



Rich Pinder

Los Angeles Cancer Surveillance Program

Links and Slides – google 'Rich Pinder USC'

rpinder@usc.edu

NAACCR Annual Meeting

**Incorporating realtime geocoding systems
into data entry routines**

**Presented at the NAACCR Annual Meeting
June 2007**

Detroit, June 2007

Data entry – main focus here

- **Increase accuracy**
- **Increase ease/speed**
- **Zip codes & Area Codes & Postal info**
- **Standardize CityName (bulk mailings)**

MAPS

Detroit, June 2007

MAPS

Detroit, June 2007

An example from the past :

Detroit, June 2007

100100 03 Teacher phone call, letter, email

MARY BO PEEP
First Middle Last

123 FARMYARD LANE A+
Street Address (Address extra)

VAN NUYS CA 91411
City State Zip Zip +4

ZipHelp Home: () - Work: () -

 Valid Date: 6/4/2007

MARY BO PEEP
123 FARMYARD LANE
VAN NUYS, CA 91411- AddValDate 6/4/2007 03

100100 03 Teacher phone call, letter, email

MARY BO PEEP
First Middle Last

123 FARMYARD LANE (Address extra)

Street Address

VAN NUYS CA 91411 Home: () -
City State Zip Zip +4 Work: () -

ZipHelp

 Valid Date: 6/4/2007

MARY BO PEEP
123 FARMYARD LANE
VAN NUYS, CA 91411- AddValDate 6/4/2007 03

100100 03 Teacher phone call, letter, email

MARY BO PEEP
First Middle Last

123 FARMYARD LANE (Address extra)
Street Address

VAN NUYS CA 91411 Home: () -
City State Zip Zip +4 Work: () -

90210 ZipHelp

 Valid Date: 6/4/2007

MARY BO PEEP
123 FARMYARD LANE
VAN NUYS, CA 91411- AddValDate 6/4/2007 03

100100 03 Teacher phone call, letter, email

MARY BO PEEP
First Middle Last

123 FARMYARD LANE [Address extra] A+
Street Address

BEVERLY HILLS CA 90210 [Zip +4] Home: () -
City State Zip Zip +4 Work: () -

ZipHelp

 Valid Date: 6/4/2007

MARY BO PEEP
123 FARMYARD LANE
VAN NUYS, CA 91411- AddValDate 6/4/2007 03

- **Zip code based data**

- Postal code info; Area codes; lat/long (of the Post Office);
Population, by race; Household count; Income; House value

- **Subscription – updated monthly**

- **\$150/yr**

- **US file ~ 9mb**

http based Geocoding

- **Various Accuracy/Completeness options**
 - Census Tiger → NavTeq & TeleAtlas, Enhanced
→ Assessor Parcel data
- **Popular interfaces to mapping resources**
 - Yahoo API / Google API

**I like to begin all software programs
with a common set of predefined
modules, units, components and
development tools.....**

Detroit, June 2007

**I like to begin all software programs
with a common set of predefined
modules, units, components and
development tools.....**



Detroit, June 2007

Ajax (also known as **AJAX**), shorthand for "Asynchronous JavaScript and XML", is a development technique used for creating interactive web applications. The intent is to make web pages feel more responsive by exchanging small amounts of data with the server behind the scenes, so that the entire web page does not have to be reloaded each time the user requests a change. This is intended to increase the web page's interactivity, speed, functionality, and usability. Ajax is also usable on many operating systems and architectures as it's based on JavaScript and XML.

Ajax (also known as **AJAX**), shorthand for "Asynchronous JavaScript and XML", is a development technique used for creating interactive web applications. The intent is to make web pages feel more responsive by exchanging small amounts of data with the server behind the scenes, so that the entire web page does not have to be reloaded each time the user requests a change. This is intended to increase the web page's interactivity, speed, functionality, and usability. Ajax is also usable on many operating systems and architectures as it's based on JavaScript and XML.

XMLHttpRequest (XHR) is an API that can be used by JavaScript, and other web browser scripting languages to transfer XML and other text data to and from a web server using HTTP, by establishing an independent communication channel between a web page's Client-Side and Server-Side.

Leaving Ajax now.....

Detroit, June 2007

Web services examples....

Detroit, June 2007

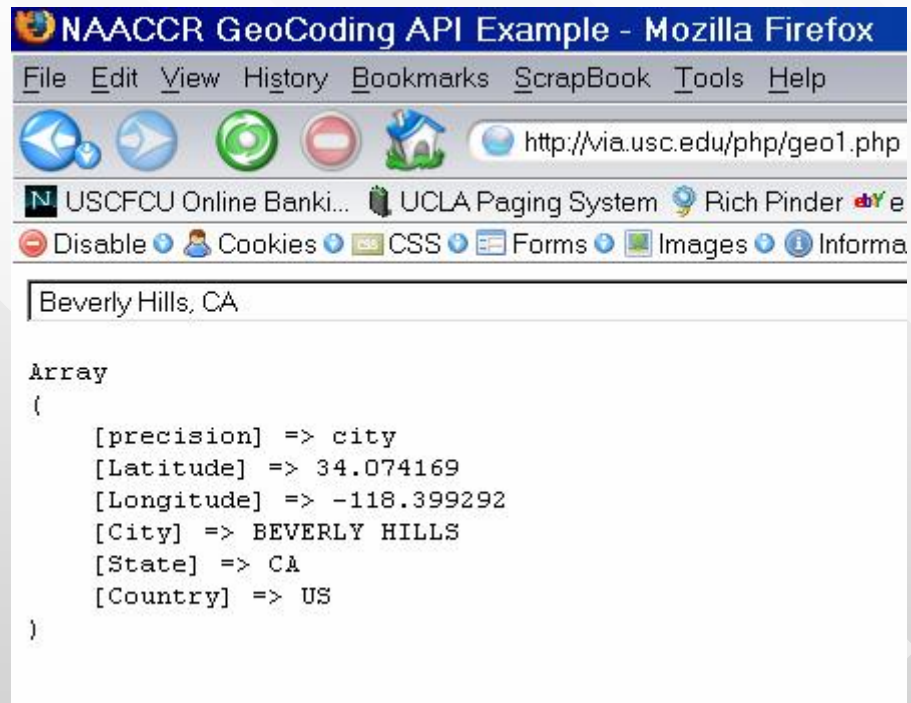
Server side - include

```
<?php
function request_cache($url, $dest_file, $timeout=43200) {
    if(!file_exists($dest_file) || filemtime($dest_file) < (time()-$timeout)) {
        $stream = fopen($url,'r');
        $tmpf = tempnam('/tmp','YWS');
        file_put_contents($tmpf, $stream);
        fclose($stream);
        rename($tmpf, $dest_file);
    }
}

function yahoo_geo($location) {
    $q = 'http://api.local.yahoo.com/MapsService/V1/geocode';
    $q .= '?appid=rlerdorf&location='.rawurlencode($location);
    $tmp = '/tmp/yws_geo_'.md5($q);
    request_cache($q, $tmp, 43200);
    libxml_use_internal_errors(true);
    $xml = simplexml_load_file($tmp);
    $ret['precision'] = (string)$xml->Result['precision'];
    foreach($xml->Result->children() as $key=>$val) {
        if(strlen($val)) $ret[(string)$key] = (string)$val;
    }
    return $ret;
}
?>
```

Server PHP Script

```
<html>
<head>
<title>GeoCoding API Example</title>
</head>
<body>
<form action="/php/ymap/geo1.php" method="GET">
<input type="text" size="80" name="location" />
</form>
<?php
include './geo.inc';
if(!empty($_REQUEST['location'])) {
    $a = yahoo_geo($_REQUEST['location']);
    echo "<pre>"; print_r($a); echo "</pre>";
}
?>
</body></html>
```



NAACCR GeoCoding API Example - Mozilla Firefox

File Edit View History Bookmarks ScrapBook Tools Help

http://via.usc.edu/php/geo1.php

USCFCU Online Banki... UCLA Paging System Rich Pinder

Disable Cookies CSS Forms Images Informa

Beverly Hills, CA

```
Array
(
    [precision] => city
    [Latitude] => 34.074169
    [Longitude] => -118.399292
    [City] => BEVERLY HILLS
    [State] => CA
    [Country] => US
)
```

NAACCR GeoCoding API Example - Mozilla Firefox

File Edit View History Bookmarks ScrapBook Tools Help

http://via.usc.edu/php/geo1.php

USCFCU Online Banki... UCLA Paging System Rich Pinder eBay

Disable Cookies CSS Forms Images Informati

Wilshire Blvd, Beverly Hills, CA

```
Array
(
    [precision] => street
    [Latitude] => 34.06684
    [Longitude] => -118.38274
    [Address] => 8750 WILSHIRE BLVD
    [City] => BEVERLY HILLS
    [State] => CA
    [Zip] => 90211
    [Country] => US
)
```

NAACCR GeoCoding API Example - Mozilla Firefox

File Edit View History Bookmarks ScrapBook Tools Help

http://via.usc.edu/php/geo1.php

USCFCU Online Banki... UCLA Paging System Rich Pinder eBay

Disable Cookies CSS Forms Images Information

9000 Wilshire Blvd, Beverly Hills, CA

```
Array
(
    [precision] => address
    [Latitude] => 34.066963
    [Longitude] => -118.387864
    [Address] => 9000 WILSHIRE BLVD
    [City] => BEVERLY HILLS
    [State] => CA
    [Zip] => 90211-1809
    [Country] => US
)
```

NAACCR GeoCoding API Example - Mozilla Firefox

File Edit View History Bookmarks ScrapBook Tools Help

http://via.usc.edu/php/geo1.php

USCFCU Online Banki... UCLA Paging System Rich Pinder eBay

Disable Cookies CSS Forms Images Information

NAACCR GeoCoding API Ex... 38.897610, -77.036377 - Google

The White House

```
Array
(
    [precision] => address
    [Latitude] => 38.897610
    [Longitude] => -77.036377
    [Address] => The White House
    [City] => Washington
    [State] => DC
    [Zip] => 20006
    [Country] => US
)
```



38.897610, -77.036377

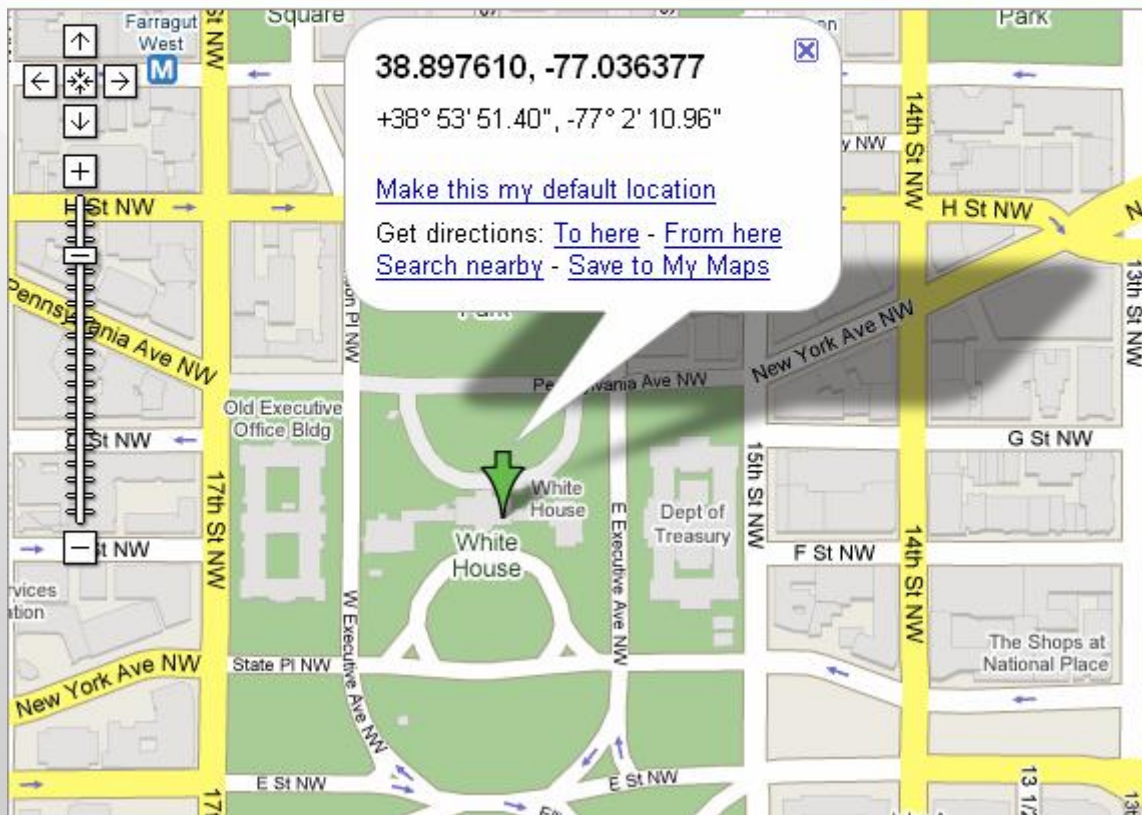
[Search the map](#)

[Find businesses](#)

[Get directions](#)

Search Results

My Maps



Detroit, June 2007

Future Options:

- **Use validated info for data entry only**
- **Same, but capture Lat/Long data**
- **Same, but build (acquire?) a second webservice, to use Lat/Long to store Census Tract**
- **Same, but customize to include additional census data to enhance record.**

links

[Google API & Geocoding Tutorial](#)

[Google & Bulk Geocoding](#)

[Zipcode Database - monthly updated subscription](#)

[Yahoo API & Ajax – mapping](#)

[Great GoogleEarth / GIS site !](#)

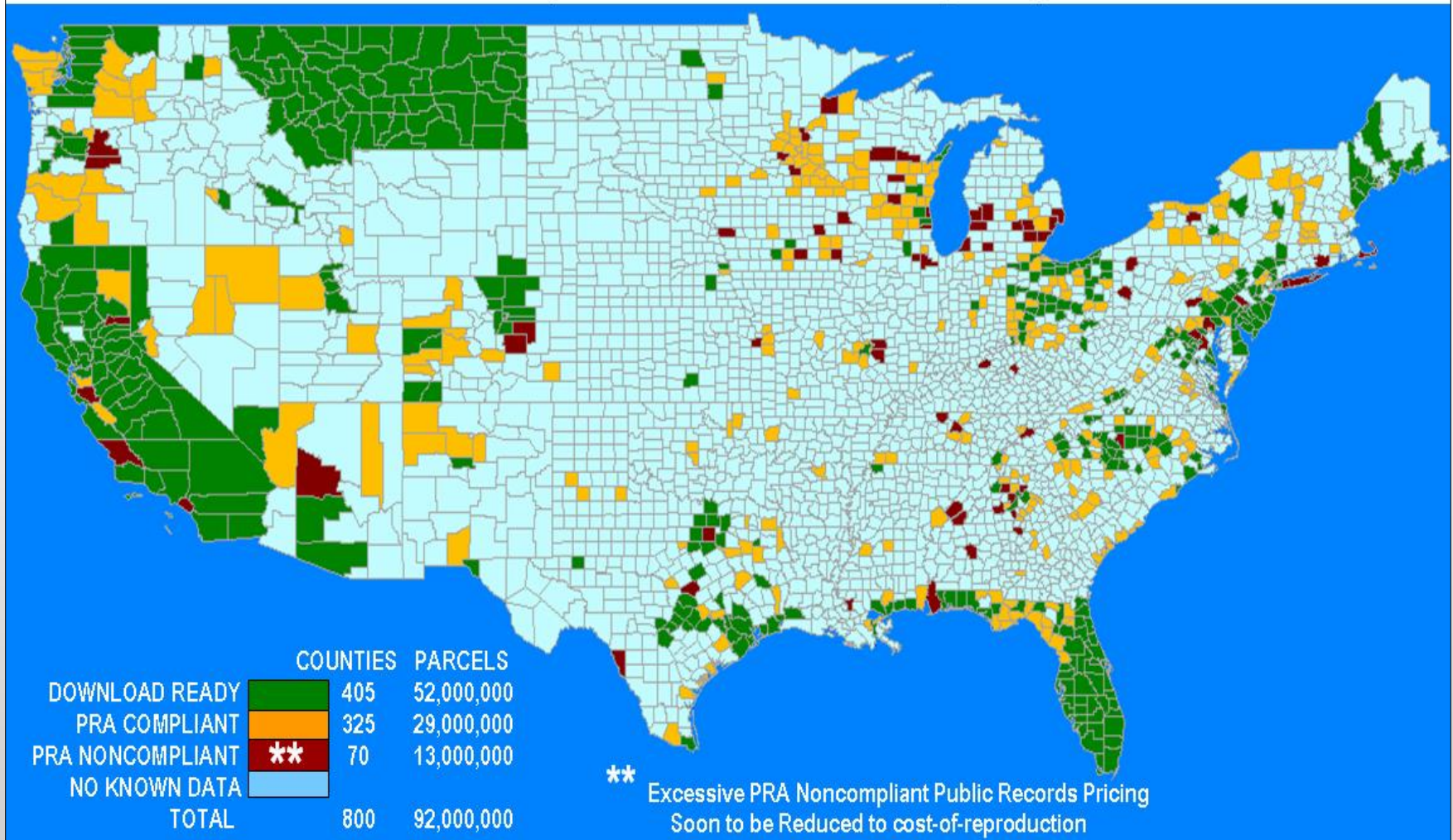
[Census Tract boundary files - from US Census](#)

[Detroit, June 2007](#)

The image features a background with a vertical gradient from light gray at the top to dark gray at the bottom. Overlaid on this are several parallel diagonal lines that slope downwards from left to right. The lines are arranged in two groups: a group of four lines on the left and a group of four lines on the right. Each line has a slight gradient, appearing lighter at the top and darker at the bottom, which makes them blend into the background gradient. The lines are evenly spaced within each group.

Detroit, June 2007

National ParcelMap Data Portal Coverage: April 2007



BoundarySolutions.com

Detroit, June 2007

Incorporating realtime geocoding systems into data entry routines

Regional registries routinely use GIS batch processing software to append geocoded location information to the cancer record. With the availability of accurate reference data files, and the ubiquitous use of high speed internet connections, could we consider automating the geocoding step up front? Perhaps as routine data entry steps occur, a tool could geocode (and validate) the information being added in real time.

The presenter will describe existing sources for address based reference file lookup and the steps involved to interface to them. At the time of writing, the two we will examine are the Google Maps API and the Geocoder.US web based interface. Then the presenter will discuss feasibility of developing a standalone hardware and software solution to provide this functionality directly.