



# **Designing Redwood City's Community GIS:**

## **Opportunities & Challenges**

by

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# Background



# Redwood City

§ Located in Silicon Valley

§ 76,000 Inhabitants

§ City Provides Its Own  
Water & Sewer Service

§ 2 Fulltime GIS Staff + 1  
Web Developer



# City's Web-GIS History

§ 2005: MapGuide 6.5  
(Intranet only)



§ 2009: MapGuide Enterprise



§ 2014: ArcGIS Server for JavaScript API



# Redwood City's 2014 Community GIS





# Opportunities



# Primary Reasons for Moving to ArcGIS Server

- § Only Having to Use Data in SDE
- § Modern Map User Interface
- § Stable and Supported Platform
- § Ability to Consume 3rd Party Basemaps
- § Familiar Map Design Interface (ArcMap)
- § Large Library of Templates/Widgets
- § Technical Support

# First Steps

- § **Chose JavaScript API as the Development Environment**
- § **Chose an existing ESRI Local Government Template as the Starting Point**
- § **Started Customizing**



# Custom Features:

- § 50+ Layers
- § City Projects
- § Path of History
- § Data Downloads
- § Custom Geocoder
- § Custom Basemap Switch
- § Drawing Tools
- § Social Media Sharing



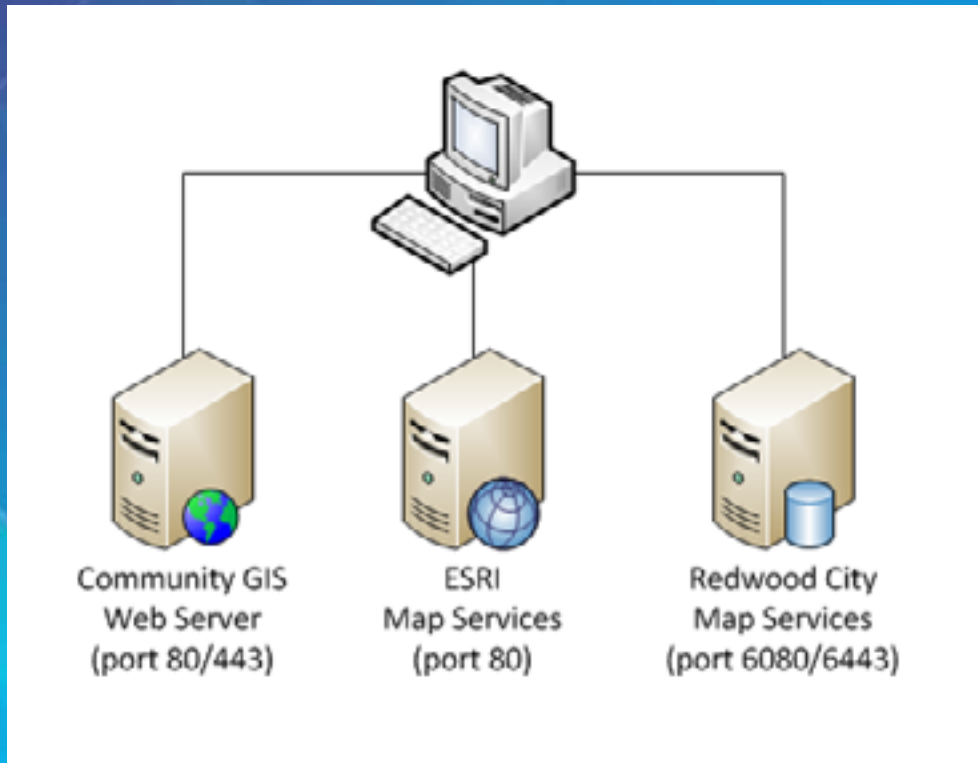
# Challenges



# Architecture Design

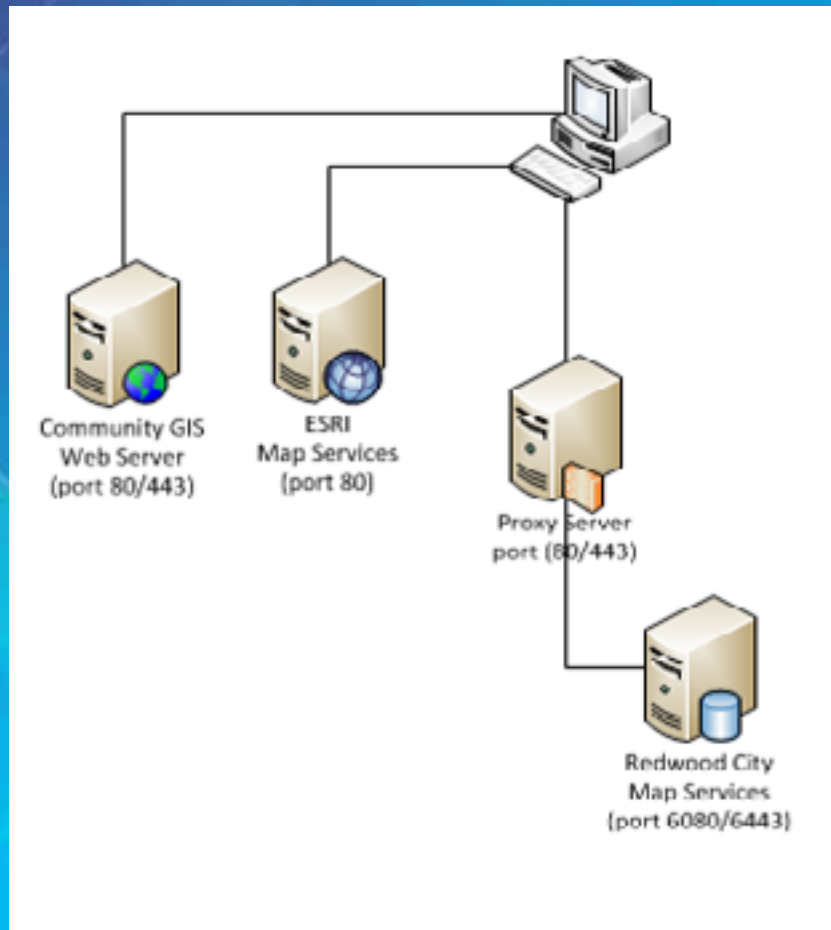
The background features a large blue area on the left and a complex geometric pattern on the right. The pattern consists of overlapping triangles and polygons in shades of purple, magenta, and yellow. A faint, light-colored map outline is visible in the bottom right corner, partially overlapping the yellow and purple shapes.

# Development GIS Architecture



- When we first began developing, the application had a very simple architecture
- **Challenge:**  
*Needed to secure the map services before releasing to the public*

# Initial Production GIS Architecture

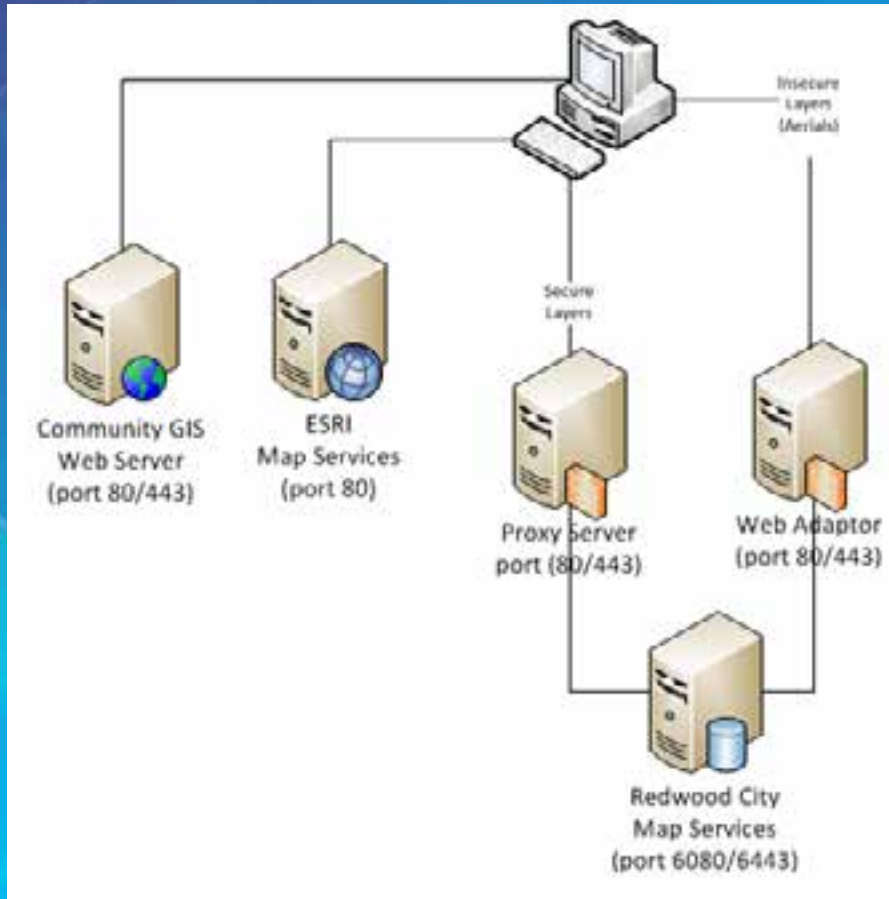


- Same as development, except using a proxy to secure the map services with tokens

- **Challenge**

*Using the proxy introduced a lot of overhead. The map slowed to a crawl impacting user experience. How to increase performance and have some security?*

# Current GIS Architecture



- *Introduced a Web Adaptor for the non-secure services (mainly the aerials)*
- *Continued to use the proxy for the secure map services*
- *Map performance improved drastically*
- *Used different host names to send request to either proxy or web adaptor*



# The Widgets



# Basemap Gallery Widget

- **Challenges:**

- *Zoom Levels: Esri basemaps and our basemaps have different zoom levels.*
- *Projection: All basemaps must be on the same projection.*

- **Solutions:**

- **Customized the Gallery Widget to allow each basemap to have flexible zoom levels.**
- **Projected our basemaps into Mercator so they would match with Esri basemaps.**



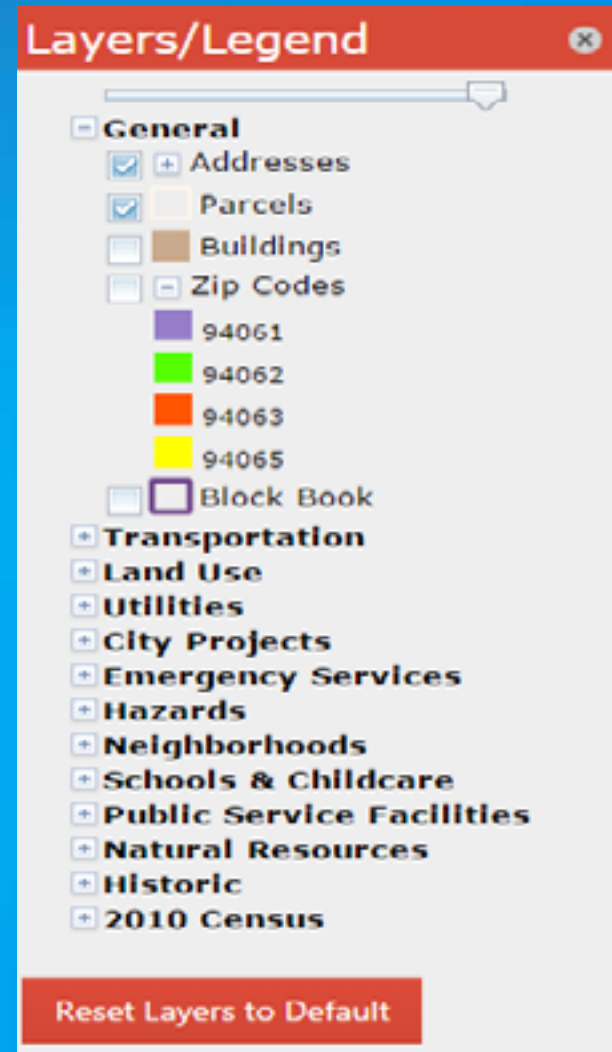
# AGSJS TOC Widget

- **Challenges:**

- *Link Layers: Needed the ability to tie two layers together so they toggle on/off in sync.*
- *Ability to hide layers from legend, but still make them visible on the map.*

- **Solutions:**

- **Customized the Widget to allow these to work.**



# Geo-Coder Widget



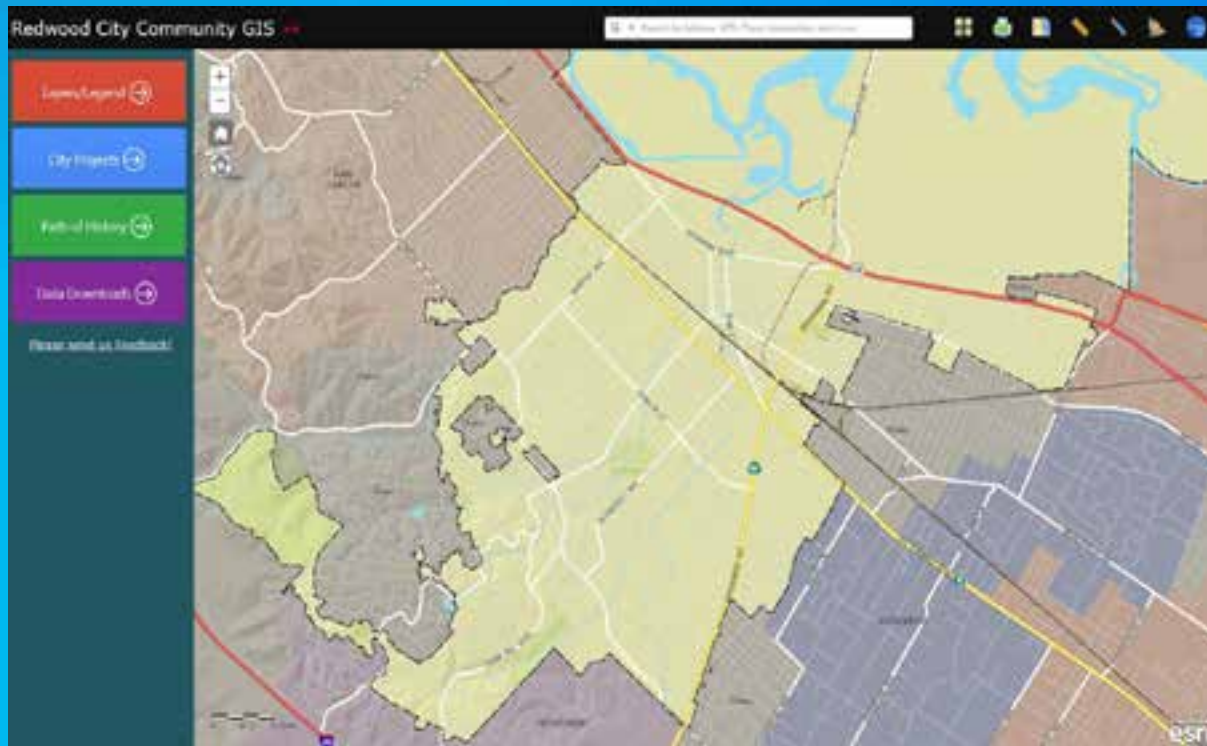
- **Challenges:**

- *Parcel Highlighting – When a search result can be narrowed to Parcel, the parcel should be highlighted, otherwise use lat/long.*
- *Control of Results – Prioritize Redwood City addresses and allow for searches by APN, Intersection, Place, etc..*

- **Solutions:**

- **Customized the GeoCoder Widget to allow both lat/long and direct parcels to be returned from the search.**
- **Created a custom GeoCoder service that pulled from multiple internal datasets.**

# Application DEMO



# Application Link:

<http://webgis.redwoodcity.org/community/>



# Tools

## § ESRI

- § ArcMap 10.1

- § ArcGIS Server 10.1

## § Editors

- § Notepad++

- § Brackets

## § Gulp

# Resources

§ ESRI

<https://developers.arcgis.com/javascript/>

§ Table of Contents Widget

§ <http://gmaps-utility-gis.googlecode.com/svn/tags/agsjs/latest/examples/toc.html>

# Contact Info

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