

Using Smart Mobile Devices for Field Data Collection and Dissemination

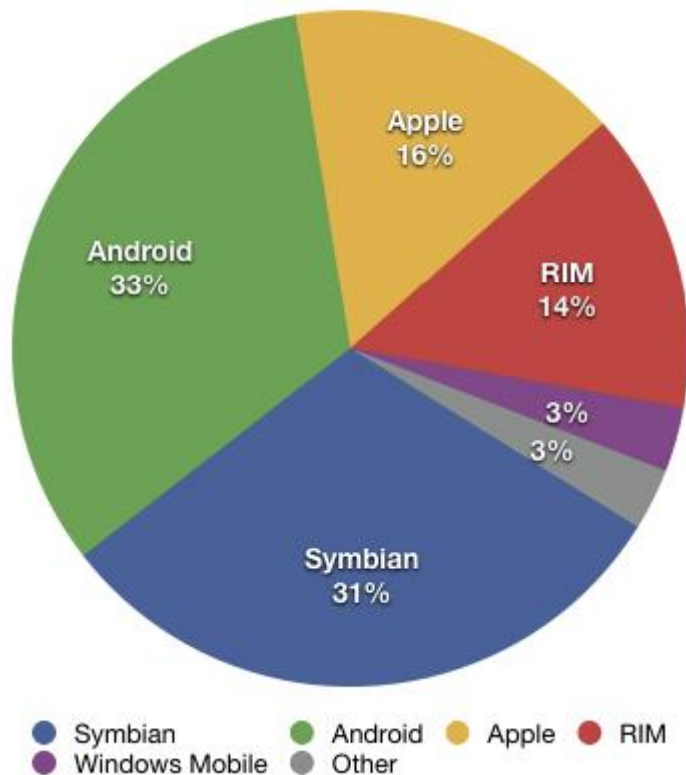
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Will Holmes, KYDOT

David Krauss, GeoDecisions

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Smart Phone Market Share Q4 2010



- Numbers do not include Tablets
- Symbian future and Windows Phone OS
- Android Defragmentation among OEMs

Canalys Smart Phone Analysis, Quarterly Shipment Data

Worldwide smart phone market Market shares Q4 2010, Q4 2009

OS vendor	Q4 2010		Q4 2009		Growth Q4'10/Q4'09
	shipments (millions)	% share	shipments (millions)	% share	
Total	101.2	100.0%	53.7	100.0%	88.6%
Google*	33.3	32.9%	4.7	8.7%	615.1%
Nokia	31.0	30.6%	23.9	44.4%	30.0%
Apple	16.2	16.0%	8.7	16.3%	85.9%
RIM	14.6	14.4%	10.7	20.0%	36.0%
Microsoft	3.1	3.1%	3.9	7.2%	-20.3%
Others	3.0	2.9%	1.8	3.4%	64.8%

*Note: The Google numbers in this table relate to Android, as well as the OMS and Tapas platform variants

Source: Canalys estimates, © Canalys 2011

Two-horse race so far in tablets

Exhibit 1: Global Tablet Operating System Shipments and Market Share in Q4 2010

Global Tablet OS Shipments (Millions of Units)	Q3 '10	Q4 '10	2010
Apple iOS	4.2	7.3	14.8
Android	0.1	2.1	2.3
Others	0.1	0.3	0.5
Total	4.4	9.7	17.6

Global Tablet OS Marketshare %	Q3 '10	Q4 '10	2010
Apple iOS	95.5%	75.3%	84.1%
Android	2.3%	21.6%	13.1%
Others	2.3%	3.1%	2.8%
Total	100.0%	100.0%	100.0%

Analytics firm Strategy Analytics reports that Android owned 22% of the global tablet market in the fourth quarter of 2010. The iPad's share of the market dropped from 96% to 75% in the fourth quarter last year, according to the report

SDKs offer developers

- Mapping engines
 - Geocoding and reverse geocoding
- Base mapping data
 - Road, aerial, and business data
 - Mapping tiles, for now
- Location Services
 - GPS, Cell, Wireless
- GUI components
 - Built-in components provide familiar Look and Feel
- Deployment and update platform
 - App Store and Market Places
 - Enterprise deployment with out App Stores

SMD and Cloud

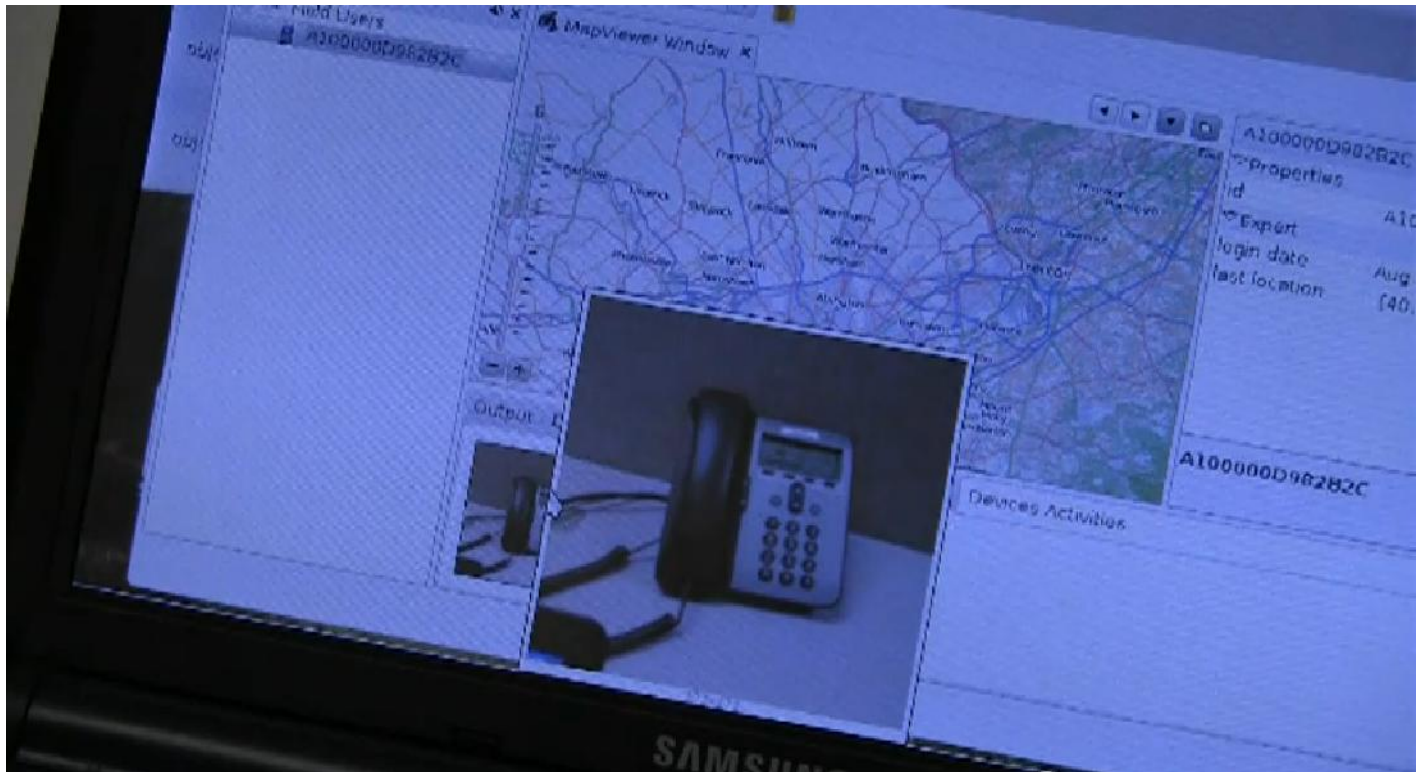
- Smart Mobile Devices and Cloud Services: Hand in Hand?
 - Mapping Services
 - Social Media (FB, Tweet, various check-in apps...)
 - File Storage
 - Image Sharing (Picassa API...)
 - Data Storage
 - Google Spreadsheet and Google Doc APIs

SMD and Cloud - Continued

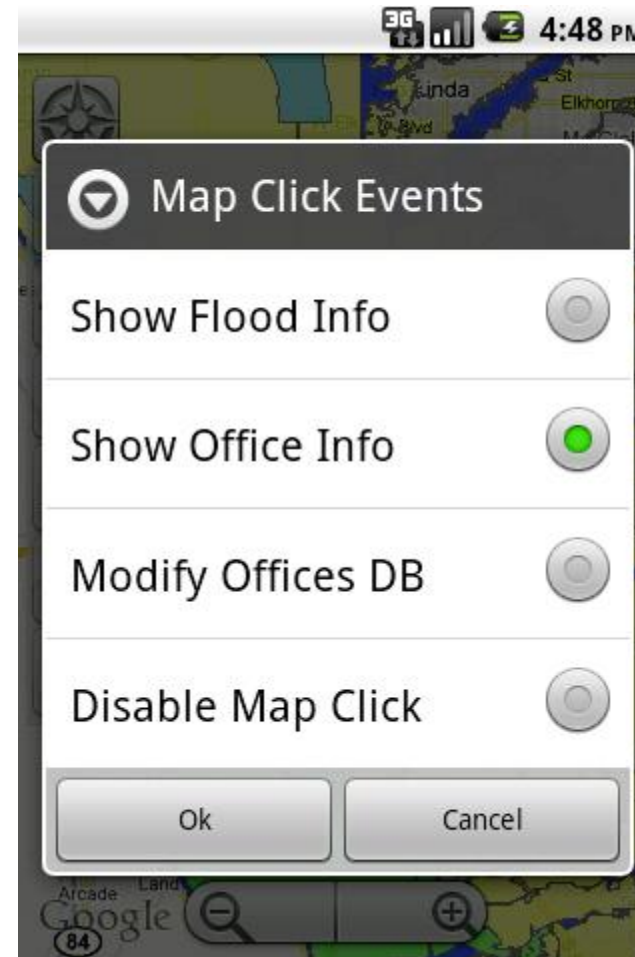
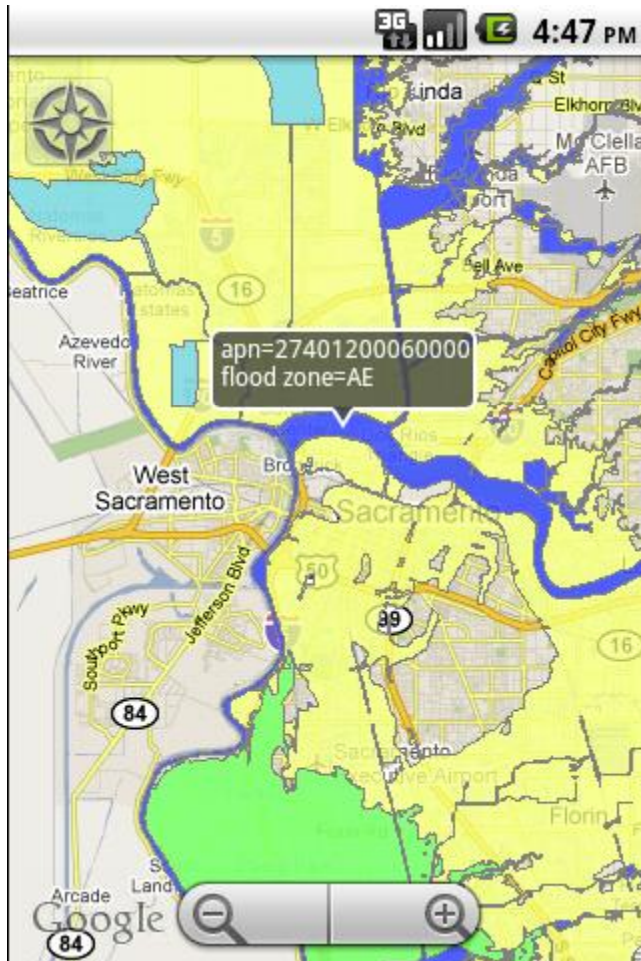
- Smart Mobile Devices and Cloud Services: Hand in Hand?
 - Raised expectation
 - Virtually no learning curve
 - “Familiar GUI and user experience”
 - A tree-view based layer legend may not work
 - Hard to change millions of users in their expected GUI and application interaction
 - Change would be a constant factor
 - Cloud services may change
 - Your building blocks change or morph
 - Need to have a patching/upgrading method to catch up
 - Complexity in scaling up
 - You may experience sudden use surge
 - Users can be in different geography and time zone
 - Cloud hosting for N-tier solutions (more on next slide)?

Disconnected Mode and Sync with Enterprise Servers

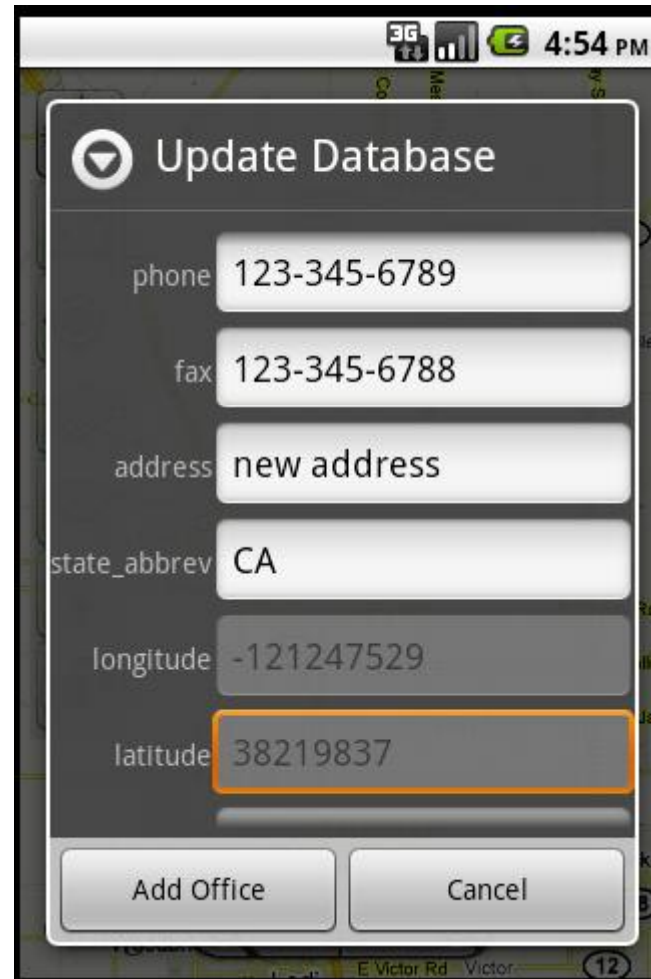
- Your Smart Device is powerful
 - Very capable hardware specifications
 - Heard about First Person Shooter? Rage and Unreal engines have mobile versions
 - Why not leverage on it?
- Local data storage
 - Sqlite for databases
 - Android, Chrome, Firefox and many other already use it. File based.
 - Files such as documents
 - Reduce hits on the servers and network
 - Can work in disconnected mode
 - Deployment/installation of large application size is OK
 - Rage for iOS is >800MB
- Sync
 - N-Tier Client/Server
 - Need server app
 - Commercial server or customized server applications



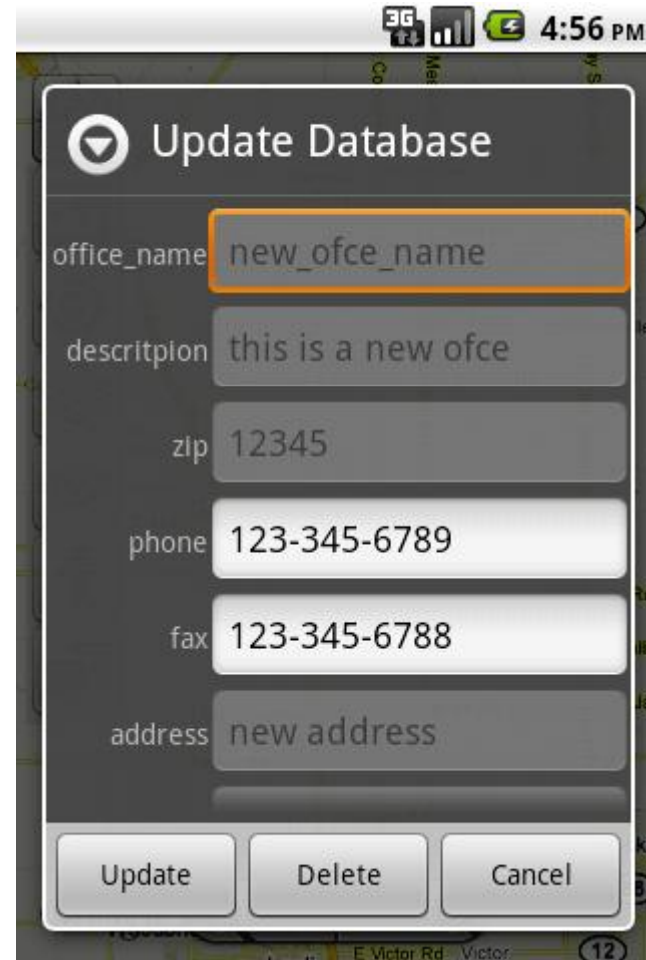
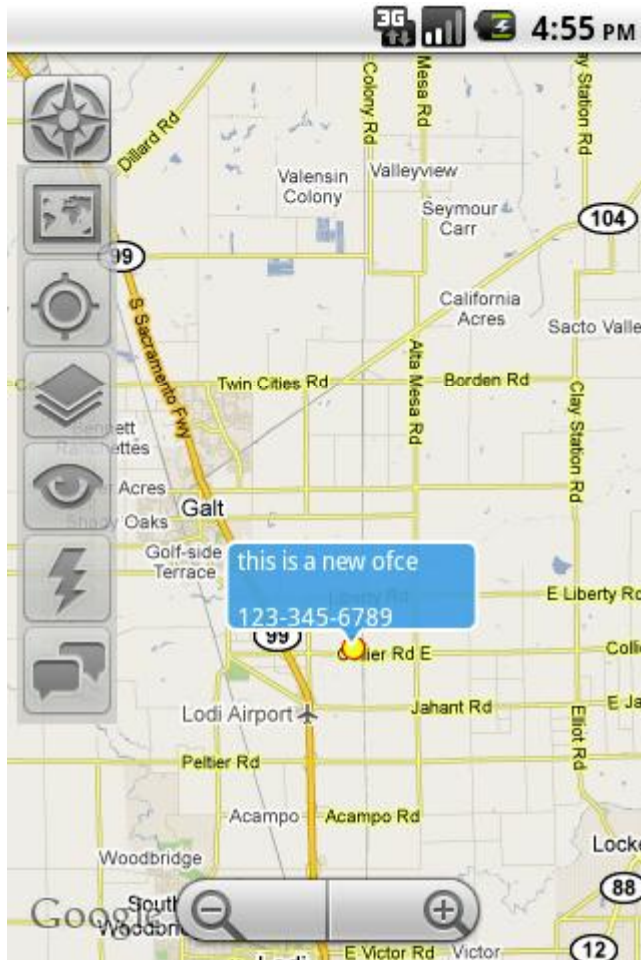
Display maps and perform spatial query



Collect field data



Update data in the field

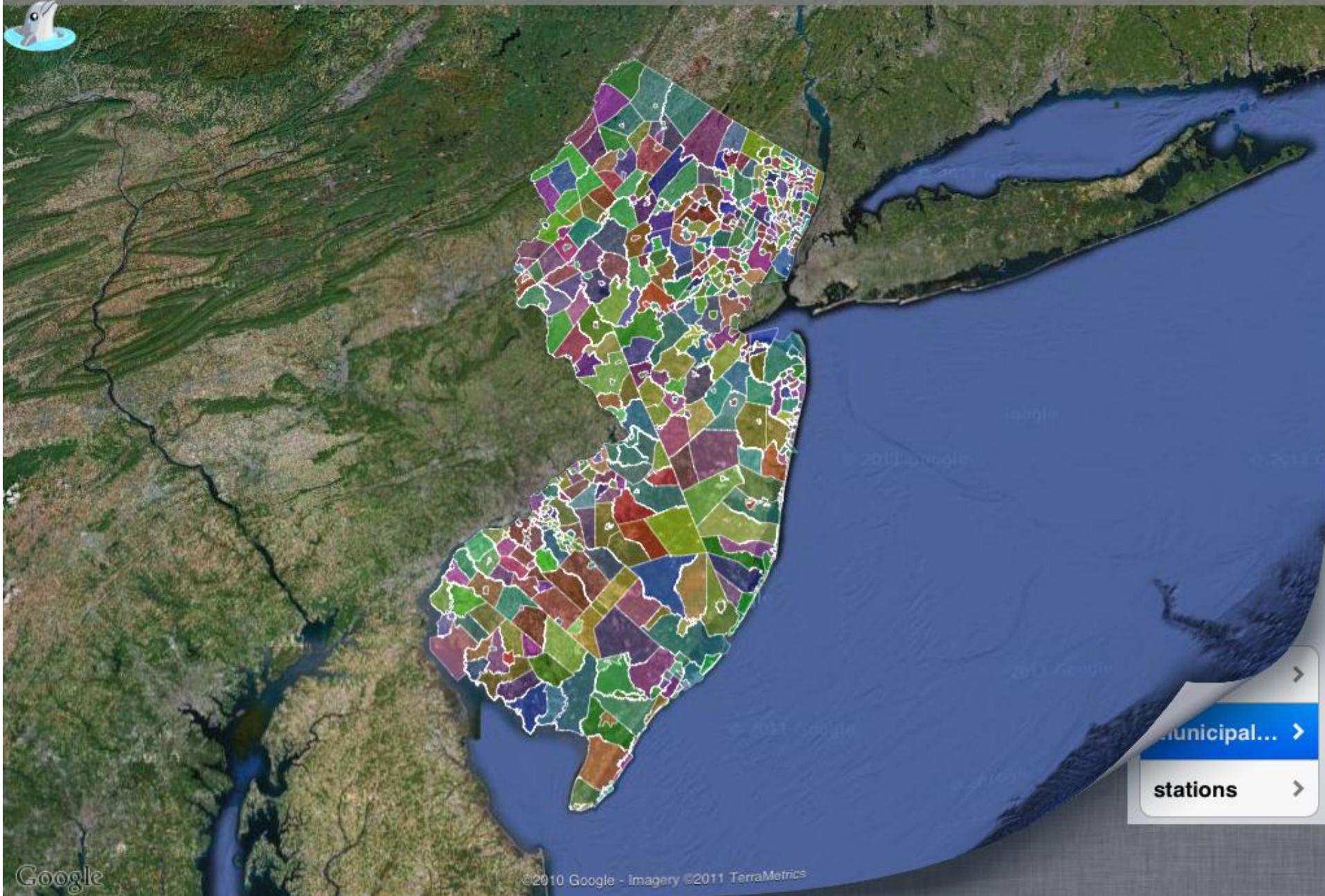


Draw

select geometry,pk_uid from municipalities



Total number of objects: 566



- >
- municipal... >
- stations >

Draw

select geometry,city_name from cities



Total number of objects: 3149



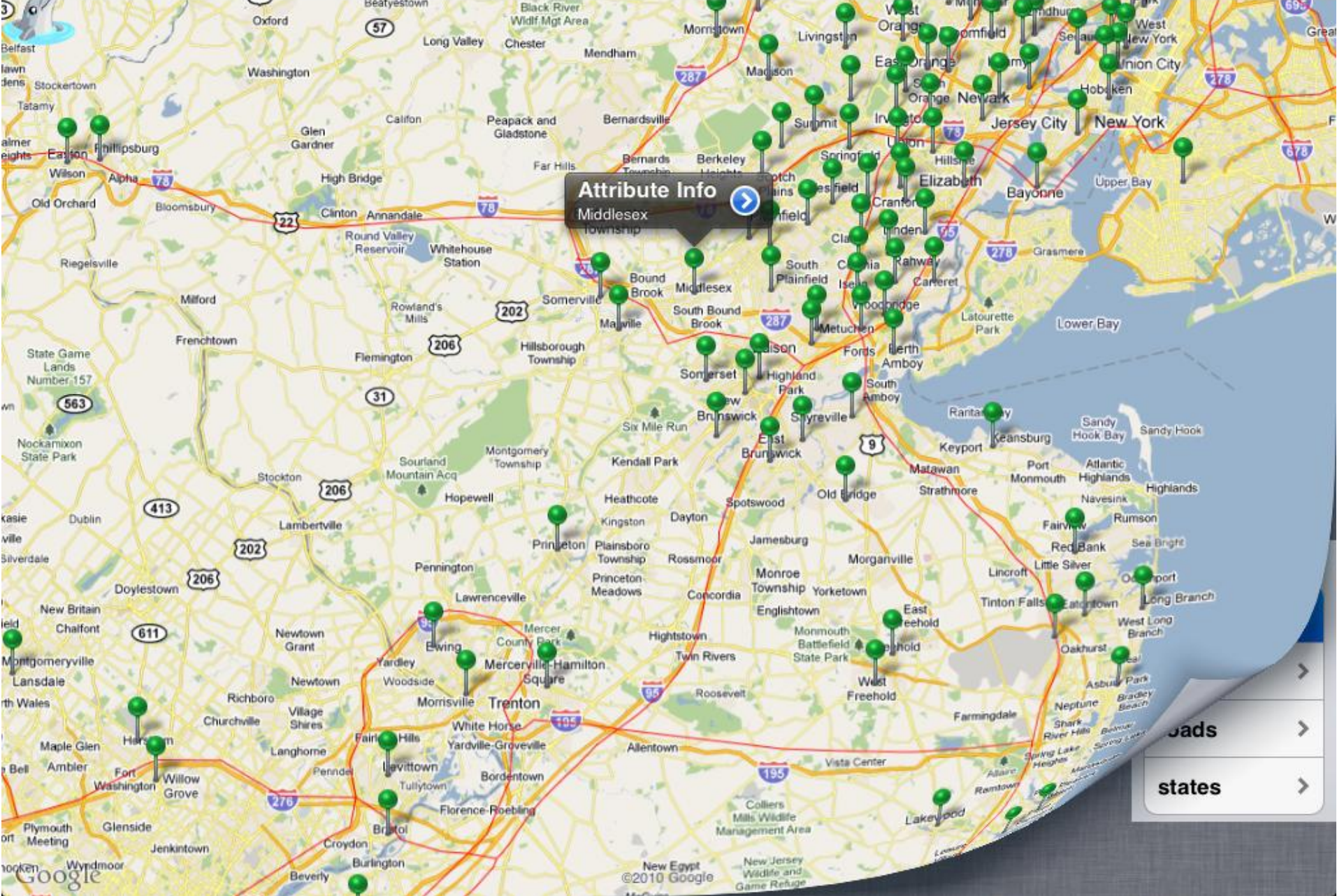
- Bermuda >
- Islands >
- states >

Draw

select geometry,city_name from cities



Total number of objects: 3149



- ads >
- states >