Real-Time GIS using SignalR and JSAPI

A PROOF-OF-CONCEPT

Amr ELDIB

Esri Canada

#DevSummit

Esri International Developer Summit 2013
Technical Sessions

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Who Doesn't Like Command Centers

William Shatner as Captain James T. Kirk commanding the bridge of the USS Enterprise *Star Trek* during the third season (1968–1969)

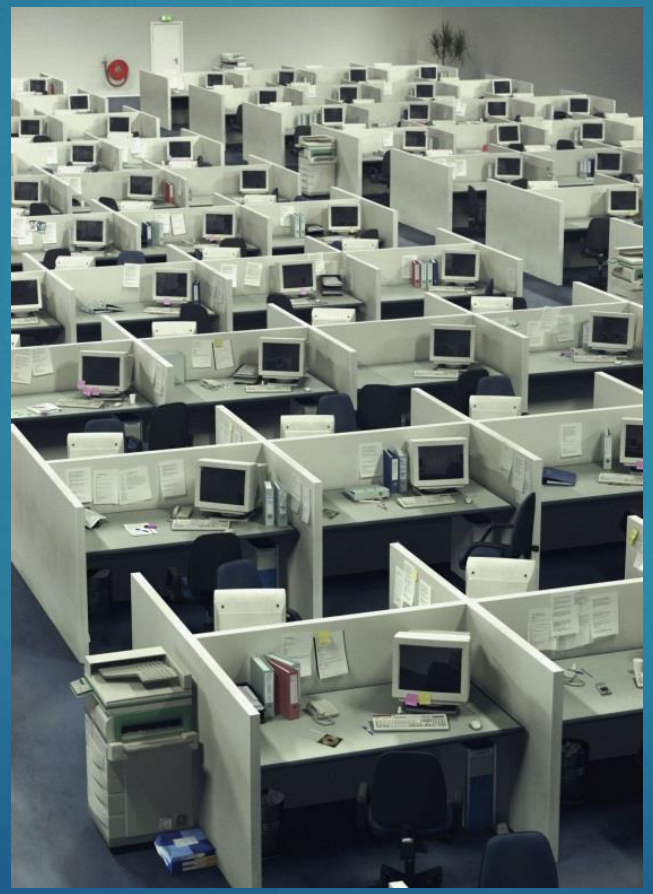
These Guys Don't

Chris O'Dowd as Roy Trenneman, Richard Ayoade as Maurice Moss, and Katherine Parkinson as Jen Barber from the British TV show "The IT Crowd"

Command Centers Today

Anton Yelchin as Pavel Chekov, Chris Pine as Captain James T. Kirk, and John Cho as Hikaru Sulu from the 2009 J. J. Abrams' Reboot of *StarTrek*

Command Centers Today



Just some cubicles with computers.

SignalR

- Incredibly simple to add real-time.
- Start with WebSockets, and gracefully fallback to other technologies when it's not available.

  WebSockets > Server-sent Events > Forever Frame > Long Polling

- Existing SignalR Samples
  - Jabbr a Chat Server.
  - ShootR a Multiplayer Shooter Game.

SignalR

Open Source

github
SOCIAL CODING

Supported

Microsoft

How It Works

Inherits Microsoft.AspNet.SignalR.Hub

Public methods are callable from client

Clients.All.myFunction

Override event handlers to handle clients activities
(connecting, disconnecting, etc.)

var proxy = $.connection.myHubClass

proxy.client.myFunction = myFunction

proxy.server.myMethod

Show Me The Code

Callable from client-side

Inherits SignalR.Hub

```
9   public class RealTimePoints : Hub
10  {
11      public void AddPoint(double x, double y)
12      {
13          Clients.All.addPoint(Context.ConnectionId, x, y);
14      }
15  }
```

Calling client function

Show Me The Code

Client-function callable from Server

Reference to Proxy

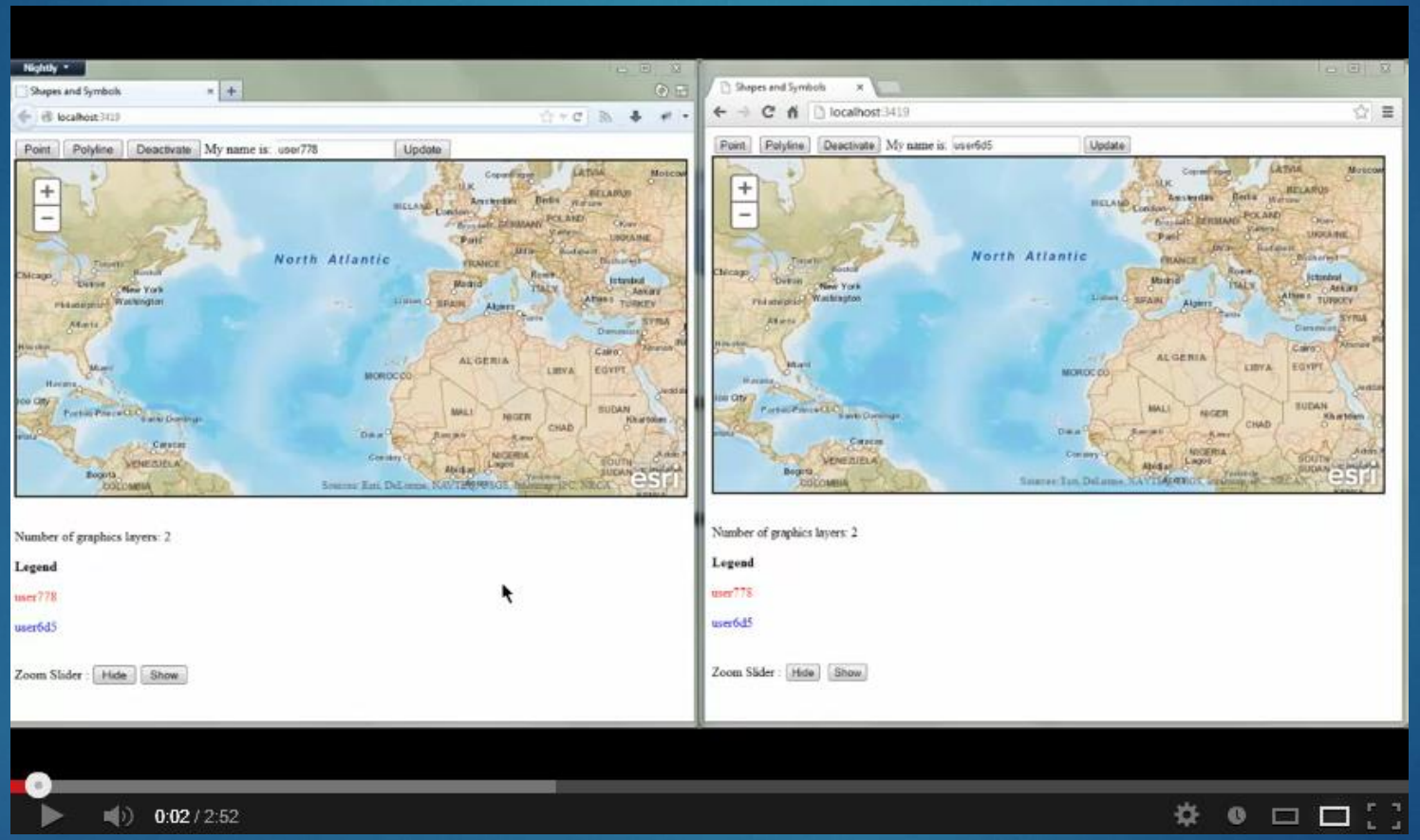
```
23      // Proxy created on the fly
24      realTimePoints = $.connection.realTimePoints;
25
26      // Declare a function on the chat hub so the server can invoke it
27      realTimePoints.client.addPoint = function addPoint(cid, x, y) {
28          var p = new esri.geometry.Point(x, y, new esri.SpatialReference({ wkid: 102100 }));
29          var gLayer = map.getLayer(cid);
30
31          var symbol = new esri.symbol.SimpleMarkerSymbol();
32          var clr = layersColors[layersColors.indexOf(cid) + 1];
33
34          symbol.setColor(new dojo.Color(clr));
35
36          gLayer.add(new esri.Graphic(p, symbol));
37      };
```

Connection ID

Show Me The Code

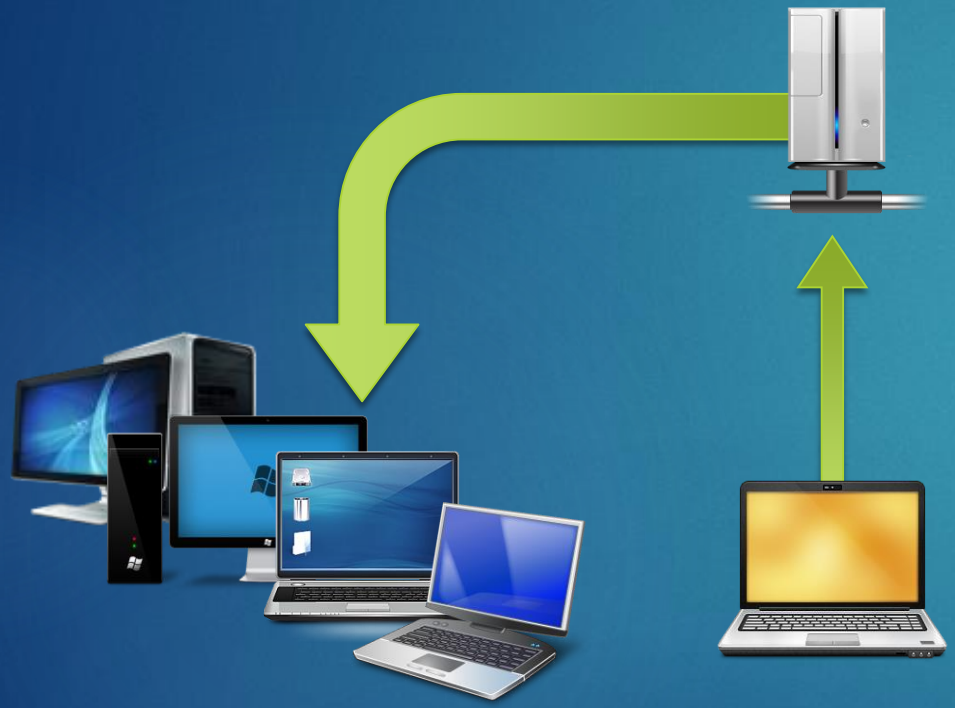
```
123 function addGraphic(geometry) {
124     var symbol = dojo.byId("symbol").value;
125     if (symbol) {
126         symbol = eval(symbol);
127     }
128     else {
129         var type = geometry.type;
130         if (type === "point" || type === "multipoint") {
131
132             var symbol = new esri.symbol.SimpleMarkerSymbol();
133             var clr = layersColors[layersColors.indexOf($.connection.hub.id) + 1];
134             symbol.setColor(new dojo.Color(clr));
135             realTimePoints.server.addPoint(geometry.x, geometry.y);
136         }
```

See It In Action

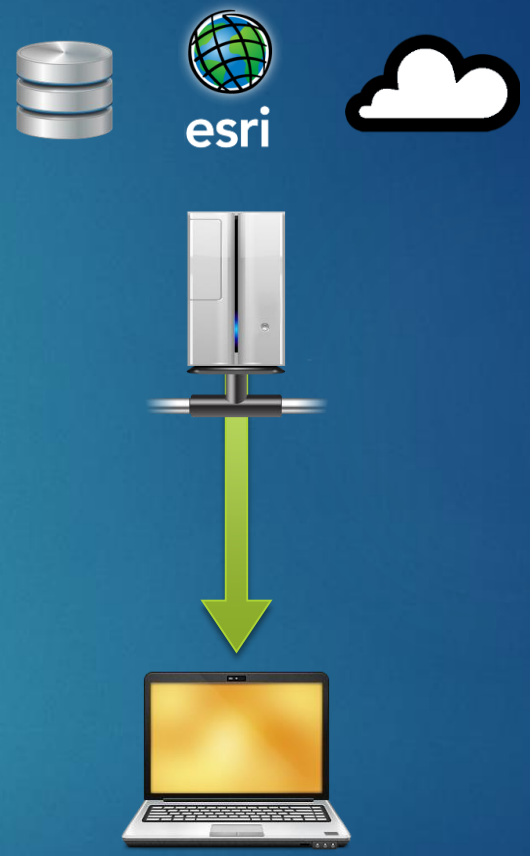


Click the screenshot to play video

Scenarios



Client-to-Client



Server-to-Client

Thank You

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