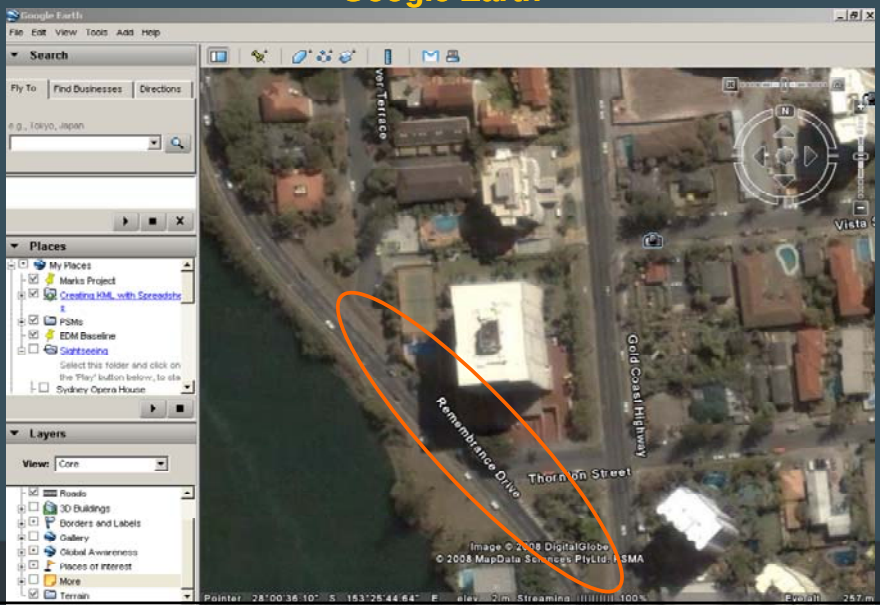
Example of Volunteered Geographic Information for Updating Road/Street Network

- Legacy of street and road name errors
- Some roads/streets closed
- Local road names versus formal gazetted names
- Multiple levels of government often required to update
- Multiple data bases with multiple errors

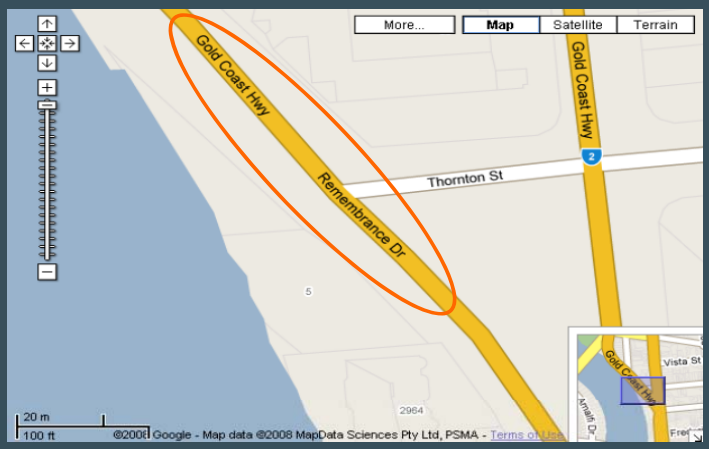
Microsoft Virtual Earth



Google Earth



And Google Maps – Both Road Names



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Killarney
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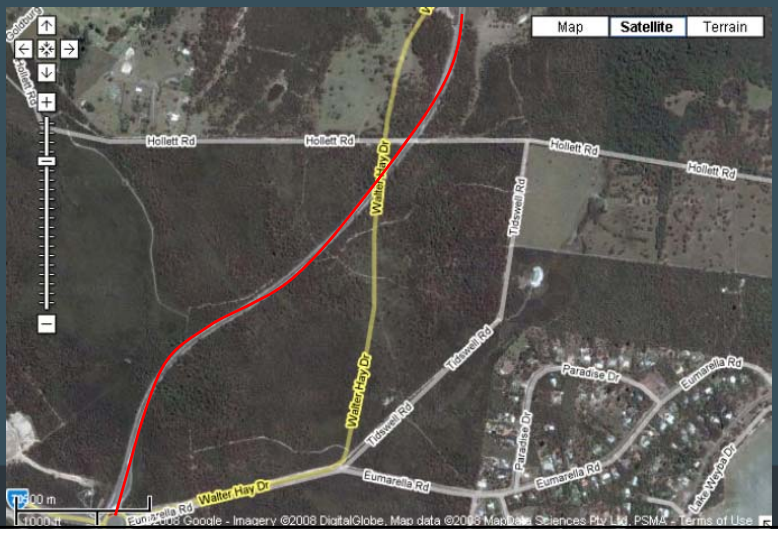
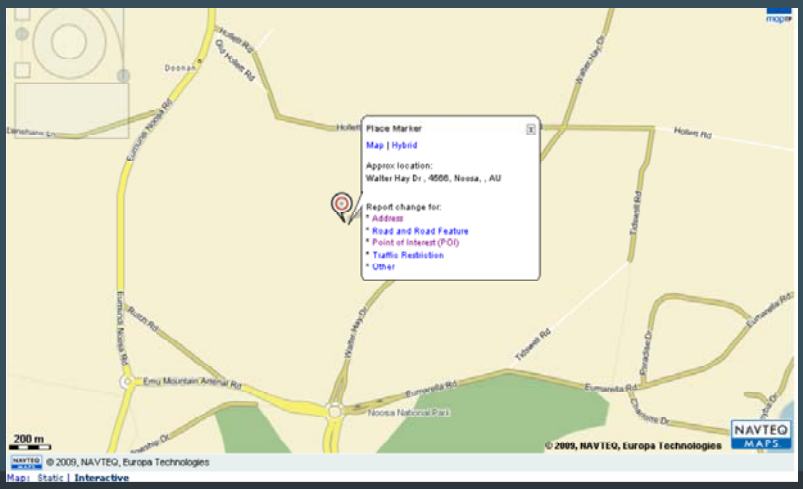
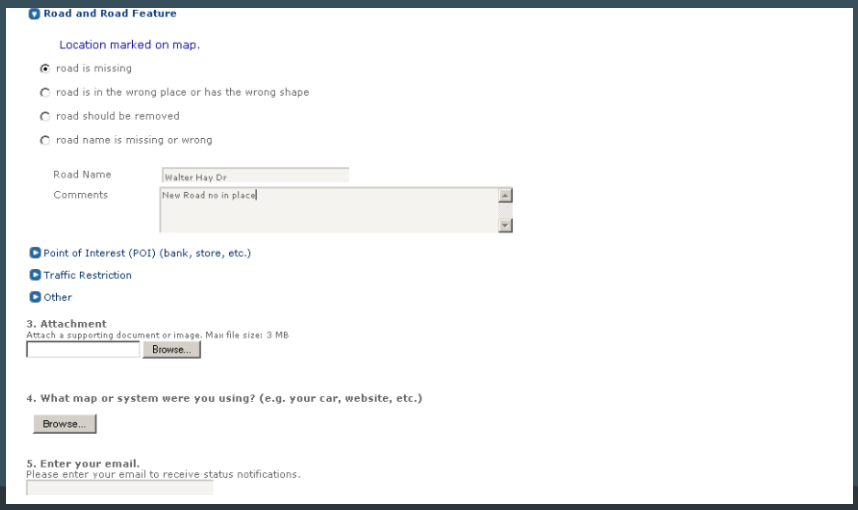
Using PNDs to Advise of Errors



NAVTEQ MapReporter



NAVTEQ MapReporter



Users As Sensors

- Identification of a data issue at the point of use by the user – Personal Navigation Devices, mobile phones or CORS GPS
- Multiple contributions may trend toward a “true” value or mean
- Large army of users out there
- Many users are technology savvy - some are experts
- Growing culture and use of online technology and social networking repositories eg facebook, Myspace
- May distinguish user entry
  - Novice user – provide advice or alert
  - Skilled user – increasingly trusted information
  - Professional User – accredited to enter certain data and data accepted e.g. ***Surveyor/Geodetic Engineer***

New Role for The Surveyor

- Surveyors can become sensors
- Trusted authority in collection of cadastre, geodetic and utility information
- Use of CORS networks now can minimise issues with respect to datums and co-ordinate systems
- Direct submission of relevant survey data to data repositories

Some Challenges for Mapping and Surveying Agencies

- Need to develop concept of trusted users
- Direct deposition of data in a digital form
  - Point location and attributes
  - Boundary and attributes
- Validation and acceptance procedures
- Focus on data improvement and maintenance
- Who will pay for this process – client, government or surveyor
- Perhaps a new business model – shared data model and costing model

Conclusions and Challenges

- Traditional government and private sector mapping organisations need to acknowledge the power and capability of users
- Greater use of mobile technologies and positioning systems to improve the currency and positional quality
- Better collaborative models need to be established across government-private sectors to reduce duplication of data collection and improve reliability
- Surveyors as Sensors can delivery improved currency of survey data and reduce duplication

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