



Esri International Developer Summit
Palm Springs, CA

Introduction to the ArcGIS API for JavaScript

Andy Gup – @agup

Derek Swingley – @derekswingley

Agenda

- History
- A Simple App
- Dev Environment
- Layers and Widgets
- Styling Graphics and New Tech
- Debugging Tips and Tricks

#esrijs

History

- First release:

The ArcGIS JavaScript API is now available to the public

by ArcGIS Server Development Team on July 9, 2008

- Many years of active development
- Rapid release cycle
- Evolves to match capabilities of the web

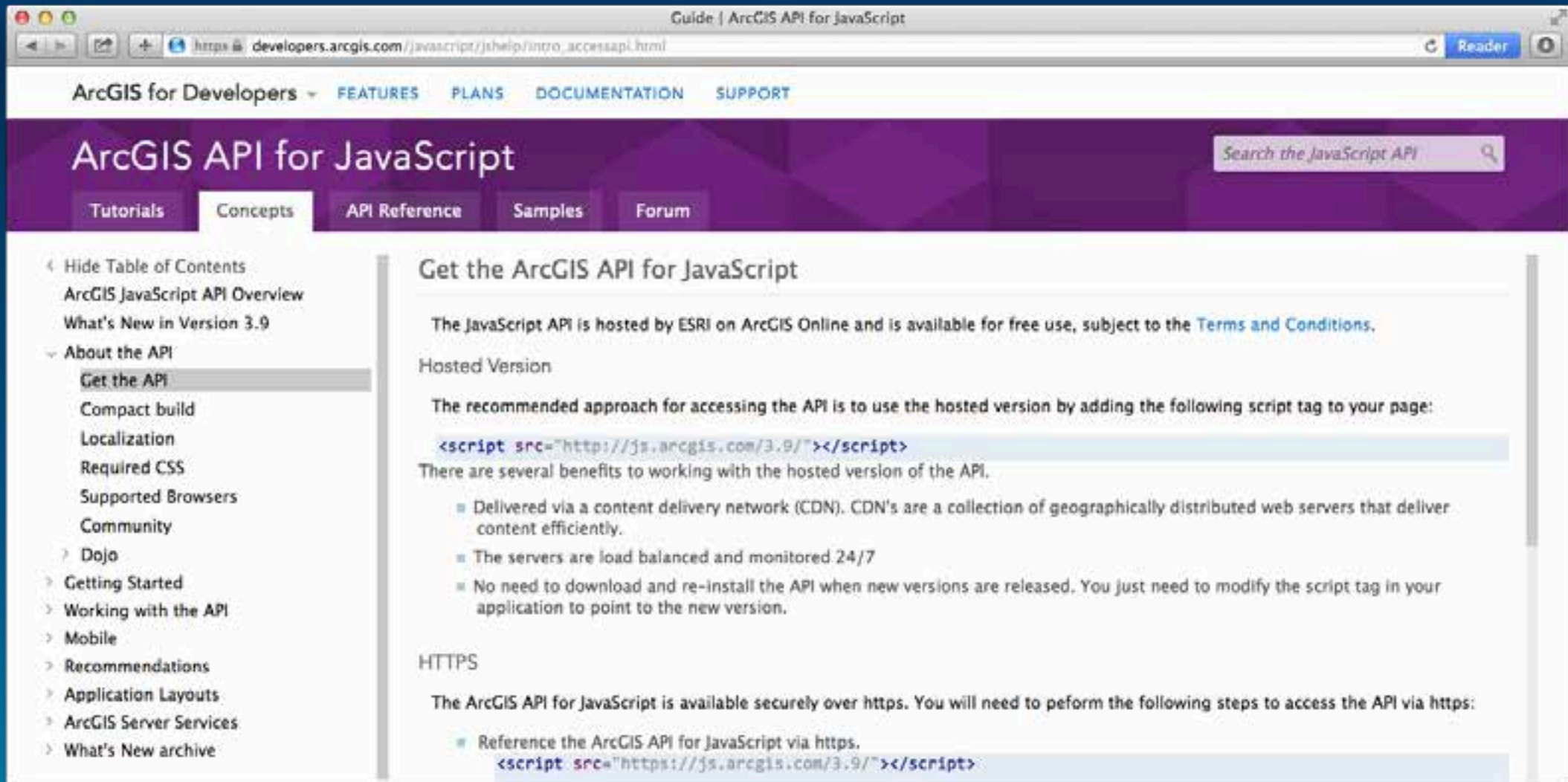
What can it do?

- Interactive maps
- ArcGIS Online basemaps
- Widgets: Geocoder, Home, Locate, etc.
- Analysis: GP, location analytics, geoenrichment
- ...explore the samples

Supported Environments



Get the API



The screenshot shows a web browser window displaying the ArcGIS API for JavaScript documentation. The page title is "ArcGIS API for JavaScript" and the URL is "https://developers.arcgis.com/javascript/jshelp/intro_accessapi.html". The navigation menu includes "Tutorials", "Concepts", "API Reference", "Samples", and "Forum". The "Get the API" section is highlighted in the left sidebar. The main content area is titled "Get the ArcGIS API for JavaScript" and contains the following text:

The JavaScript API is hosted by ESRI on ArcGIS Online and is available for free use, subject to the [Terms and Conditions](#).

Hosted Version

The recommended approach for accessing the API is to use the hosted version by adding the following script tag to your page:

```
<script src="http://js.arcgis.com/3.9/"></script>
```

There are several benefits to working with the hosted version of the API.

- ▀ Delivered via a content delivery network (CDN). CDN's are a collection of geographically distributed web servers that deliver content efficiently.
- ▀ The servers are load balanced and monitored 24/7
- ▀ No need to download and re-install the API when new versions are released. You just need to modify the script tag in your application to point to the new version.

HTTPS

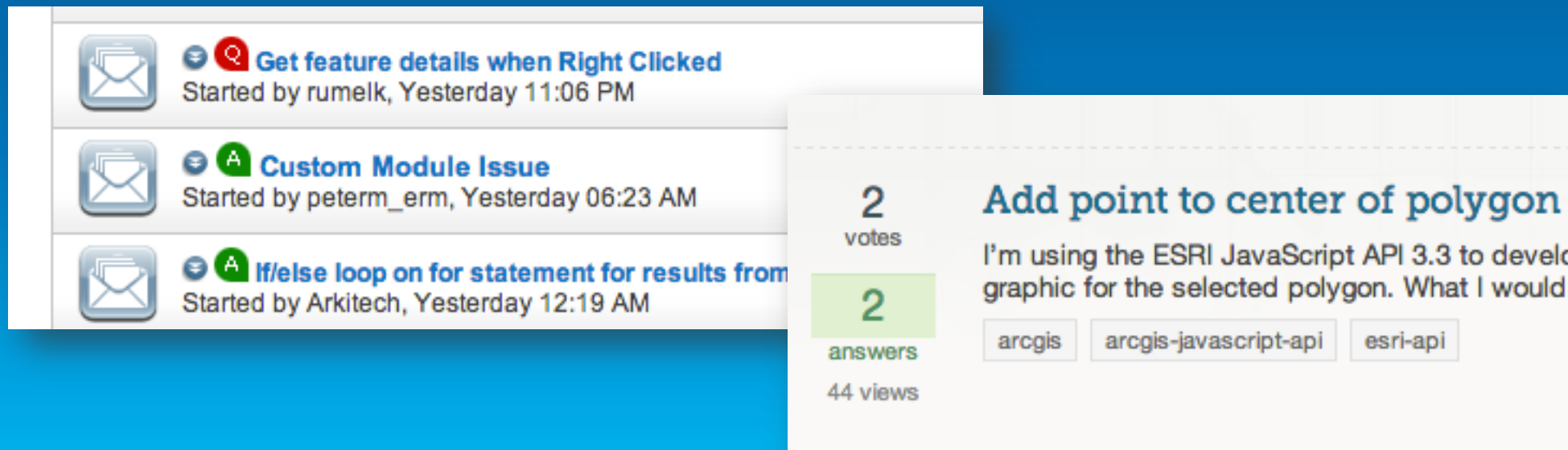
The ArcGIS API for JavaScript is available securely over https. You will need to perform the following steps to access the API via https:

- ▀ Reference the ArcGIS API for JavaScript via https.

```
<script src="https://js.arcgis.com/3.9/"></script>
```

Help

- [Community](#) page in the SDK documentation
- Traditional forum
- GIS.StackExchange
- Twitter: API team is on twitter or use #esrijs



The image shows a screenshot of a Stack Overflow question. The question title is "Add point to center of polygon" and the body text is "I'm using the ESRI JavaScript API 3.3 to develop a graphic for the selected polygon. What I would". The question has 2 votes, 2 answers, and 44 views. The tags are "arcgis", "arcgis-javascript-api", and "esri-api". The question was started by "rumelk" yesterday at 11:06 PM. The question is titled "Get feature details when Right Clicked".

Get feature details when Right Clicked
Started by rumelk, Yesterday 11:06 PM

Custom Module Issue
Started by peterm_erm, Yesterday 06:23 AM

If/else loop on for statement for results from
Started by Arkitech, Yesterday 12:19 AM

2 votes

2 answers

44 views

Add point to center of polygon

I'm using the ESRI JavaScript API 3.3 to develop a graphic for the selected polygon. What I would

arcgis arcgis-javascript-api esri-api

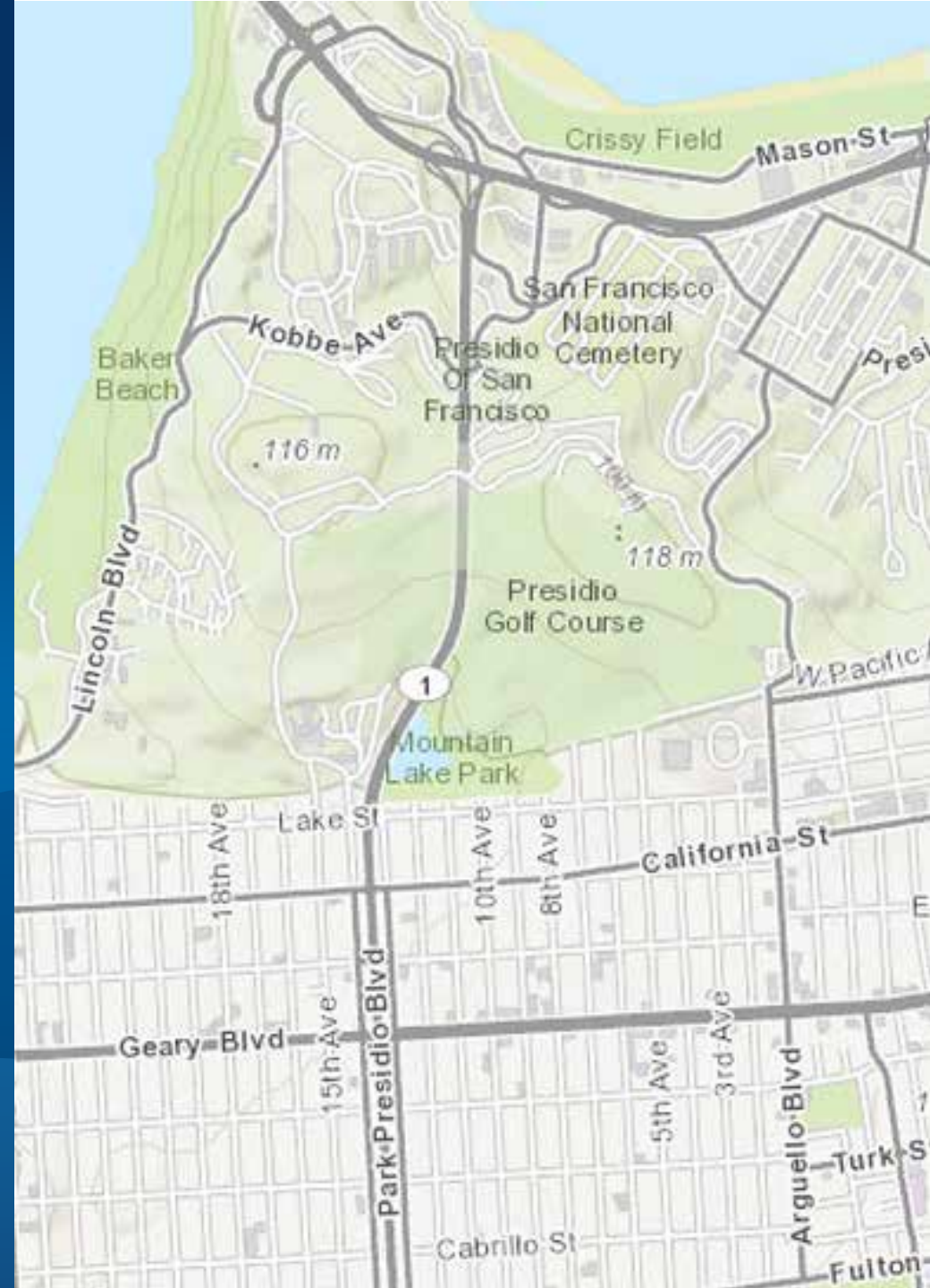
Create a map

```
<script src="http://js.arcgis.com/3.9/"></script>
<script>
  var map;
  require(["esri/map", "dojo/domReady!"], function(Map) {
    map = new Map("map", {
      basemap: "topo",
      center: [-122.45, 37.75],
      zoom: 13
    });
  });
</script>
```


Create a map...using ArcGIS.com

```
<script src="//js.arcgis.com/3.9/"></script>
<script>
  var map;
  require([
    "esri/arcgis/utils",
    "dojo/domReady!"
  ], function(
    arcgisUtils
  ) {
    // args are map ID, element ID, optional options
    arcgisUtils.createMap("cb571eb907af4ec481511014d3fb0571", "map").then(
      function(response) {
        map = response.map;
      },
      function(error) {
        console.log("error", error);
      }
    );
  });
</script>
```

Hello World Map



Layers

- Feature Layer
- Tiled
- Dynamic
- KML
- CSV

Layer coding pattern

```
map = new Map("mapDiv", {
  basemap: "national-geographic",
  center: [-96.541, 38.34],
  zoom: 6
});

var infoTemplate = new InfoTemplate("${state_name}", "Population");
var featureLayer = new FeatureLayer("http://sampleserver6.arcgiso
  mode: FeatureLayer.MODE_ONDEMAND,
  outFields: ["*"],
  infoTemplate: infoTemplate
});

map.addLayer(featureLayer);
map.infoWindow.resize(155,75);
```

Feature Layers

- Vector data (svg or canvas)
- Interactive
- Popups
- Query (spatial and attribute)
- Enables editing



Feature Layers

The screenshot displays a web application interface for field production data. At the top, a map shows the location near Wichita, Kansas, with a road marker for 42. Below the map, the title "Current Kansas Field Production" is visible. A data entry form contains the following information:

Status:	Oil
Field Name:	BRUMLEY NORTHWEST
acreage:	555
Average Depth:	3,298.364
Cumulative Oil:	308,755.31
Cumulative Gas:	0

Below the form are two buttons: "Delete" and "Save". At the bottom, a map view shows a grid of fields. A specific field is highlighted in green, with a yellow outline. The map includes labels for "W 193rd St S", "Peck", "Sumner", and "53".

Widgets

- Application framework
- Single purpose
- Reusable / sharable
- Examples
 - Directions Widget
 - Geocoding Widget

Working with Widgets

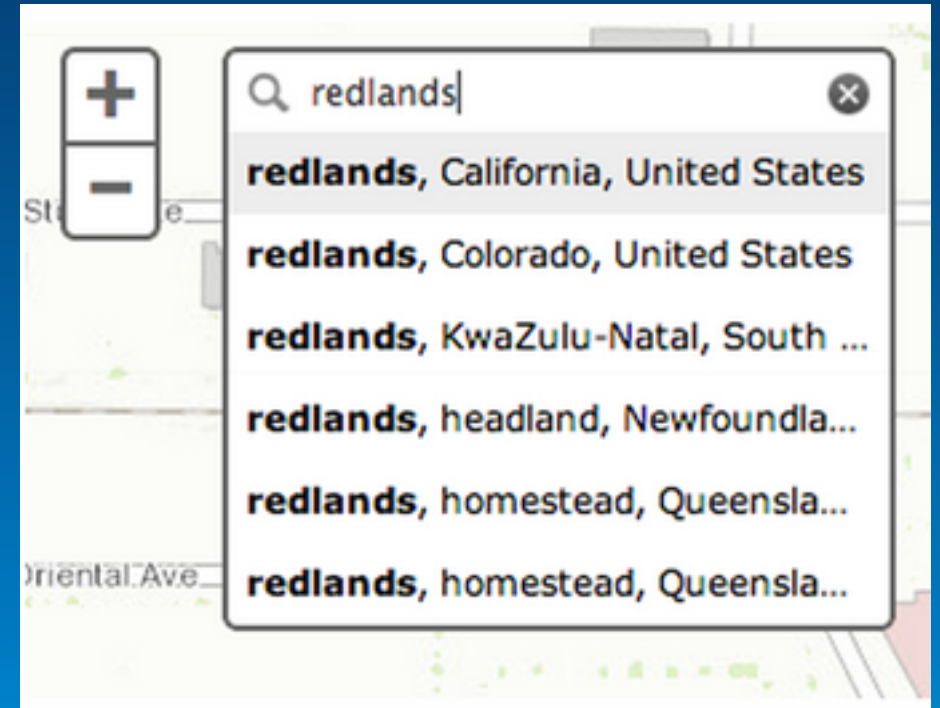
```
var map, geocoder;

require([
  "esri/map", "esri/dijit/Geocoder", "dojo/domReady!"
], function(Map, Geocoder) {
  map = new Map("map", {
    basemap: "gray",
    center: [-120.435, 46.159], // lon, lat
    zoom: 7
  });

  geocoder = new Geocoder({
    map: map
  }, "search");
  geocoder.startup();
});
```


Widget demos

Geocoding, Directions



Custom Styling for...

- Graphics
- Map zoom buttons
- Widgets
- Popups

Customizing Popups

- PopupTemplate
- Custom themes
- Sprites

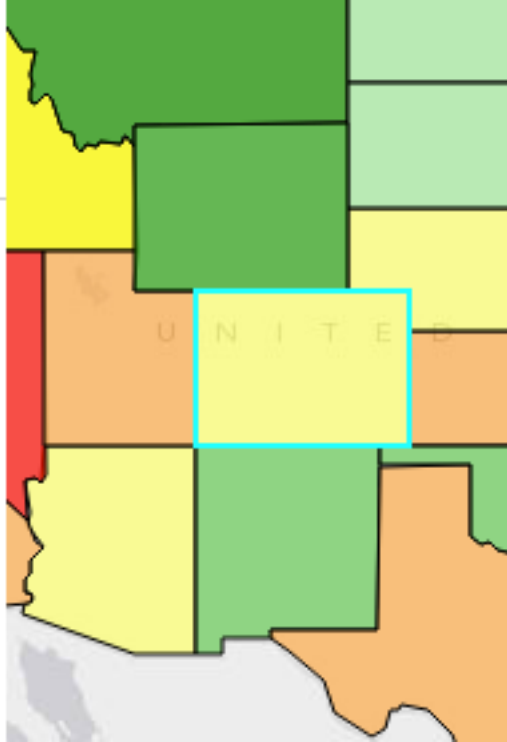
Popup outside the map

4 feature(s) selected

< Prev Next >

Activity Label: Low

State	Colorado
Website	Influenza Surveillance
URL	More info
Activity Level	Level 5
Weekend	February 16, 2013



Styling Popups



Mobile Popups

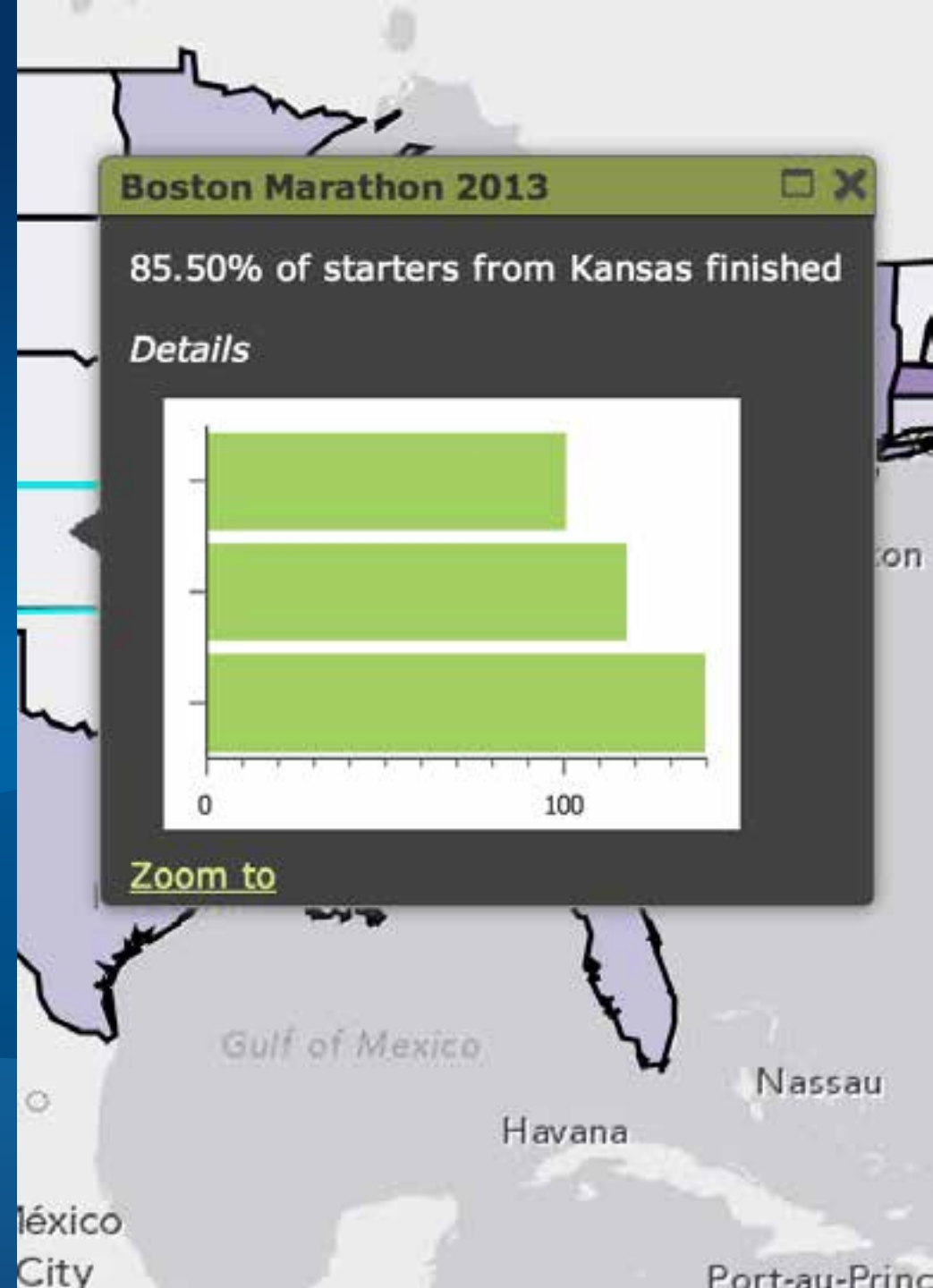
```
var popup = new PopupMobile(null, domConstruct.create("div"));
arcgisUtils.createMap("1df512c380994cc5a3dad2e2d428eea3", "mapDiv", {
  mapOptions: {
    center: [-59.48, 44.066],
    zoom: 4,
    infoWindow: popup
  }
});
```

Mobile Popups



VehicleTheft2011: 3TUE	
ID	7,874,795
CaseNum	HT105519
TheDate	1/4/2011 16:00
Block	083XX S THROOP ST
Type	MOTOR VEHICLE THEFT
Descrip	AUTOMOBILE
LocType	STREET
Domestic	FALSE
Beat	613
Ward	21
Year	2,011
Month	1
DOW	3
TheHour	16
DayNight	DAY
Season	4Winter
DayOfTheYear	4
DateOfOcc	January 3, 2011
DOWNames	3TUE
TimePeriods	Early Evening
TheSeasons	4

Custom popups



Debugging tips

All major browsers have debugging tools

All REST service requests are HTTP

Use the console

```
featureLayer.queryFeatures(query, function (featureSet) {  
    console.log("Features: " + featureSet.features[0].attributes.Name);  
    updateGrid(featureSet, pageNumber);  
});
```

```
▶ Resource interpreted as Script but transferred with MIME type text/html  
383&outFields=*&callback=dojo.io.script.jsonp dojoIoScript  
Features: MARTINIQUE ←
```

Debugging demo

```
Timeline Profiles Resour  
Info.objectIds.slice(beg  
;  
ls with the given object  
res(query, function (fea  
res: " + featureSet.featu  
Set, pageNumber);  
atureSet, pageNumber) {  
1. map(featureSet.featu
```

Basic performance considerations

How long does the user have to wait??

Reducing number of layers

Set custom scale dependencies

Generalizing features

Reducing query area size

Performance: Reducing number of layers

Fewer layers == faster load times

Consider lazy loading layers:

```
map.addLayer(featureLayer);  
map.removeLayer(featureLayer);
```

Performance: Set custom scale dependencies

ArcGISTiledMapServiceLayer

```
map.minScale = 12;  
map.maxScale = 8;
```

Performance: Generalizing features

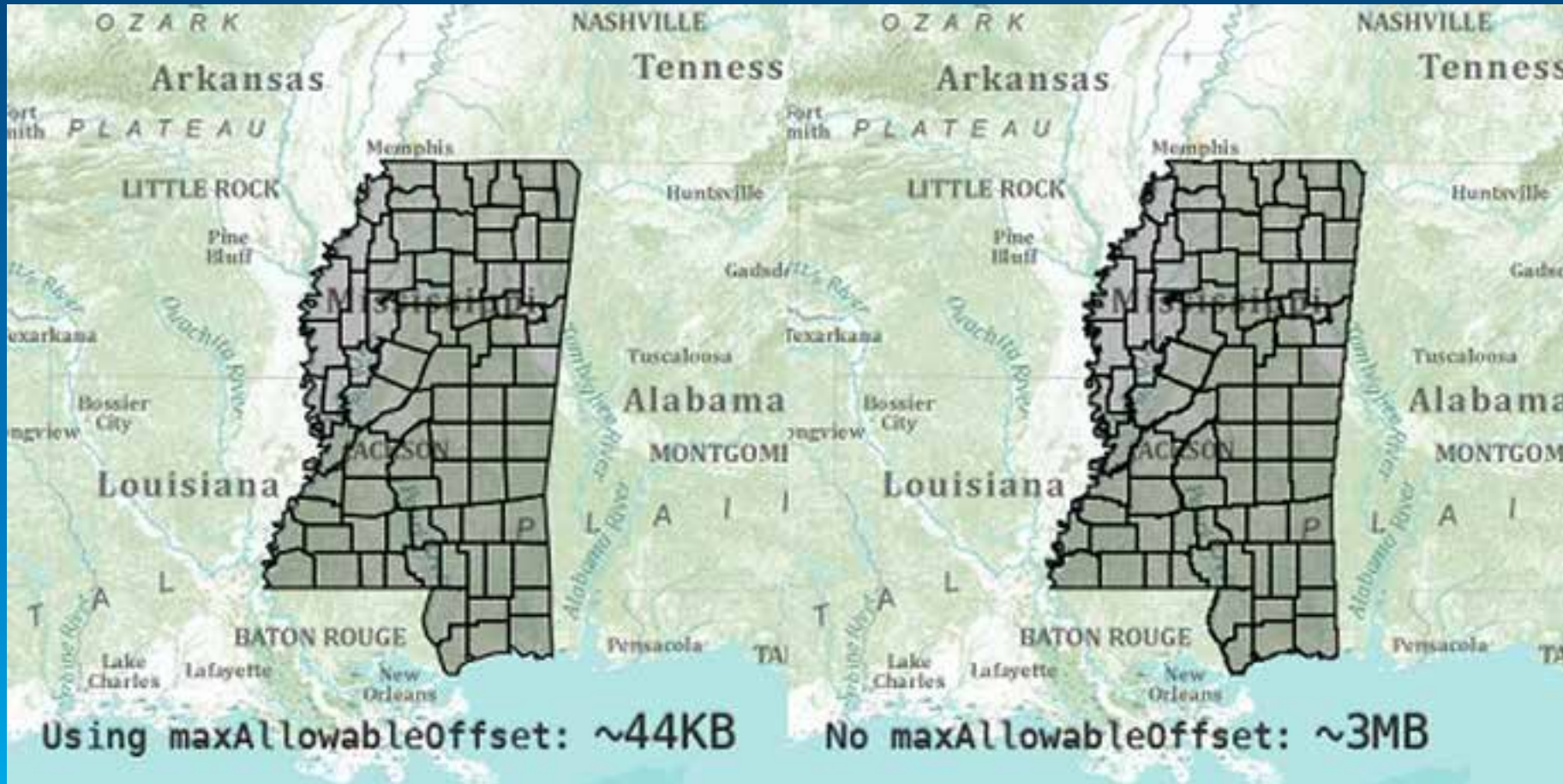
How dense is a polygon or polyline?

Can you use point clustering?

```
getMaxAllowableOffset
```

```
setMaxAllowableOffset
```

Performance: Generalizing features



Performance: Limit query area size

Neighborhood

City

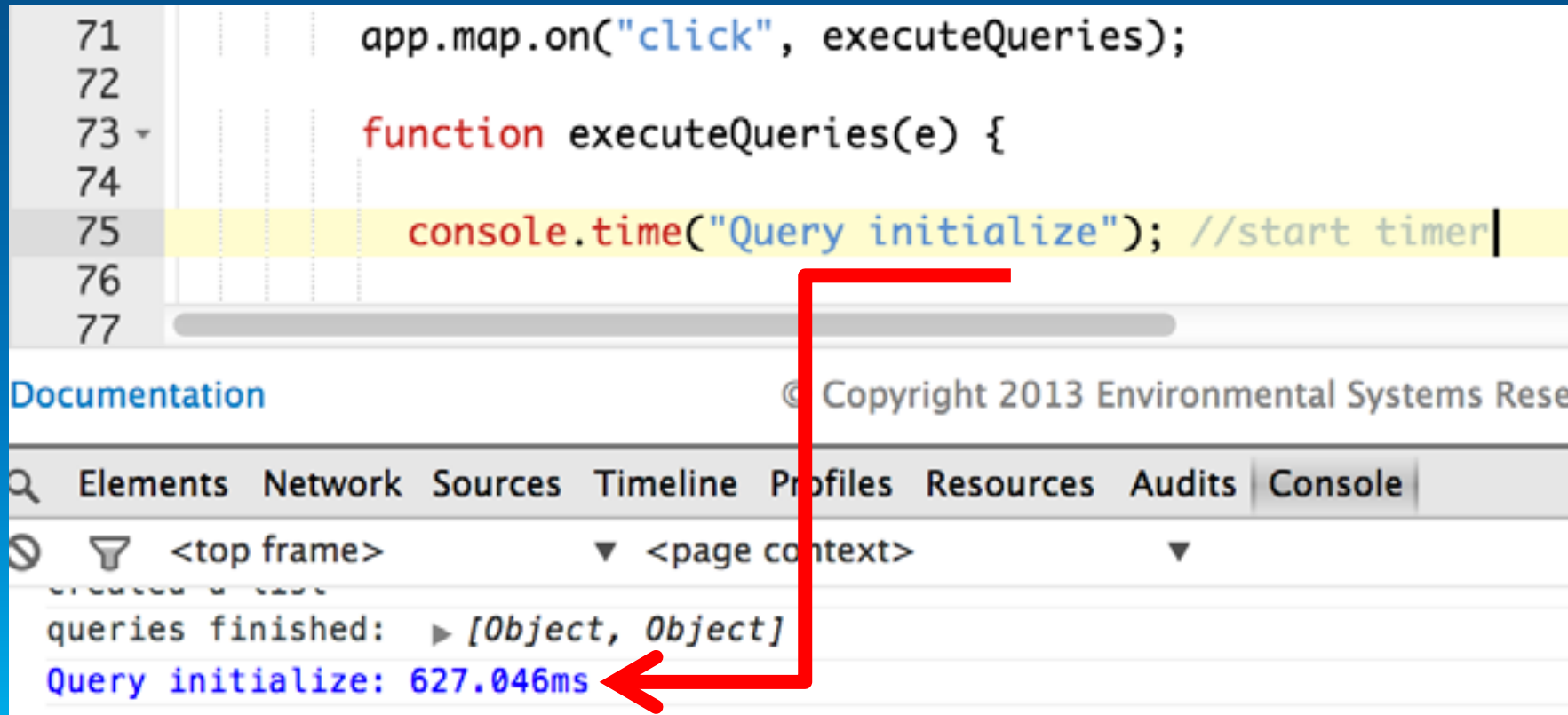
County

State

Country

Performance: measuring time

`console.time()` and `console.timeEnd()`



The image shows a code editor with the following JavaScript code:

```
71 app.map.on("click", executeQueries);
72
73 - function executeQueries(e) {
74
75   console.time("Query initialize"); //start timer
76
77
```

The line `console.time("Query initialize");` is highlighted in yellow. A red arrow points from this line down to the console output.

The console output shows:

```
queries finished: ▶ [Object, Object]
Query initialize: 627.046ms
```

The console output is filtered by the context `<page context>`. The `Query initialize: 627.046ms` line is highlighted in blue.

IDEs

Notepad++

Aptana

Sublime (Mac)

WebStorm



Github demo

Esri is on GitHub

We're excited about helping you find, explore, and share software. Browse our open source code and get started with our developer platform.

[BROWSE ON GITHUB](#)

Need an [ArcGIS subscription](#)? Start developing

JavaScript sessions!

Agenda

[View Full Screen](#)



Sessions



My Planner

List

Grid

42 Sessions (narrowed by keyword "javascript")

— Monday, March 10th

4:00pm - 4:30pm

⊕ JavaScript Tooling—Love Your Development

5:15pm - 5:45pm

— Tuesday, March 11th

⊕ Building Mobile Web Apps with the ArcGIS AP

1:00pm - 2:00pm

⊕ Declarative Mapping Applications with Angular

1:00pm - 2:00pm

⊕ Introduction to the ArcGIS Web App Builder: J
Easy

1:00pm - 2:00pm

Session Survey: <http://esriurl.com/7517>

Andy Gup – @agup

Derek Swingley – @derekswingley



Understanding our world.