Google Fusion Tables & FME

How to Gather and Share Spatial Data in Minutes
Introducing Google Fusion Tables

Fusion Tables
Gather, visualize and share your data online

Visualize and publish your data as maps, timelines and charts.
Host your data tables online.
Combine data from multiple people.

Search public data tables

http://www.google.com/fusiontables/Home
What is a Fusion Table?

- A database in the cloud used to store, analyze, and visualize large data sets
Visualize Data in Various Ways

- Example: GDP per Capita
# Fusion Tables User Interface

- Import
- Manage
- Visualize
- Export
- Share

<table>
<thead>
<tr>
<th>Country</th>
<th>Map</th>
<th>GDP per capita</th>
<th>Literacy rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Afghanistan</td>
<td>Line</td>
<td>$934.00</td>
<td>99</td>
</tr>
<tr>
<td>Albania</td>
<td>Line (sample)</td>
<td>$7,169.00</td>
<td>99</td>
</tr>
<tr>
<td>Algeria</td>
<td>Bar</td>
<td>$6,885.00</td>
<td>75.4</td>
</tr>
<tr>
<td>Angola</td>
<td>Pie</td>
<td>$6,181.00</td>
<td>67.4</td>
</tr>
<tr>
<td>Antigua and Barbuda</td>
<td>Scatter</td>
<td>$17,308.00</td>
<td>99</td>
</tr>
<tr>
<td>Argentina</td>
<td>Timeline (date, text, number)</td>
<td>$14,525.00</td>
<td>97.6</td>
</tr>
<tr>
<td>Armenia</td>
<td></td>
<td>$4,983.00</td>
<td>99.7</td>
</tr>
<tr>
<td>Australia</td>
<td></td>
<td>$38,683.00</td>
<td>99</td>
</tr>
<tr>
<td>Austria</td>
<td></td>
<td>$38,567.00</td>
<td>99</td>
</tr>
<tr>
<td>Azerbaijan</td>
<td></td>
<td>$9,540.00</td>
<td>99.5</td>
</tr>
<tr>
<td>Bahamas, The</td>
<td></td>
<td>$25,807.00</td>
<td>99.7</td>
</tr>
<tr>
<td>Bahrain</td>
<td></td>
<td>$27,214.00</td>
<td>88.8</td>
</tr>
<tr>
<td>Bangladesh</td>
<td></td>
<td>$1,487.00</td>
<td>53.5</td>
</tr>
<tr>
<td>Barbados</td>
<td></td>
<td>$22,272.00</td>
<td>99.7</td>
</tr>
<tr>
<td>Belarus</td>
<td></td>
<td>$12,750.00</td>
<td>99.7</td>
</tr>
<tr>
<td>Belgium</td>
<td></td>
<td>$35,534.00</td>
<td>99</td>
</tr>
<tr>
<td>Belize</td>
<td></td>
<td>$7,841.00</td>
<td>75.1</td>
</tr>
<tr>
<td>Benin</td>
<td></td>
<td>$1,440.00</td>
<td>40.5</td>
</tr>
</tbody>
</table>
Google Maps API: Fusion Tables Layer
Map & Query Your Data with Google Maps API (v3)

* Chicago Redeye "Chicago Homicides 1/1/09 - 3/4/10"
Fusion Tables SQL API
Google Fusion Tables - SQL API


```sql
SELECT name, address FROM 790805 LIMIT 5;
```

name,address
FIRST CUP,"2911 VAN NESS AVE , 94109"
UNION STREET COFFEE ROASTERY,"2191 UNION ST , 94123"
NAPOLI PIZZA RESTAURANT,"1045 POLK ST , 94109"
WAYO,"1407 VAN NESS AVE , 94109"
MIFUNE RESTAURANT,"1737 POST ST , 94115"

- Example Table: [http://fmely/sffood](http://fmely/sffood)
Nearest Neighbour

```
SELECT * FROM 790805
ORDER BY ST_Distance(
    address, LatLng(37.7832, -122.4035))
LIMIT 5;
```
Loading Data Into Fusion Tables
# Case Study #1: Delivery Map

- **Excel Input**

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>COMPANY</td>
<td>ADDRESS</td>
<td>PC</td>
<td>CITY</td>
<td>QTY</td>
</tr>
<tr>
<td>2</td>
<td>Klohn Crippen Berger</td>
<td>500 - 2955 Virtual Way</td>
<td>V5M 4X6</td>
<td>Burnaby</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Best Buy Canada</td>
<td>8800 Glenlyon Parkway</td>
<td>V5J 5K3</td>
<td>Burnaby</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Ballard Power</td>
<td>9000 Glenlyon Parkway</td>
<td>V5J 5J8</td>
<td>Burnaby</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>Electronic Arts</td>
<td>4330 Sanderson Way,</td>
<td>V5G 4X1</td>
<td>Burnaby</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>Art Institute</td>
<td>3264 Beta Avenue</td>
<td>V5G 4K4</td>
<td>Burnaby</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>BCAA</td>
<td>4567 Canada Way</td>
<td>V5G 4T1</td>
<td>Burnaby</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>Tourism Vancouver</td>
<td>Suite 210 - 200 Burrard Street</td>
<td>V6C 3L6</td>
<td>Downtown</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>Teck Cominco</td>
<td>3300, 5 Bentall 550 Burrard St</td>
<td>V6C 0B3</td>
<td>Downtown</td>
<td>2</td>
</tr>
<tr>
<td>10</td>
<td>PHSA</td>
<td>700 - 1380 Burrard Street</td>
<td>V6Z 2H3</td>
<td>Downtown</td>
<td>1</td>
</tr>
<tr>
<td>11</td>
<td>Sierra Systems</td>
<td>2500 - 1177 West Hastings St</td>
<td>V6E 2K3</td>
<td>Downtown</td>
<td>1</td>
</tr>
</tbody>
</table>
Case Study #1: Delivery Map

- Direct Import Yields Poor Geocoding
- Location Information Scattered Across Columns
Case Study #1: Delivery Map

- Use FME to Concatenate a Complete Address
- Write to Fusion Tables
Case Study #1: Delivery Map

- Results (http://fme.ly/deliveries)
Case Study #2:  
Dr. John Snow – Cholera Map

Case Study #2:
Dr. John Snow – Cholera Map

ye olde faycebooke

Dr. John Snow
This day I did GPS all water pump locations in London Town. Dost anyone possess a spatial dataset of Cholera deaths?

Miasmatic27
Thou nutbar. Knowest not that cholera be a plague of the air, and not the water! LOL

Albert Augustus Charles Emmanuel Saxe-Coburg
Listen not to that imbecile. You may findeth a crowdsourced cholera map on-the-line at http://fme.ly/cholera

Dr. John Snow
OSM - Open Sewer Map - format too. Many thanks your highness.
Case Study #2: Dr. John Snow – Cholera Map
Case Study #2: Dr. John Snow – Cholera Map

- Results at [http://fme.ly/pumps](http://fme.ly/pumps)
Case Study #3: FME Server Download Statistics

Case Study #4: WhiteStar
Daily Texas Well Permits

- Daily Aggregation of Well Permits
- Results at http://fme.ly/whitestar
Case Study #4: WhiteStar
Daily Texas Well Permits

- Permit Data on State of Texas ftp web site
- Permits are in an annoying card file format – 1980s style.
- The permit data are cumulative for an entire month. We want daily permits.
Case Study #4: WhiteStar Daily Texas Well Permits

- FME is run daily to process latest data file:
  - Parse the text file for key attributes
  - Figure out if record was received within a period of time ago, i.e. within the last day.
  - Insert the results to the shared Fusion Table
  - Tweet the results via @whitestar_corp
Extracting Data From Fusion Tables
Data Extraction 1: Complete Table(s)
Data Extraction 1: Complete Table(s)
Data Extraction 1: Complete Table(s)

- List of "owned" tables
Data Extraction 1: Complete Table(s)

- For “public” tables, visit
  - http://www.google.com/fusiontables
  - Search for something (e.g. Fishing, or Iowa)
  - Use File->About to Get Table ID:

**About Iowa Caucus 2012 County Results with Shapes**

<table>
<thead>
<tr>
<th>Name</th>
<th>Iowa Caucus 2012 County Results with Shapes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numeric ID</td>
<td>2512093</td>
</tr>
<tr>
<td>Encrypted ID</td>
<td>1csWdY-5u30XJw0Rdlml0WzAQ8PcPhXmCwHe006U</td>
</tr>
<tr>
<td>Key</td>
<td>ID</td>
</tr>
<tr>
<td>Attribution</td>
<td>Republican Party of Iowa (RPI)</td>
</tr>
<tr>
<td>Exportable</td>
<td>yes</td>
</tr>
<tr>
<td>Visibility</td>
<td>Public</td>
</tr>
<tr>
<td>Protected Map Layer</td>
<td>Not set up</td>
</tr>
</tbody>
</table>
Data Extraction 1: Complete Table(s)

<table>
<thead>
<tr>
<th>ID</th>
<th>DistrictName_en</th>
<th>Shape</th>
<th>NumVoters</th>
<th>NumBallotBoxes</th>
<th>VoteCount_Paul</th>
<th>VoteCo...chmann</th>
<th>VoteCo...Gingrich</th>
<th>VoteCo...antor</th>
<th>VoteCo...ntsm</th>
<th>VoteCount-Other</th>
<th>VoteCo...Roemer</th>
<th>VoteCo...Romney</th>
<th>VoteCount_Perry</th>
<th>VoteCount_Cain</th>
<th>VoteCo...ference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

2512093
SQLCreator executes Queries

```sql
select Sum('VoteCount-Santorum') as Santorum,
       Sum('VoteCount-Romney') as Romney
from 2512093
```
FME & Fusion Tables: Summary

- Google Fusion Tables is a Free & Flexible Way to:
  - Gather
  - Visualize
  - And Share Data
- FME makes it **Fast** and **Easy** to get data in and out of Fusion Tables
  - ...And Fully Leverage Its Potential
- For more information, visit [http://www.safe.com/fusiontables](http://www.safe.com/fusiontables)
Fusion Tables: Resources

- Fusion Tables API Documentation: http://goo.gl/RehWT
- Google Maps API (Fusion Tables Layer) Documentation: http://goo.gl/ghpjlm
- Developer Code: http://fme.ly/fusionsamp
- Fusion Tables Web App http://goo.gl/CwBkC
- Mano Marks’ Complete Presentation: http://fme.ly/manofusion
Thank You