REAL-TIME GIS USING SIGNALR AND JSAPI

A PROOF-OF-CONCEPT

It’s never too early to code some JavaScript

AMR ELDIB
Esri Canada

#DevSummit

Esri International Developer Summit 2013 Technical Sessions
March 28, 2013 8:30am – Palm Springs Convention Center
WHO DOESN’T LIKE COMMAND CENTERS

William Shatner as Captain James T. Kirk commanding the bridge of the USS Enterprise in 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 Star Trek.
COMMAND CENTERS TODAY

Just some cubicles with computers.
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.
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
Callable from client-side

Inherits SignalR.Hub

Calling client function

```java
public class RealTimePoints : Hub {
    public void AddPoint(double x, double y) {
        Clients.All.addPoint(Context.ConnectionId, x, y);
    }
}
```
SHOW ME THE CODE

Client-function callable from Server

Reference to Proxy

Connection ID

```javascript
// Proxy created on the fly
realTimePoints = $.connection.realTimePoints;

// Declare a function on the chat hub so the server can invoke it
realTimePoints.client.addPoint = function addPoint(cid, x, y) {
  var p = new esri.geometry.Point(x, y, new esri.SpatialReference({ wkid: 102100 }));
  var gLayer = map.getLayer(cid);
  var symbol = new esri.symbol.SimpleMarkerSymbol();
  var clr = layersColors[layersColors.indexOf(cid) + 1];
  symbol.setColor(new dojo.Color(clr));
  gLayer.add(new esri.Graphic(p, symbol));
};
```
function addGraphic(geometry) {
    var symbol = dojo.byId("symbol").value;
    if (symbol) {
        symbol = eval(symbol);
    } else {
        var type = geometry.type;
        if (type === "point" || type === "multipoint") {
            var symbol = new esri.symbol.SimpleMarkerSymbol();
            var clr = layersColors[layersColors.indexOf($connection.hub.id) + 1];
            symbol.setColor(new dojo.Color(clr));
            realTimePoints.server.addPoint(geometry.x, geometry.y);
        }
    }
}
SCENARIOS

CLIENT-TO-CLIENT

SERVER-TO-CLIENT