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## Web-Based Data Editing with GeoREST

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### GS1508-L - Web-Based Data Editing with GeoRest

This hands-on lab explores the configuration of GeoREST, which is used to add, view, and edit data, including both spatial data and the attributes of most spatial data types. Attendees will use Autodesk® Infrastructure Map Server 2014 software to digitize data onscreen and save the spatial data directly to the original data files or database.

### Learning Objectives

At the end of this class, you will be able to:

- α Configure GeoREST to share GIS data
- α Edit live attribute data using GeoREST via a web form
- α Customize Autodesk Infrastructure Map Server to serve maps with GeoREST
- α Edit spatial and GIS data using GeoREST PUT and POST techniques

### About the Speaker

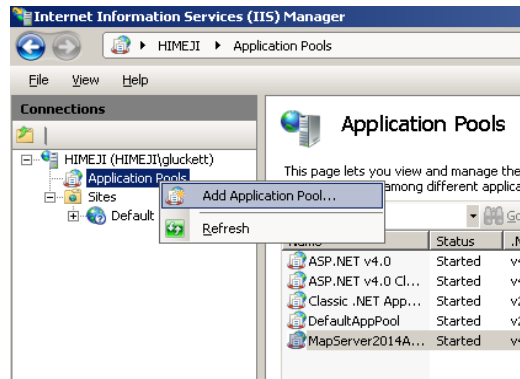
*Gordon is president of Arrow Geomatics Inc., a GIS consulting, training, and development company. Oracle® and SQL Server Spatial are some of Gordon's specialties, especially when it is combined with Autodesk® products.*

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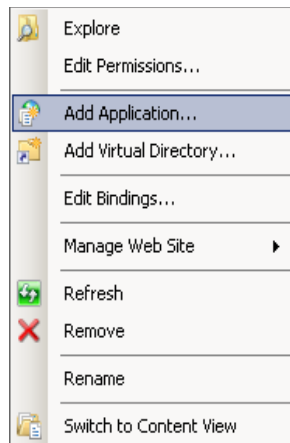


## Exercise 1: Configuration of GeoRest in Internet Information Server

1. Open Control Panel > Administrator Tools > Internet Information Services (IIS) Manager.
2. Right-click over the Application Pools > Add Application Pool..



3. In the Add Application Pool dialog box, for Name, enter: **GEOREST**
4. Click OK.
5. Right-click over Default Web Site > Add Application.

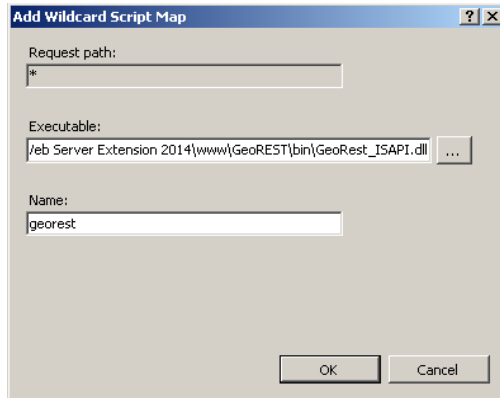


6. In the Add Application dialog box, for Alias, enter: **rest**
7. For Application Pool, select **GEOREST**.
8. For Physical Path, browse to:  
**C:\Program Files\Autodesk\Autodesk Infrastructure Web Server Extension 2014\www\GeoREST\bin\**
9. Click OK.
10. Click on the new **rest** application.
11. Double-click Handler Mappings.
12. Under Actions, click Add Wildcard Script Map.

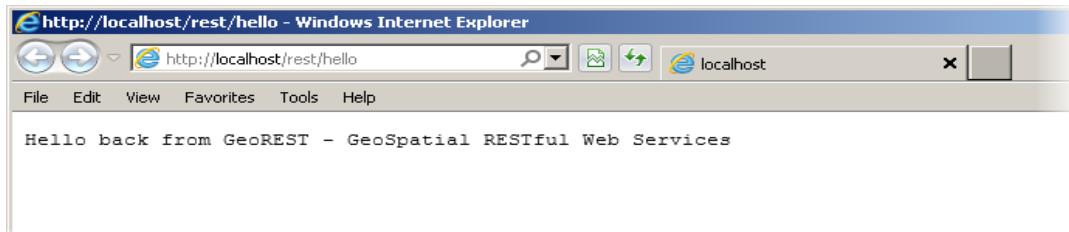


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13. In the Add Wildcard Script Map dialog box, for executable, browse to:  
**C:\Program Files\Autodesk\Autodesk Infrastructure Web Server Extension 2014\www\GeoREST\bin\GeoRest\_ISAPI.dll**



14. For name, enter: **georest**
15. Click OK.
16. To test the install, open Internet Explorer.
17. In the Address Bar, enter: <http://localhost/rest/hello/>



### Exercise 2: Change restcfg.xml to point to SDF

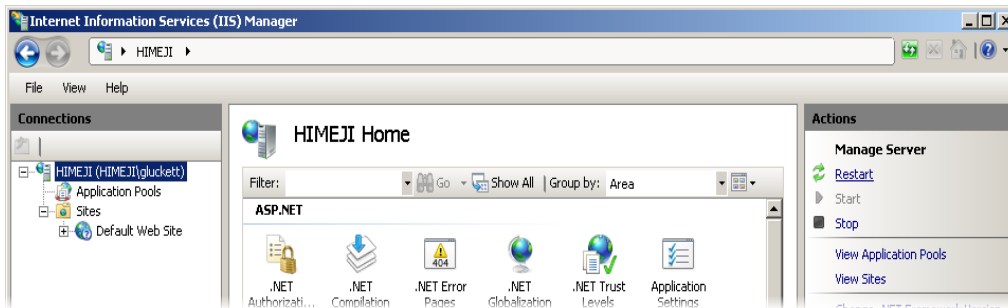
1. Using Notepad.exe, open restcfg.xml found in  
**C:\Program Files\Autodesk\Autodesk Infrastructure Web Server Extension 2014\www\GeoREST\conf\Sheboygan\Property\**
2. Change the ConnectionString to point to the Parcels.sdf in the 2014 folder:

```
<RestConfig>
  <Data>
    <Resource uripart="property">
      <Source type="FDO">
        <Provider>OSGeo.SDF</Provider>
        <ConnectionString>File=C:\Program Files\Autodesk\Autodesk Infrastructure Web Server Extension 2014\www\GeoREST\data\Sheboygan\Parcels.sdf;ReadOnly=FALSE;</ConnectionString>
        <FeatureClass>SHP_Schema:Parcels</FeatureClass>
      </Source>
    </Data>
  </RestConfig>
```
3. Save the **restcfg.xml** file.
4. Open Control Panel > Administrator Tools > Internet Information Services (IIS) Manager.

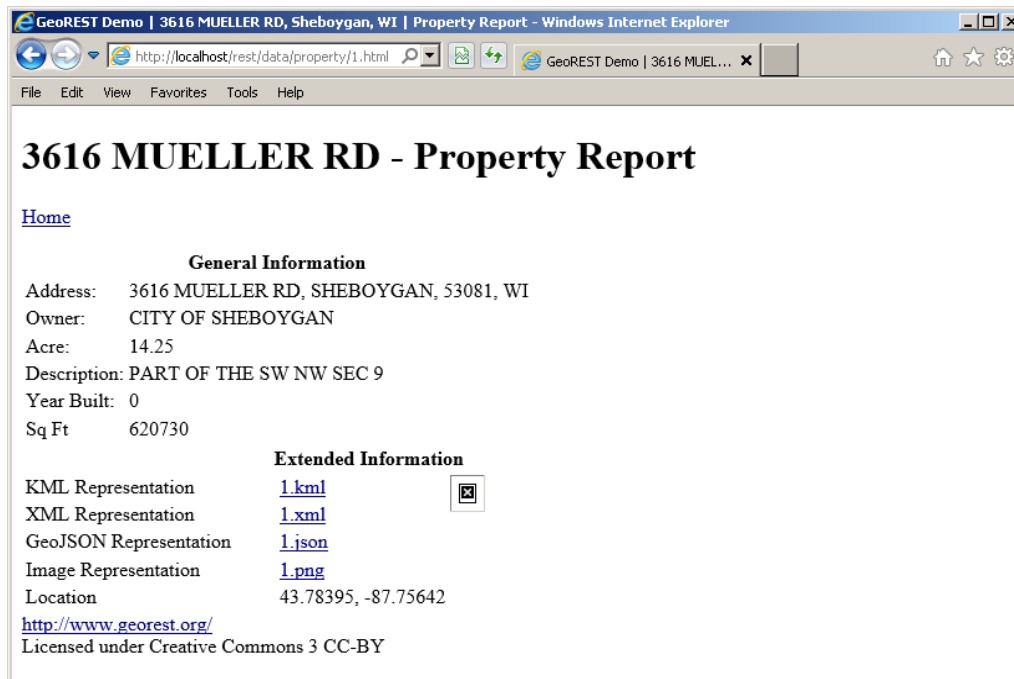


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5. Under Actions, click Restart.



6. Open Internet Explorer.
7. For the Address, enter: <http://localhost/rest/data/property/1.html>



### Exercise 3: Load MapGuide Package and point GeoREST to AIMS

1. Copy the *Sheboygan.mgp* file into *C:\Program Files\Autodesk\Autodesk Infrastructure Map Server 2014\Packages* folder.
2. Using Internet Explorer, enter: <http://localhost/mapserver2014/mapadmin/login.php>
3. In the login page, for Administrator ID, enter: **Administrator**
4. For Password, enter: **admin**
5. Click Manage Packages.
6. Ensure *Sheboygan.mgp* is selected and click Load Package.



## Load Package

Packaged resources or data in the package folder can be loaded to this site server.  
[Configure Packages directory.](#)

	Package Name	Size (bytes)	Status
<a href="#">Load Package</a> <a href="#">View Log</a> <a href="#">Delete</a> <a href="#">Refresh</a>	Sheboygan.mgp	13,912,231	

7. After the package is loaded, open Notepad.exe and open **C:\Program Files\Autodesk\Autodesk Infrastructure Web Server Extension 2014\www\GeoREST\conf\SheboyganMap\restcfg.xml**.
8. In notepad.exe, click Edit > Goto.
9. For Line Number, enter: **88**
10. For ServerPort, change it to **2812**

```
<Source type="MapGuide">
<FeatureSource>Library://Samples/Sheboygan/Data/Parcels.FeatureSource</FeatureSource>
  <FeatureClass>SHP_Schema:Parcels</FeatureClass>
  <ServerIp>127.0.0.1</ServerIp>
  <ServerPort>2812</ServerPort>
</Source>
```

11. Save the restcfg.xml file.
12. Open Control Panel > Administrator Tools > Internet Information Services (IIS) Manager.
13. Under Actions, click Restart.
14. Open Internet Explorer.
15. For the Address, enter: <http://localhost/rest/data/image/1.png>



## Exercise 4: Edit Data with GeoREST

1. Using Notepad.exe, open restcfg.xml found in  
**C:\Program Files\Autodesk\Autodesk Infrastructure Web Server Extension 2014\www\GeoREST\conf\Sheboygan\Property\**

2. First, change the <Source> tag to point to AIMS and not directly to the SDF file.

```
<Source type="MapGuide">  
  <FeatureSource>Library://Samples/Sheboygan/Data/Parcels.FeatureSource</FeatureSource>  
  <FeatureClass>SHP_Schema:Parcels</FeatureClass>  
  <ServerIp>127.0.0.1</ServerIp>  
  <ServerPort>2812</ServerPort>  
</Source>
```

3. Next, replace the XML representation with the PUT/GET/POST/DELETE:

```
<Representation renderer="XML" pattern=".xml">  
  <Method name="GET" />  
  <Method name="PUT" />  
  <Method name="POST" />  
  <Method name="DELETE" />  
</Representation>
```

4. Open Control Panel > Administrator Tools > Internet Information Services (IIS) Manager.

5. Under Actions, click Restart.

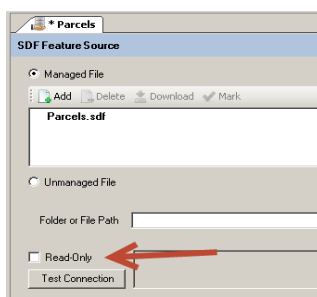
6. Copy the **property\_html\_single.tpl** into the  
**C:\Program Files\Autodesk\Autodesk Infrastructure Web Server Extension 2014\www\GeoREST\conf\Sheboygan\Property\** folder.

7. Open Internet Explorer.

8. For the Address, enter: <http://localhost/rest/data/property/1.html>

9. This editable form now can change the fields in the Parcels SDF including the Geometry.

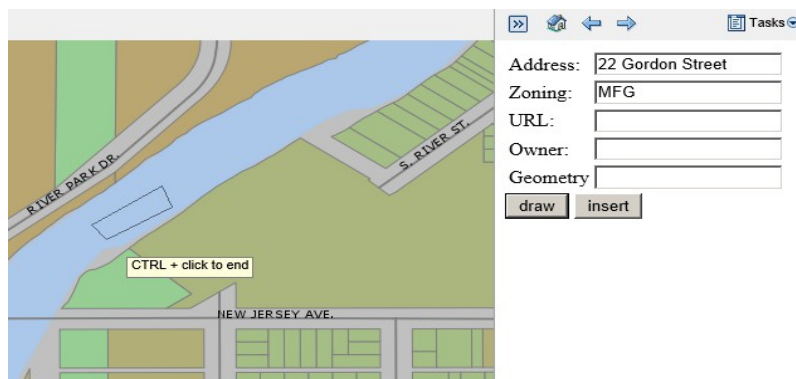
NOTE: You require MapGuide Maestro Open Source Software to set that data source to be writable. (<http://trac.osgeo.org/mapguide/wiki/maestro/Downloads>)





## Exercise 5: Online Digitizing with AIMS

1. Copy the **insert.html** file into the *C:\Program Files\Autodesk\Autodesk Infrastructure Web Server Extension 2014\www\* folder.
2. Open Autodesk Infrastructure Studio 2014.
3. In the Site Explorer, open the Layout in Samples > Sheboygan > Layouts > SheboyganPhp.
4. In the URL For Home Task Displayed In The Task Pane, enter: **../insert.html**
5. In Preview In Browser Using AJAX Viewer, click GO.
6. In the Windows Security, for Username, enter: **Anonymous**
7. Click OK.
8. Zoom the map below 1:5,000.
9. In the Task Pane, click Draw.
10. Draw a polygon on the screen.
11. Click Insert, to insert the data into the Parcels.SDF.





## CODE USED IN THIS COURSE

### Final restcfg.xml

```
<RestConfig>

  <Data>

    <Resource uri part="property">

      <Source type="MapGuide">

        <FeatureSource>Library://Samples/Sheboygan/Data/Parcels.FeatureSource</FeatureSource>

        <FeatureClass>SHP_Schema:Parcels</FeatureClass>

        <ServerIp>127.0.0.1</ServerIp>

        <ServerPort>2812</ServerPort>

      </Source>

      <Representation renderer="JSON" pattern=".json"/>

      <Representation renderer="XML" pattern=".xml">

        <Method name="GET" />

        <Method name="PUT" />

        <Method name="POST" />

        <Method name="DELETE" />

      </Representation>

      <Representation renderer="Template" pattern=".html" mimetype="text/html" >

        <Templates section="PROPERTY" prefix="PROPERTY_">

          <Many file="property_html_many.tpl" />

          <Single file="property_html_single.tpl" />

          <None file="property_html_none.tpl" />

          <Error file="property_html_error.tpl" />

        </Templates>

        <Method name="GET" defaultcount="5" maxcount="500" />

      </Representation>

      <Representation renderer="Template" pattern=".kml" mimetype="application/vnd.google-earth.kml+xml" >

        <Templates section="PROPERTY" prefix="PROPERTY_">

          <Many file="property_kml_many.tpl" />

          <Single file="property_kml_single.tpl" />

        </Templates>

      </Representation>

    </Resource>

  </Data>

</RestConfig>
```





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```
<None file="property_kml_none.tpl" />

<Error file="property_kml_error.tpl" />

</Templates>

<Method name="GET" maxcount="500" maxbboxwidth="0.009" maxbboxheight="0.009" />

</Representation>

<Representation renderer="Template" pattern=".kmz" mimetype="application/vnd.google-
earth.kmz" >

  <Templates section="PROPERTY" prefix="PROPERTY_">

    <Many file="property_kml_many.tpl" />

    <Single file="property_kml_single.tpl" />

    <None file="property_kml_none.tpl" />

    <Error file="property_kml_error.tpl" />

  </Templates>

  <Method name="GET" maxcount="500" maxbboxwidth="0.009" maxbboxheight="0.009" />

</Representation>

<Representation renderer="OData" />

</Resource>

</Data>

</RestConfig>
```

## INSERT.HTML

```
<html>
<head>
  <title>Insert Data into Sheboygan, WI | Property Report </title>
</head>
<body>
<h1 id="georest-title"></h1>
  <table class="border">
    <tr>
      <td>Address:</td>
      <td>
        <input style="width:150px" id=RPROPAD type=text value="22 Gordon Street"><br>
      </td>
    </tr>
  </table>
</body>
```



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```
<td>Zoning:</td>
<td>
  <input style="width:150px" id=RTYPE type=text value="MFG"><br>
</tr>
<tr>
  <td>URL:</td>
  <td>
    <input style="width:150px" id=URL type=text ><br>
  </tr>
<tr>
  <td>Owner:</td>
  <td>
    <input style="width:150px" id=NAME type=text ><br>
  </tr>
<tr>
  <td>Geometry </td>
  <td>
    <input style="width:150px" id=SHPGEOM type=text >
  </td>
</tr>
</table>
</script>

var beginxml='<?xml version="1.0" encoding="UTF-8"?><FeatureSet><Features><Feature>';
var endxml ='</Feature></Features></FeatureSet>';
var middlexml;
var xml;

function insertXML()
{
var elements=document.getElementsByTagName("input");
middlexml="";
xml="";
  for(var i = 0; i < elements.length; i++)
  {
    if(elements[i].type == 'text')

middlexml=middlexml+'<Property><Name>'+elements[i].id+'</Name><Value>'+elements[i].value+'</Value
></Property>';
  }
}
```



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```
xml=beginxml+middlexml+endxml;
var xmlhttp;
if (window.XMLHttpRequest)
{
    xmlhttp=new XMLHttpRequest();
    xmlhttp.onreadystatechange = function(evt)
    {
        if(this.readyState == 4)
        {
            //alert(this.responseText);
            document.location.reload(true);
            parent.parent.mapFrame.Refresh();
        }
    };

    xmlhttp.open("POST","/rest/data/property/.xml",true);
    xmlhttp.setRequestHeader("Content-Type","application/xml; charset=UTF-8");
    xmlhttp.send(xml);
}
}
function onDigitizePolygon(polygon_string)
{
var strPolygon = 'POLYGON(';

for (var i = 0; i < polygon_string.Count; i++) {
    var point = polygon_string.Point(i);
    strPolygon = strPolygon + point.X;
    strPolygon = strPolygon + ' ' + point.Y + ',';
}

strPolygon = strPolygon.substr(0, strPolygon.length - 1);
strPolygon = strPolygon + '))';

    document.getElementById("SHPGEOM").value=strPolygon;
}
</script>
<input type=button value=draw onclick=parent.parent.mapFrame.DigitizePolygon(onDigitizePolygon)>
<input type=button value=insert onclick=insertXML()>
</body>
</html>
```



## property\_html\_single.tpl

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">

<html>

{{#PROPERTY}}

<head>

  <title>GeoREST Demo | {{PROPERTY_RPROPAD}}, Sheboygan, WI | Property Report </title>

</head>

<body>

<h1 id="georest-title">{{PROPERTY_RPROPAD}} </h1>

  <table class="border">

    <tr>

      <td>Address:</td>

      <td>

        <input style="width:150px" id=RPROPAD type=text value="{{PROPERTY_RPROPAD}}"><br>

      </td>

    </tr>

    <tr>

      <td>Zoing:</td>

      <td>

        <input style="width:150px" id=RTYPE type=text value="{{PROPERTY_RTYPE}}"><br>

      </td>

    </tr>

    <tr>

      <td>URL:</td>

      <td>

        <input style="width:150px" id=URL type=text value="{{PROPERTY_URL}}"><br>

      </td>

    </tr>

    <tr>

      <td>Owner:</td>

      <td>

        <input style="width:150px" id=NAME type=text value="{{PROPERTY_NAME}}"><br>

      </td>

    </tr>

    <tr>

      <td>Geometry </td>

      <td>

        <input style="width:180px" id=SHPGEOM type=text value="{{PROPERTY_SHPGEOM}}">

      </td>

    </tr>

  </table>
```



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```
<script>
var beginxml='<?xml version="1.0" encoding="UTF-8"?><FeatureSet><Features><Feature>';
var endxml ='</Feature></Features></FeatureSet>';
var middlexml;
var xml;
function updateXML()
{
var elements=document.getElementsByTagName("input");
middlexml="";
xml="";
    for(var i = 0; i < elements.length; i++)
    {
        if(elements[i].type == 'text')

middlexml=middlexml+'<Property><Name>'+elements[i].id+'</Name><Value>'+elements[i].value+'</Value
></Property>';
    }
xml=beginxml+middlexml+endxml;
var xmlhttp;
    if (window.XMLHttpRequest)
    {
        xmlhttp=new XMLHttpRequest();
        xmlhttp.onreadystatechange = function(evt)
        {
            if(this.readyState == 4)
            {
                alert(this.responseText);
                document.location.reload(true);
            }
        };
        xmlhttp.open("PUT","/rest/data/property/{{PROPERTY_Autogenerated_SDF_ID}}.xml",true);
        xmlhttp.setRequestHeader("Content-Type","application/xml; charset=UTF-8");
        xmlhttp.send(xml);
    }
}
</script>
<input type=button value=update onclick=updateXML()>
</body>
{{/PROPERTY}}
</html>
```



## GEOJSON OPENLAYERS EXAMPLE:

```
<div id="map" class="map"></div>

<script src="http://openlayers.org/dev/OpenLayers.js" type="text/javascript"></script>

<script>

var map = new OpenLayers.Map( 'map' );

var vector_layer = new OpenLayers.Layer.Vector("json layer");

map.addLayer(vector_layer);

OpenLayers.Request.GET({

  url: "/rest/data/property/1.json",

  headers: {'Accept':'application/json'},

  success: function (req)

  {

    var g = new OpenLayers.Format.GeoJSON( {

      'internalProjection': new OpenLayers.Projection("EPSG:900913"),

      'externalProjection': new OpenLayers.Projection("EPSG:4326") });

    var feature_collection = g.read(req.responseText);

    vector_layer.destroyFeatures();

    vector_layer.addFeatures(feature_collection);

  }

});

var osm = new OpenLayers.Layer.OSM();

map.addLayer(osm,{sphericalMercator: true});

var center = new OpenLayers.LonLat(-87.75503575673602, 43.7827819616656).transform("EPSG:4326",

"EPSG:900913");

map.setCenter(center,14);

</script>
```



## GEOJSON LEAFLET EXAMPLE:

```
<!doctype html>
<html>
<head>
  <link rel="stylesheet" href="http://cdn.leafletjs.com/leaflet-0.5/leaflet.css" />
  <!--[if lte IE 8]>
<link rel="stylesheet" href="http://cdn.leafletjs.com/leaflet-0.5/leaflet.ie.css" />
  <![endif]-->
  <style type="text/css">
    body {
      padding: 0;
      margin: 0;}
    html, body, #leaflet-map {
      height: 100%;}
  </style>
  <script src="http://cdn.leafletjs.com/leaflet-0.5/leaflet.js"></script>
  <script src="http://code.jquery.com/jquery-1.10.2.min.js"></script>
  <link rel="points" type="application/json" href="/rest/data/property/.json">
</body>
<div id="leaflet-map"></div>
<script>
  var mapTiles = L.tileLayer('http://a.tiles.mapbox.com/v3/lyzidiadmond.map-ietb6srb/{z}/
{x}/{y}.png', {
    maxZoom: 18
  });
  $.getJSON($('link[rel="points"]').attr("href"), function(data) {
    var geojson = L.geoJson(data, {
      onEachFeature: function (feature, layer) {
        layer.bindPopup(feature.properties.RPROPAD);
      }
    });
    var map = L.map('leaflet-map').fitBounds(geojson.getBounds());
    mapTiles.addTo(map);
    geojson.addTo(map);
  });
</script>
</body>
</html>
```