

The Google Map API

Creating Interactive Ajax Mashup
Applications using the Google Map API

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Objective

Present how to use the Google Map JavaScript to create customized and interactive web-based maps.

Agenda

- Introduction to Google Map
- Getting Started
- Using the API
- Geocoding Server/Client-Side
- Demo
- Alternatives
- Conclusion / QA

What Is Google Map ?

- Interactive draggable web-based map
 - Services
 - Embeddable map, gazetteer, geo-coding, point-to-point directions, and traffic
 - Programmatic API
 - **Simple** – copy HTML from Google Maps
 - **RESTful** – returns encoded documents
 - **Full API** – controls all aspects of map
-

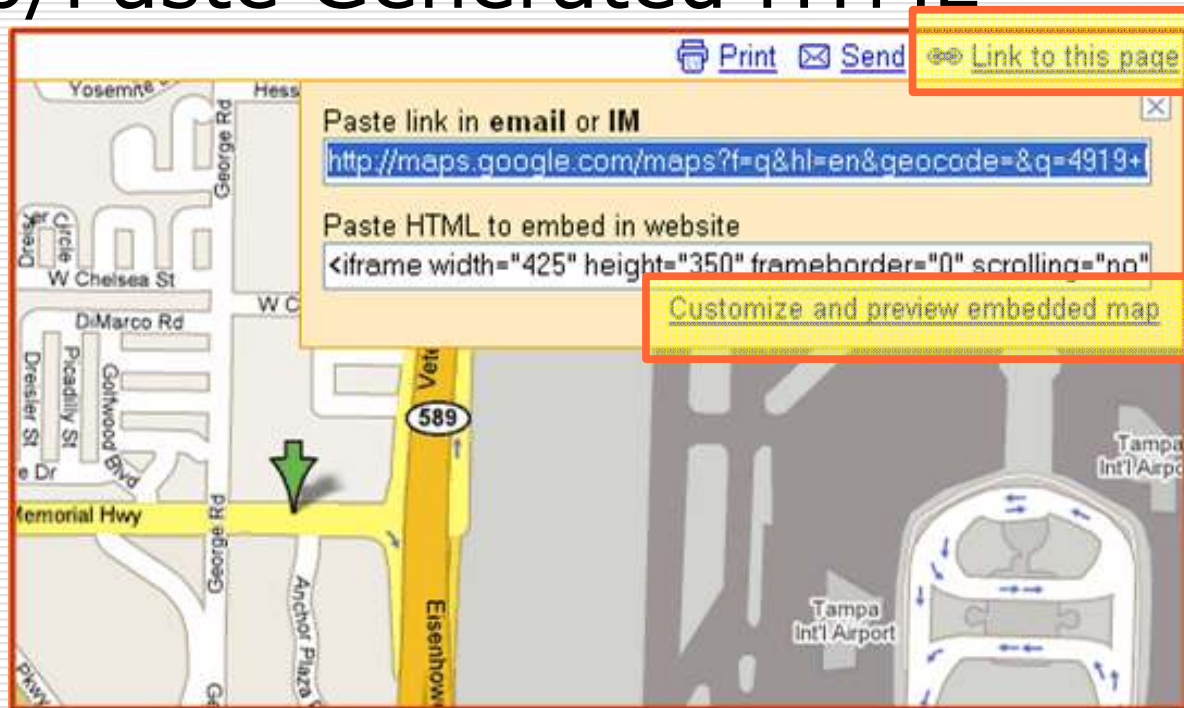
Google Map Examples

- ❑ maps.google.com
- ❑ mapMsg.com
- ❑ trulia.com
- ❑ panoramio.com
- ❑ wikimapia.com

Getting Started

Your First Map

- ❑ Use maps.google.com
- ❑ Cop/Paste Generated HTML



Using the API

- API key is required
- Understanding of JavaScript
- Control all facets of map
 - Add marker overlays
 - Customize map controls
 - Handle map events
 - Geocode addresses

Your API Key

- Your Key
 - <http://code.google.com/apis/maps/>
 - Attached to Google account and a URL
 - Must be provided to use API libraries

Thank you for signing up for a Google Maps API key!

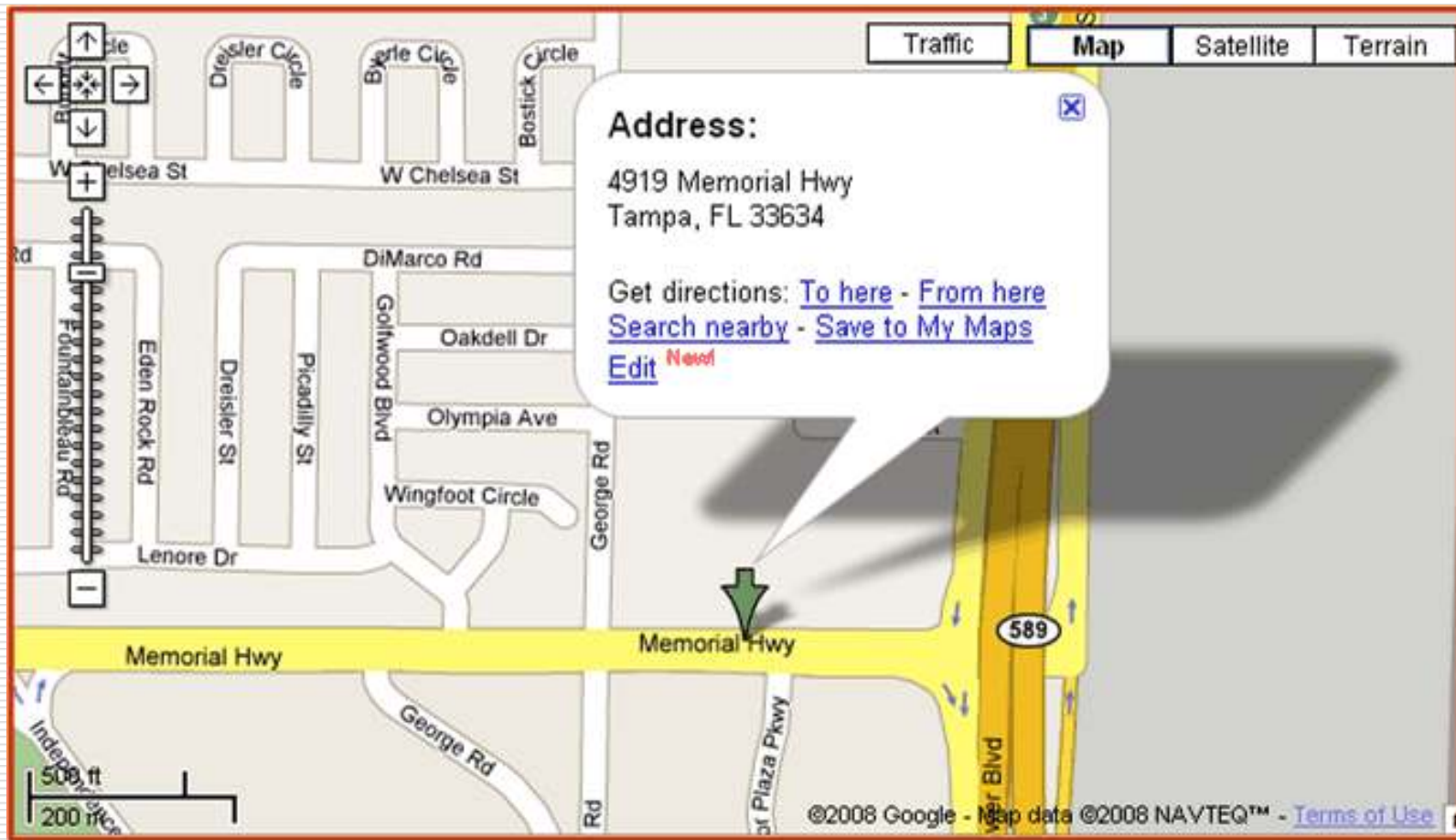
Your key is:

```
ABQIAAAAsPhOZnImh-ZovxmYgG6zYhQdeEZiHKdcvZvmFvXjI8rgW3g6ARRBJttVyZLB_K_yzYoic9xeHH8oZA
```

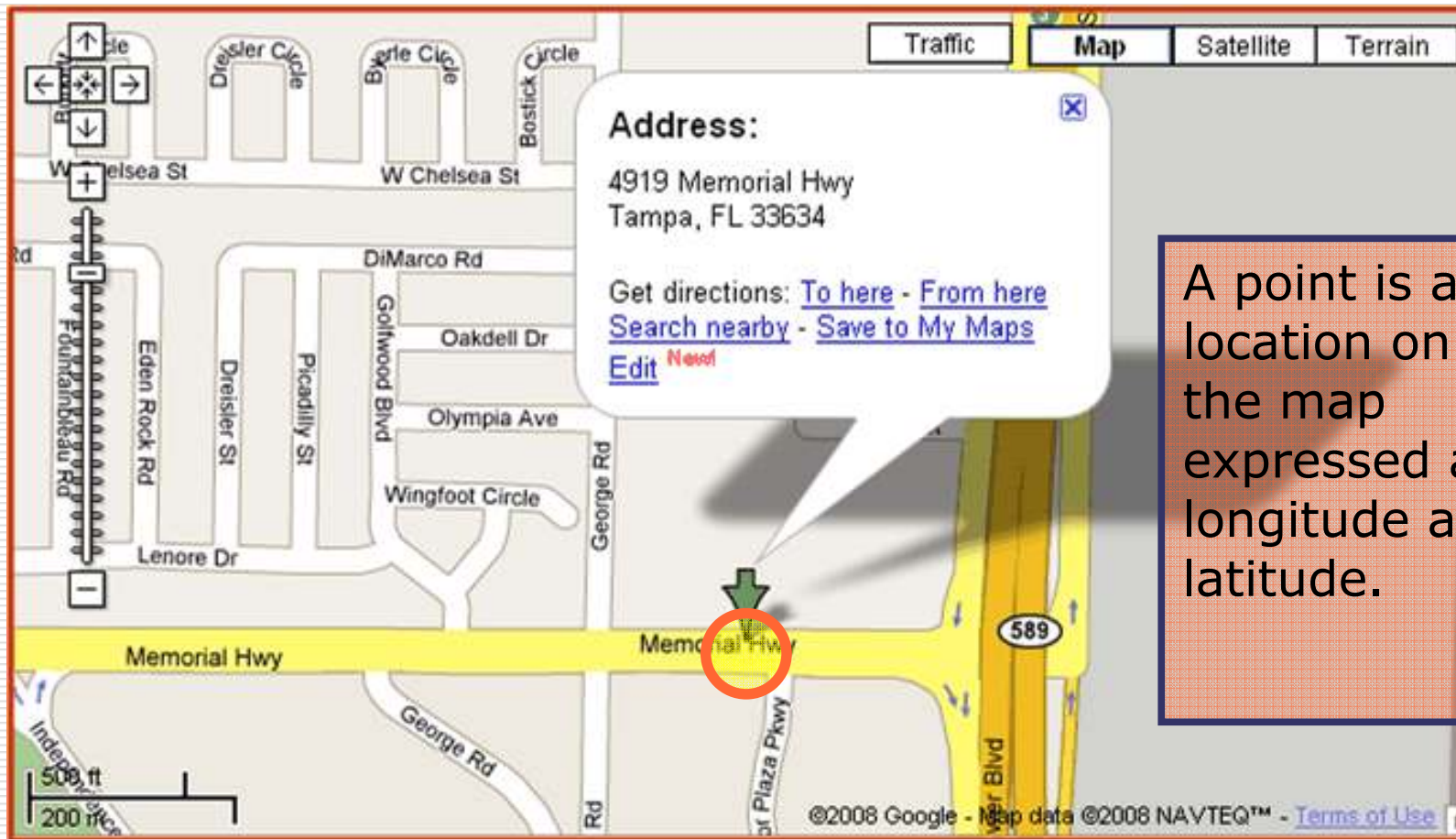
This key is good for all URLs in this directory:

```
http://simpli.us/
```

Map Elements

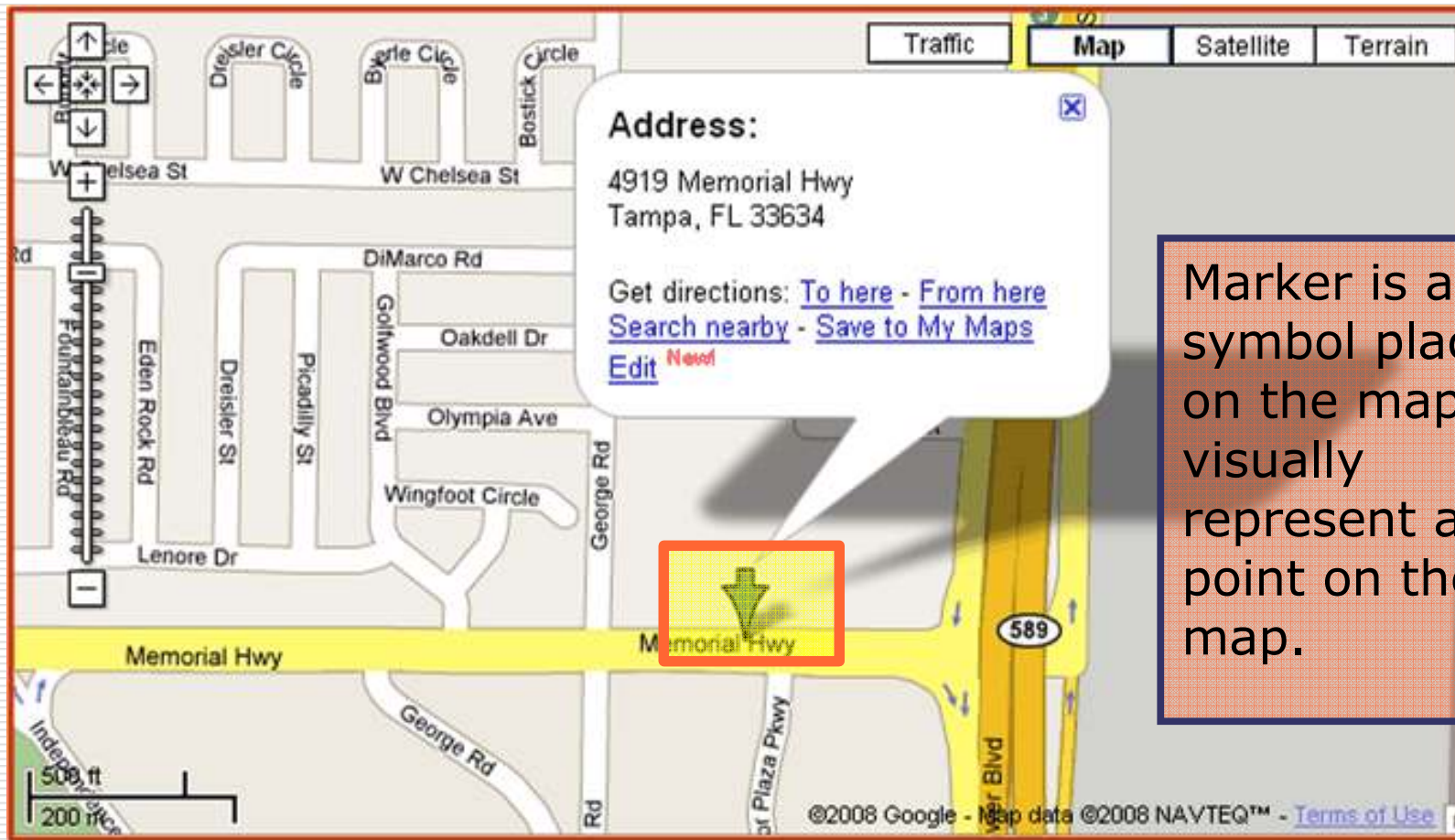


Map Elements - Point



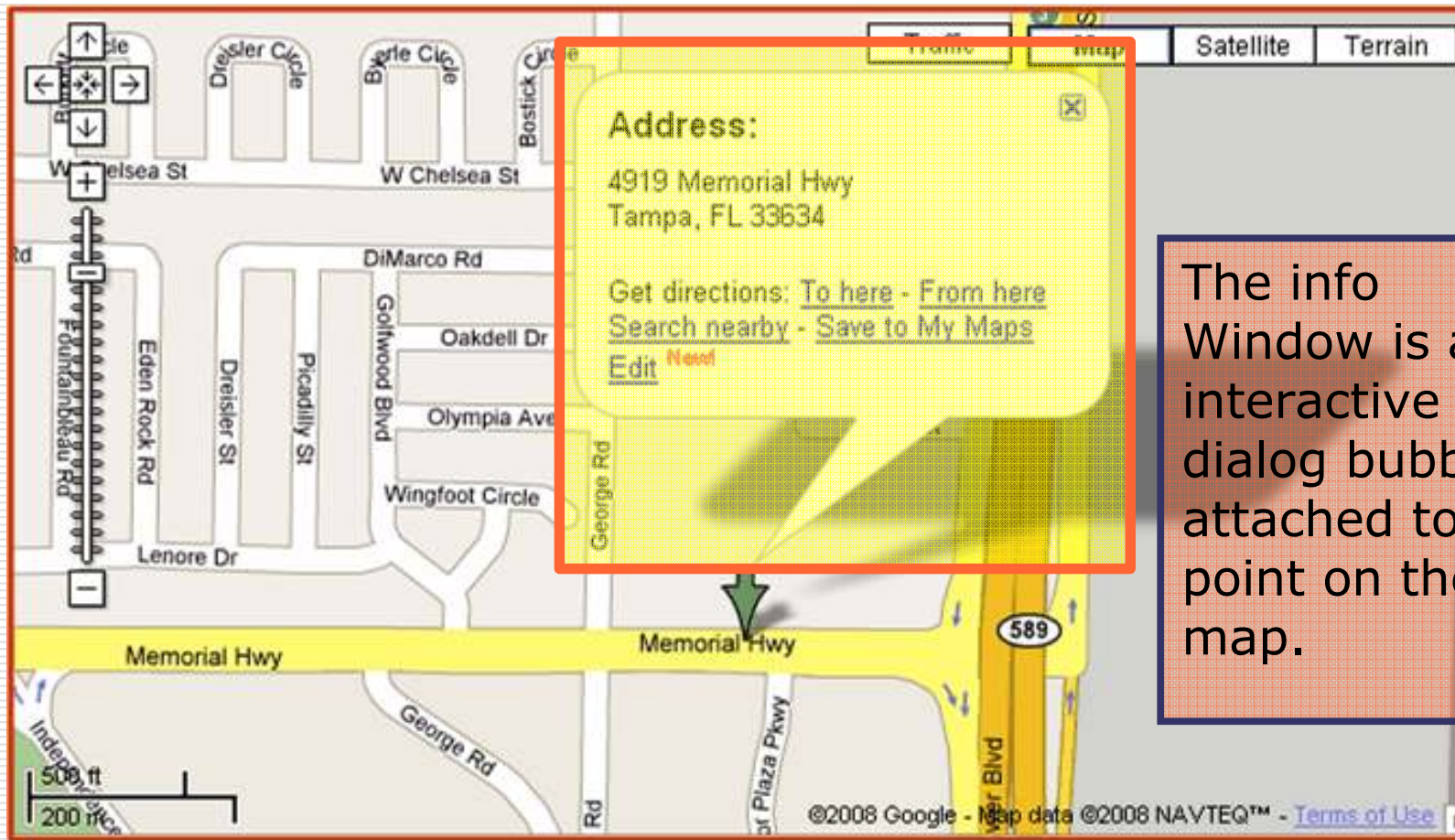
A point is a location on the map expressed as longitude and latitude.

Map Elements – Marker

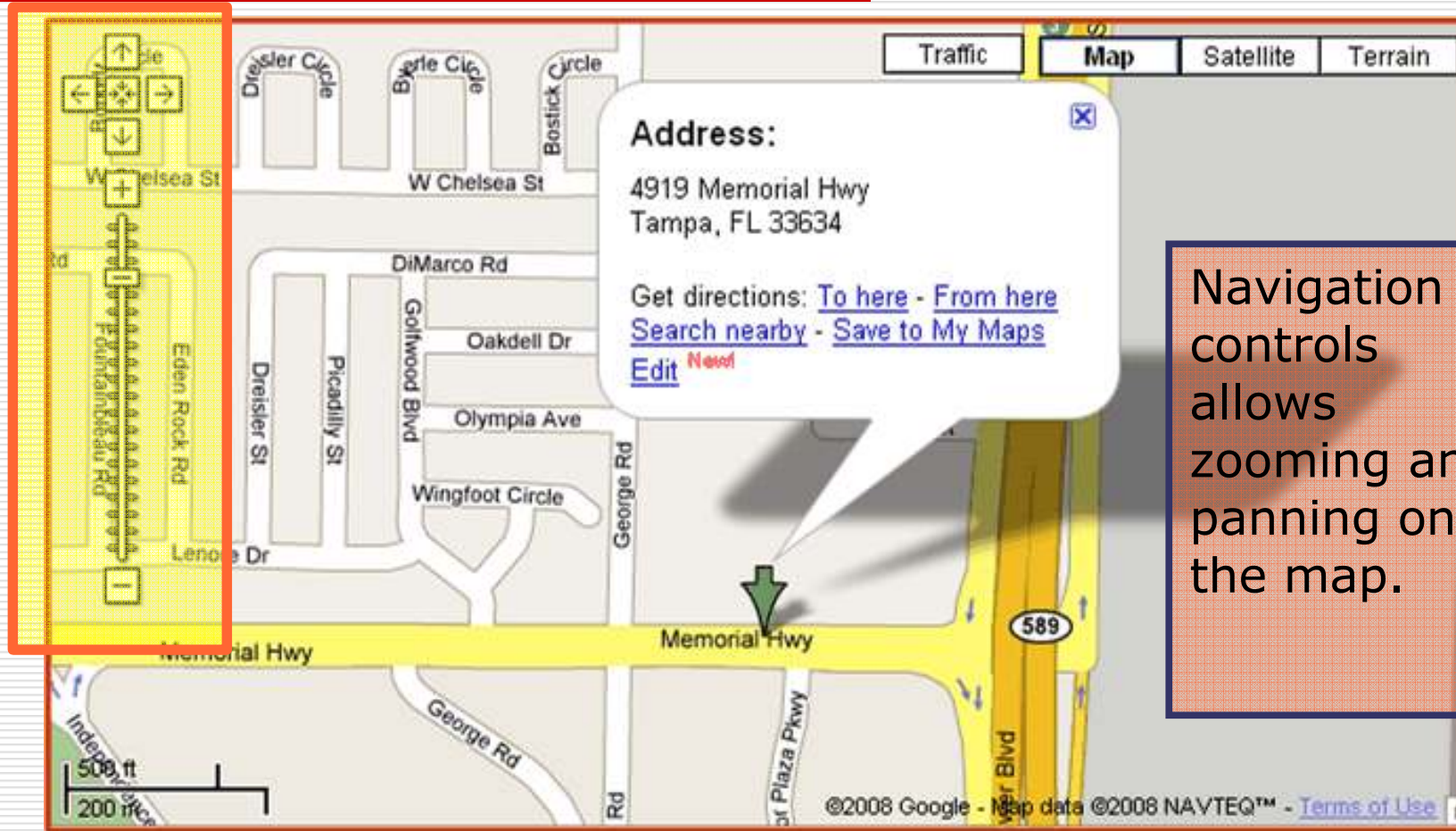


Marker is a symbol placed on the map to visually represent a point on the map.

Map Elements – Info Window

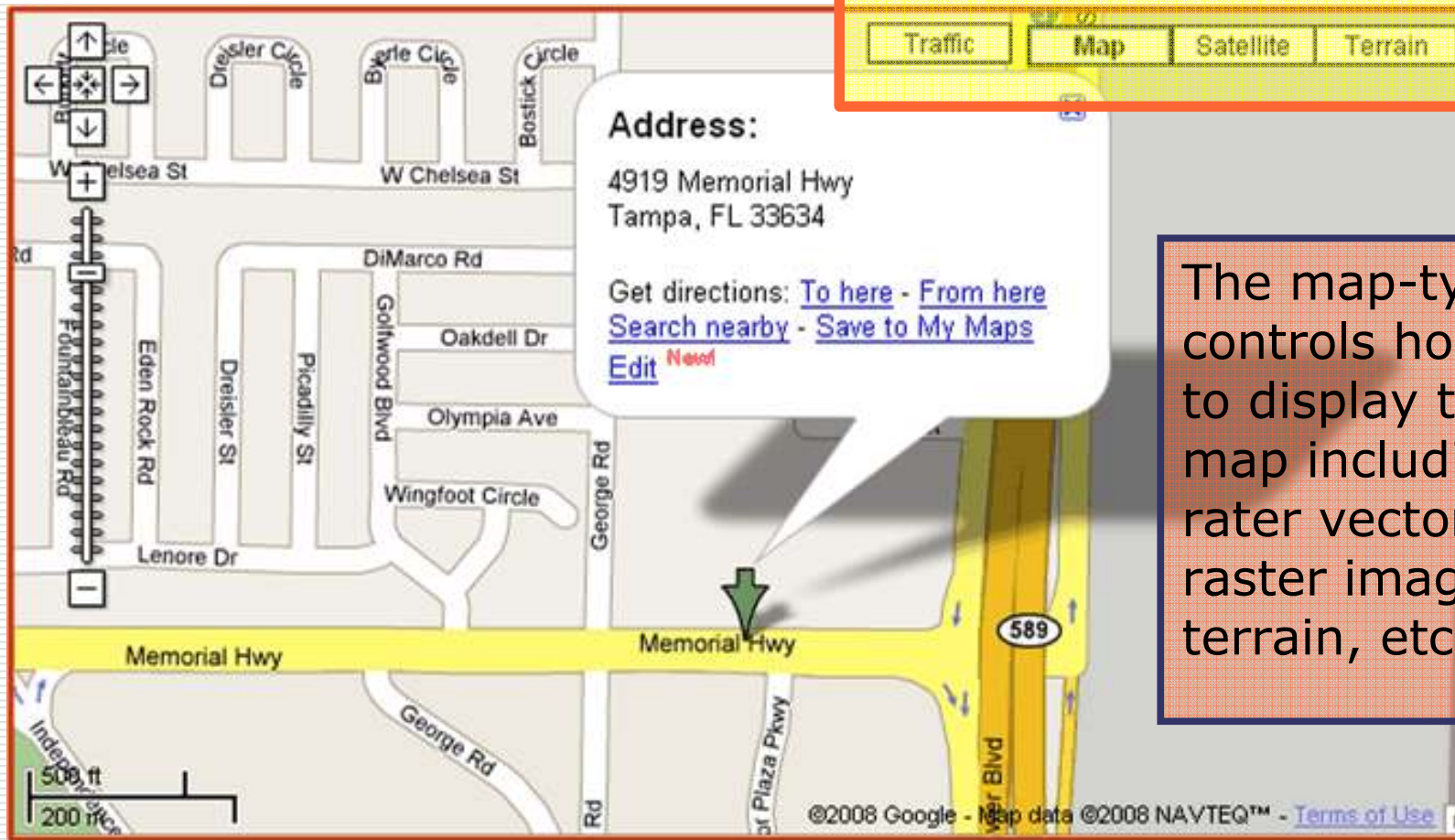


Map Elements – Zoom / Pan



Navigation controls allows zooming and panning on the map.

Map Elements – Types



The map-type controls how to display the map including raster vector, raster image, terrain, etc.

Using the API

Building an Interactive Map

Launching the Map

```
...
<script
src="http://maps.google.com/mapsfile=api&v=2&key=ABQ...MmBA"
  type="text/javascript"></script>

<script type="text/javascript">

  function init() {
    if (GBrowserIsCompatible()) {
      var map = new GMap2(document.getElementById("mapDiv"));
      map.setCenter(new GLatLng(27.981828,-82.549153), 15);
    }
  }
</script>

<body onload="init()" onunload="GUnload()">
  <div id="mapDiv" style="width: 500px; height: 300px"></div>
</body>

...
```

Adding A Marker

```
...  
  
<script type="text/javascript">  
  
    function init() {  
        if (GBrowserIsCompatible()) {  
            var map = new GMap2(document.getElementById("mapDiv"));  
            var loc = new GLatLng(27.981828, -82.549153);  
            map.setCenter(loc, 15);  
            map.addOverlay(new GMarker(loc));  
        }  
    }  
  
</script>  
  
<body onload="init()" onunload="GUnload()">  
    <div id="mapDiv" style="width: 500px; height: 300px"></div>  
</body>  
  
...
```

Displaying an Info Window

```
...  
  
<script type="text/javascript">  
  
    function init() {  
        if (GBrowserIsCompatible()) {  
            var map = new GMap2(document.getElementById("mapDiv"));  
            var loc = new GLatLng(27.981828, -82.549153);  
            map.setCenter(loc, 15);  
            map.openInfoWindowHtml(loc, "<b>Tampa JUG Meeting</b>");  
        }  
    }  
  
</script>  
  
<body onload="init()" onunload="GUnload()">  
    <div id="mapDiv" style="width: 500px; height: 300px"></div>  
</body>  
  
...
```

Adding Controls

```
...  
<script type="text/javascript">  
  
    function init() {  
        if (GBrowserIsCompatible()) {  
            var map = new GMap2(document.getElementById("mapDiv"));  
            var loc = new GLatLng(27.981828,-82.549153);  
            map.setCenter(loc, 15);  
            map.addControl(new GLargeMapControl());  
            map.addControl(new GMapTypeControl());  
            map.openInfoWindowHtml(loc, "<b>Tampa JUG Meeting</b>");  
        }  
    }  
  
</script>  
  
...
```

Handling Map Events

```
...
<script type="text/javascript">

    function init() {
        if (GBrowserIsCompatible()) {
            var map = new GMap2(document.getElementById("mapDiv"));
            var geoXml = new GGeoXml("http://.../geocode-kml.xml");
            ...
            GEvent.addListener(map, "dblclick", function(marker, point) {
                var locName = prompt("Name this location:");
                var marker = new GMarker(point, {title:locName});
                map.addOverlay(marker);
                marker.openInfoWindowHtml("<b>" + locName + "</b>");
            });
        }
    }

</script>
...
```

Geocoding

Making the Map Useful

Google Geocode Service

- Geocode included in API
 - Supports US/international addresses
 - Retrieves long/lat values
 - Exposed as
 - RESTful (representational state transfer) document (xml/kml, json, csv)
 - Programmatic API call
 - Will not work for all addresses
-

RESTful Geocoding

- HTTP request returns an XML doc
- Supported format
 - Google's KML
 - GeoRSS
 - JSON
 - CSV

Getting KML Doc

- HTTP Request to Google service
- KML doc returned
- Rich data set
 - Geo data
 - Overlays
 - Polylines

```
- <Placemark id="p1">
  <address>4919 Memorial Hwy, Tampa, FL 33634, USA</address>
  - <AddressDetails Accuracy="8">
    - <Country>
      <CountryNameCode>US</CountryNameCode>
    - <AdministrativeArea>
      <AdministrativeAreaName>FL</AdministrativeAreaName>
    - <SubAdministrativeArea>
      <SubAdministrativeAreaName>Hillsborough</SubAdministrativeAreaName>
    - <Locality>
      <LocalityName>Tampa</LocalityName>
    - <Thoroughfare>
      <ThoroughfareName>4919 Memorial Hwy</ThoroughfareName>
      </Thoroughfare>
    - <PostalCode>
      <PostalCodeNumber>33634</PostalCodeNumber>
      </PostalCode>
    </Locality>
    </SubAdministrativeArea>
  </AdministrativeArea>
  </Country>
</AddressDetails>
- <Point>
  <coordinates>-82.549153,27.981828,0</coordinates>
</Point>
```

<http://maps.google.com/maps/geo?q=4919+Memorial+Hwy,+Tampa,+FL+33634,+US&output=xml&key=ABQI...lOaQ>

GeoRSS

- Use RSS format for map info
 - Native support in Google API
 - Rich data set captures
 - Location
 - Markers
 - Image
 - Descriptive text
 - Not generated by Google
-

RESTful Call

```
...
<script type="text/javascript">

    function init() {
        if (GBrowserIsCompatible()) {
            var map = new GMap2(document.getElementById("mapDiv"));
            var geoXml = new GGeoXml("http://.../geocode-kml.xml");
            map.addOverlay(geoXml);
        }
    }

</script>
...
```

The Client Geocoder

- Google API object
- Gets long/lat points via API Call

```
...  
<script type="text/javascript">  
  function init() {  
    if (GBrowserIsCompatible()) {  
      geocoder.getLatLng('4919 Memorial+Hwy, Tampa, FL 33634',  
        function(point) {  
          map.setCenter(point);  
          var marker = new GMarker(point);  
          map.addOverlay(marker);  
          marker.openInfoWindowHtml(address);  
        });  
    }  
  }  
</script>  
...
```

Geocode – Capturing Long / Lat

- Geocoding is expensive
 - Capture long / lat when possible
 - Client-side with JavaScript
 - Capture with Client Geocoder
 - Save on server
 - Or, server-side with Http Request
 - Geocode valid address
 - Save address along with long/lat
-

Demo



Alternatives

Other Mapping Services

- Yahoo
 - As powerful as Google
 - Easy/well-designed JavaScript API
 - Offers Flex/Flash components
 - Requires key
- MSN Live
- Open source Alternatives
 - Worldkit Geocoder
 - Geonames.org
 - OpenstreetMap.org

Conclusion

- ❑ Easy to start mapping
- ❑ Google provides power interface to control and customize your map
- ❑ You can start as a simple HTML embed or as complicated as your own custom solution
- ❑ You can easily integrate your server-side with Google services to start mapping your current data
- ❑ Other services such as Yahoo are also available

References

- <http://code.google.com/apis/map> - Google API homepage
- <http://doug.ricket.com/gdd2007/> - Intro tutorial to Google Map API
- <http://developer.yahoo.com/> - Yahoo's developer homepage
- <http://georss.org/> - Georss.org
- <http://brainoff.com/geocoder/> - Worldkit Geocoder
- <http://www.geonames.org/> - Geoname.org Free Gazetteer

Q/A

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