2009 Esri and Trimble Mobile Government Grant Project

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Items Received from Grant

- ESRI Developer Network subscription
- A Trimble Juno Handheld Mobile Device
- An

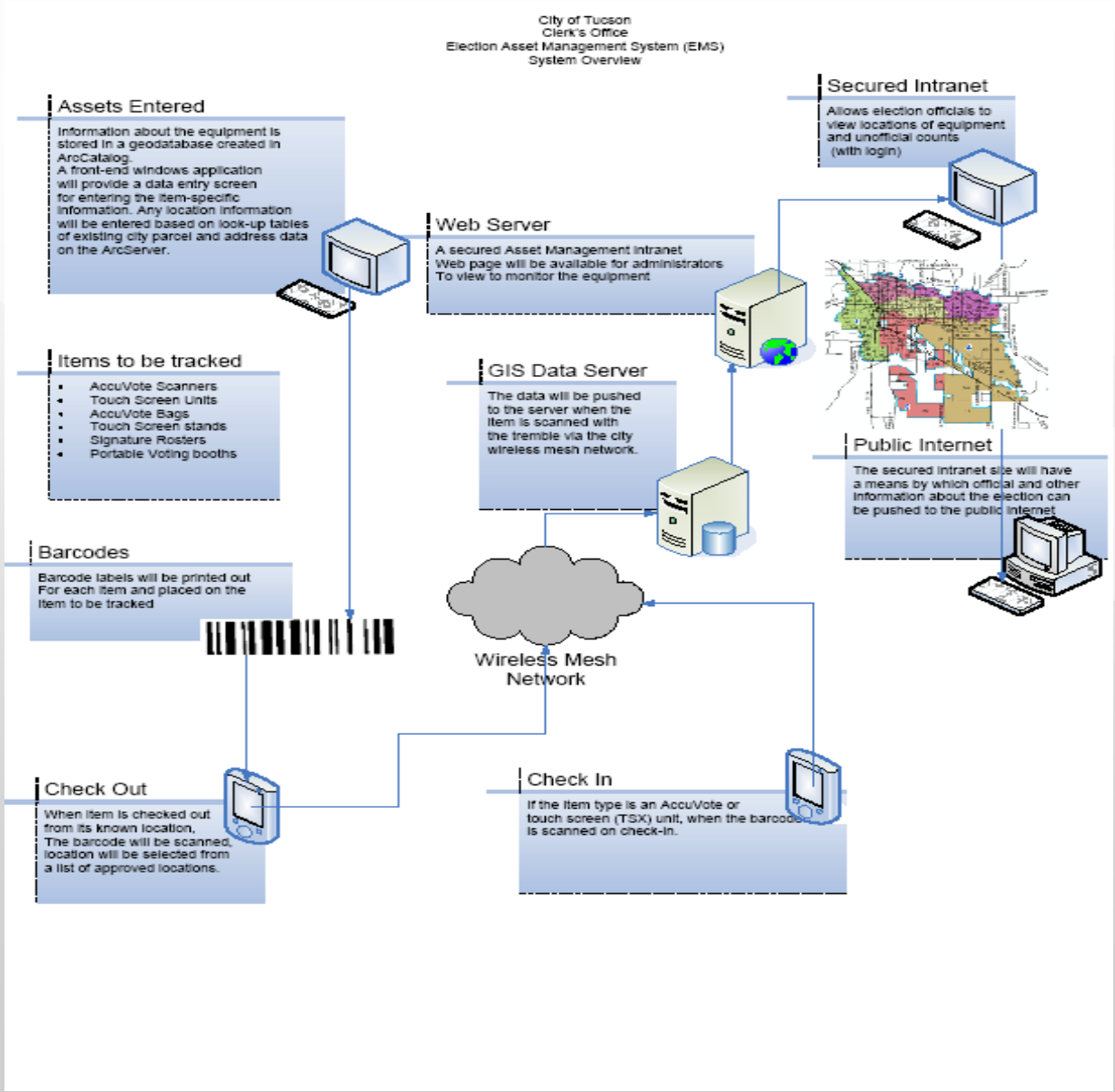
GIS and Election Asset Management

- The City of Tucson City Clerk's Office integrates Geographic Information Systems (GIS) into its election asset management strategy to ensure accurate, timely, and secure administration of elections. By incorporating Geographic Information Systems into its solution, administrators are assured that election equipment, including voting machines and ballots, are always securely in the right place at the right time with the right people.

The Problem

- Archaic and disparate methods for tracking Equipment
- Unprecedented need for greater security and tracking.

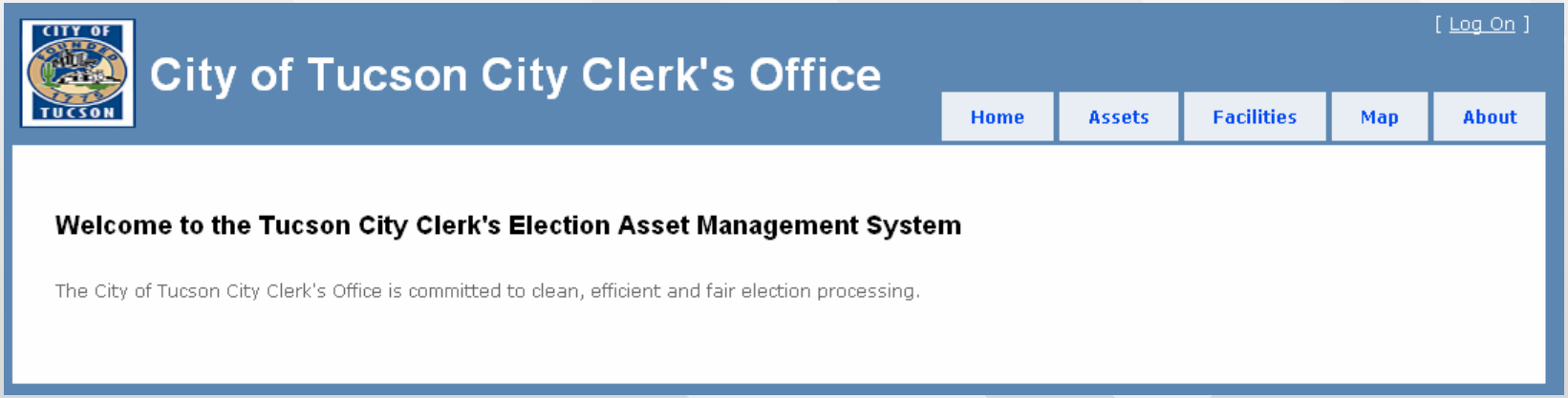
The Approach



GIS as an Integrated tool

- The majority of the solution was done using Microsoft Visual Studio C# ASP.NET MVC Framework.
- This was very exciting because all I had to do is create a very small amount of code for the web page to work both for PC’s and mobile devices.

MVC Framework interface



Asset Listing

[Log On]

City of Tucson City Clerk's Office

Home | Assets | Facilities | Map | About

Find Asset Name:

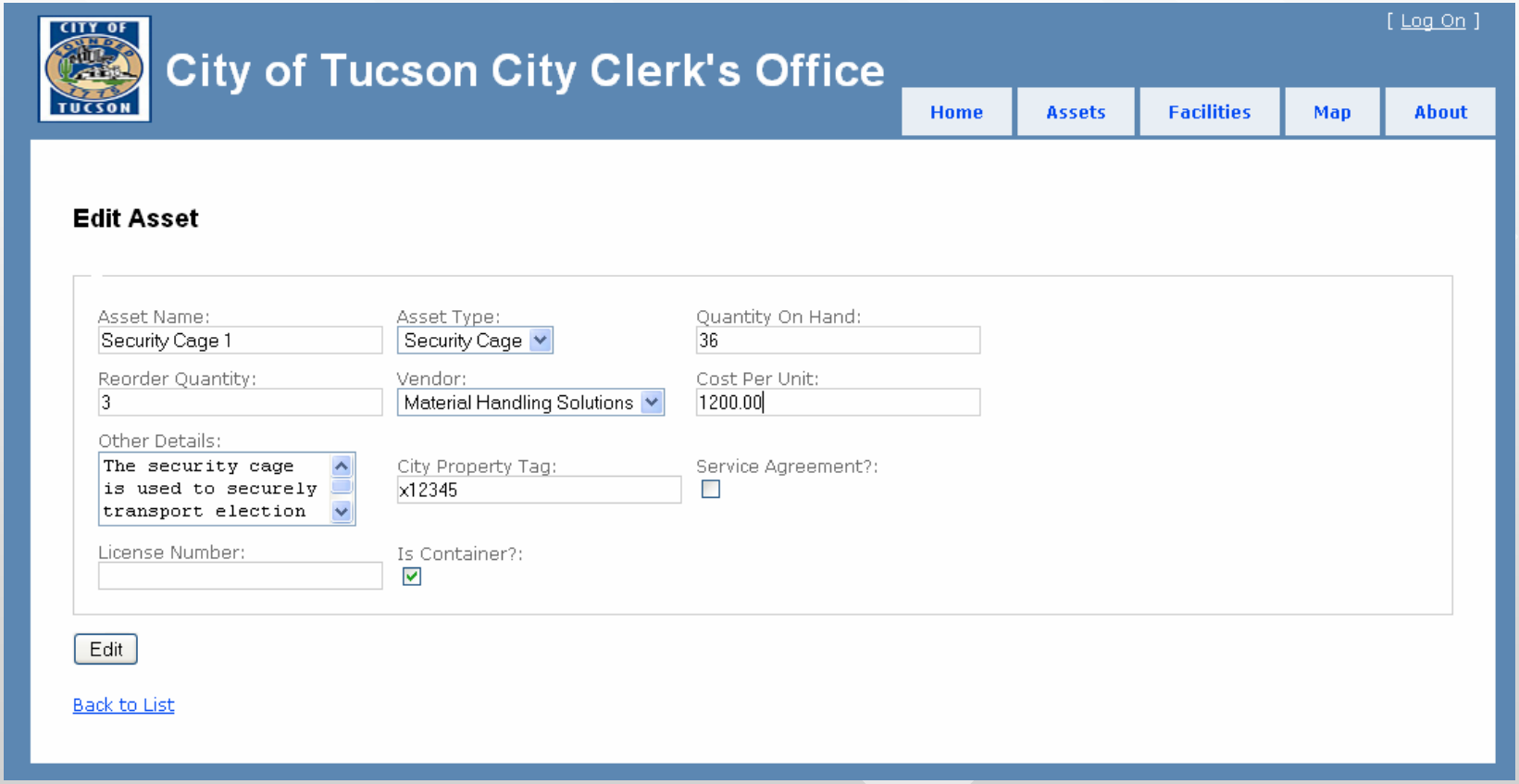
Submit

Assets Listing

	Asset Name	Asset Type	Quantity On Hand	Reorder Quantity	City Property Tag
Edit | Delete | Details	Touch Screen Unit	TSX	36	1	
Edit | Delete | Details	AccuVote	TSX	36	1	
Edit | Delete | Details	Security Cage 1	Security Cage	36	3	x12345
Edit | Delete | Details	Tab room laptop	Laptop	1		x75653
Edit | Delete | Details	Security Cage 2	Security Cage			X33333
Edit | Delete | Details	Security Cage 3	Security Cage			
Edit | Delete | Details	Security Cage 6	Security Cage			
Edit | Delete | Details	Security Cage 7	Security Cage			
Edit | Delete | Details	Security Cage 8	Security Cage			
Edit | Delete | Details	Security Cage 9	Security Cage			

Create New

Edit Asset


[Log On]
City of Tucson City Clerk's Office
Home
Assets
Facilities
Map
About
Edit Asset
Asset Name:
Security Cage 1
Asset Type:
Security Cage
Quantity On Hand:
36
Reorder Quantity:
3
Vendor:
Material Handling Solutions
Cost Per Unit:
1200.00
Other Details:
The security cage is used to securely transport election
City Property Tag:
x12345
Service Agreement?:
License Number:
Is Container?:
Edit
Back to List

Asset Details

Asset Details

Asset Name: Security Cage 1
Asset Type: Security Cage
Quantity On Hand: 36
Reorder Quantity: 3
Vendor: Material Handling Solutions
Cost Per Unit: 1200.00
Other Details: The security cage is used to securely transport election equipment.
City Property Tag: x12345
Has Service Agreement: No
License Number:
Date Entered: 5/10/2010
Entered By: ppennin1
Last Update Date: 6/10/2010
Last Update By: ppennin1
is Container: Yes

Asset Container Items:

	Child Asset
Edit | Delete	Touch Screen Unit
Edit | Delete	AccuVote

Asset Actions:

	Asset Action Type	Action Date Time	Action By	Facility Name	Facility Street Address	Action Details
Edit | Delete	Home	6/2/2010	ppennin1	Election Support Services	800 E 12th St	Security cage delivered by vendor.
Edit | Delete	Outbound	6/16/2010	ppennin1	Community of Hope Lutheran Church	3141 W Ironwood Hill Dr	Troubleshooters Randy and Bob transported item in city vehicle #234 white Ford Van.

Add New Action

Images:

Add Image

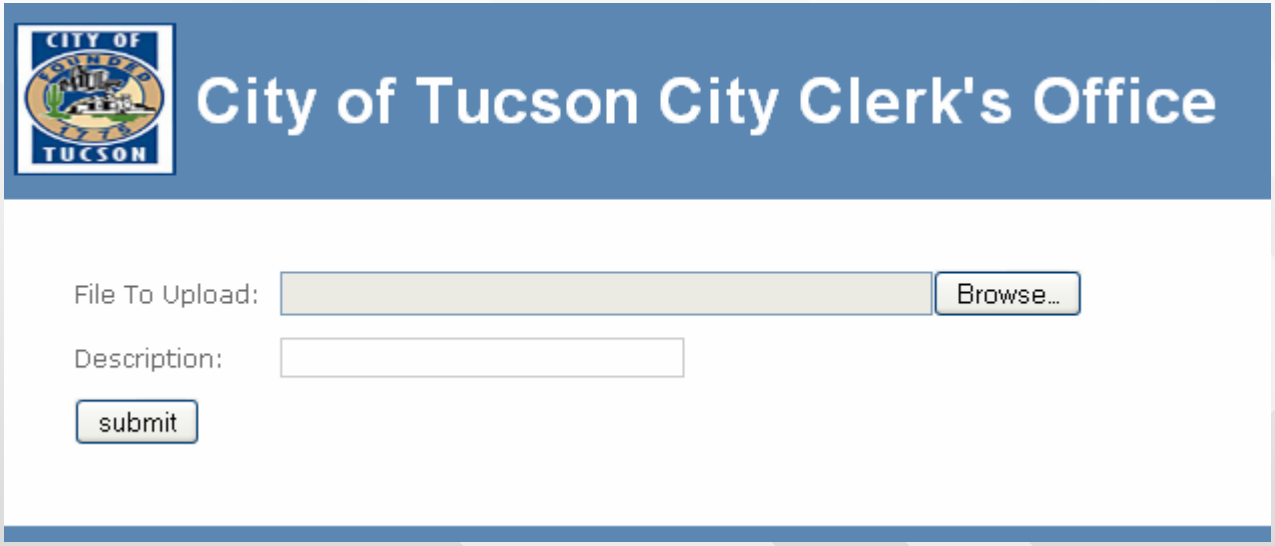
View Images

Security Seals:

	Seal Number	Seal Description	Seal Attached By
Edit | Delete	123456	Red Plastic	ppennin1

Add New Security Seal

Images


City of Tucson City Clerk's Office
File To Upload:
Browse...
Description:
submit

Images

City of Tucson City Clerk's Office

Photo	Description
	Security Cage

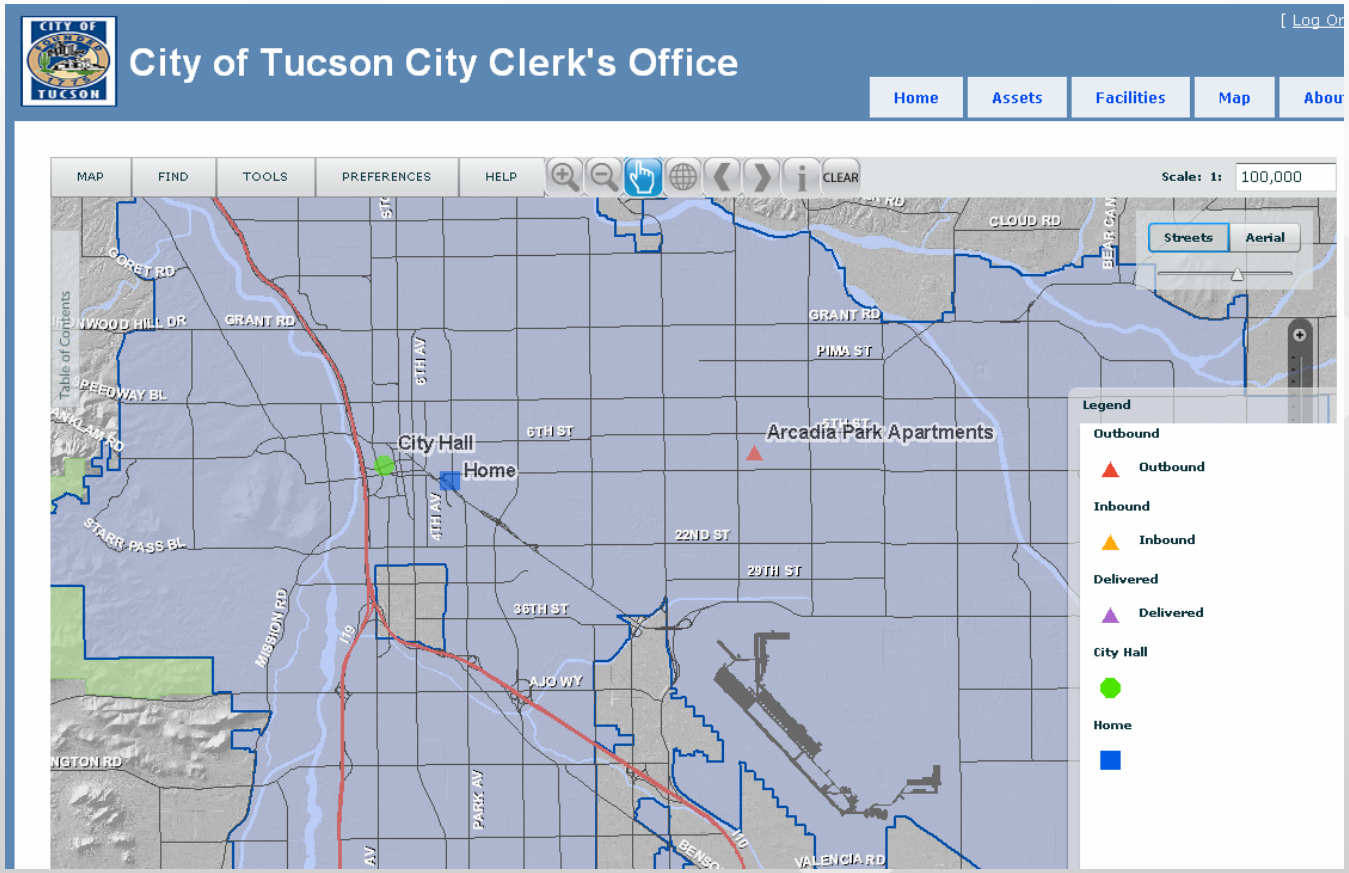
Mobile Device

- An image of the mobile view of the web site is shown below using the mobile device emulation tool I found that effortlessly enables you to see how your web site looks on many different kinds of mobile devices.

Smart Phone View

- The mobile application updates the location of the security cages on the web server. The GIS division links to a summarized view in the database of the security cage action and location, and plots points based on the facility location selected which then displays it on the map using the Flex Application Programming Interface (API) for ArcGIS Server

The Map


City of Tucson City Clerk's Office
Home
Assets
Facilities
Map
MAP
FIND
TOOLS
PREFERENCES
HELP
CLEAR
Scale: 1: 100,000
Streets
Aerial
Table of Contents
City Hall
Home
Arcadia Park Apartments
GRANT RD
CLOUD RD
PIMA ST
6TH ST
22ND ST
29TH ST
36TH ST
AJO WY
STARR PASS BL
MISSION RD
PARK AV
VALENCIA RD
Legend
Outbound
Outbound
Inbound
Inbound
Delivered
Delivered
City Hall
Home

The Map

- The map is embedded in my solution with an iFrame and is independently managed by the GIS Division. It consists of an XY event layer with a definition query for each location status (Outbound, Inbound, Delivered, City Hall and Home). As the location status for each cage is changed by the mobile application, the map also updates by changing the cages displayed location and symbol. This allows users back at the office with desktop computers to graphically view the location and status of all the security cages on Election Day. A view of the map is shown below.

Conclusion

- The project was a great research and development tool that enabled our office to explore GIS possibilities.
- ESRI has these kinds of grants available annually. For example, this year's grant involves ArcLogistics. Please see:
- http://www.esri.com/grants/esri/government.html

References

MVC Framework	http://www.microsoft.com/downloads/details.aspx?FamilyID=53289097-73ce-43bf-b6a6-35e00103cb4b&displaylang=en
How to use the MVC Framework	http://www.asp.net/learn/mvc/?lang=cs
Windows Mobile SDK	http://www.microsoft.com/downloads/details.aspx?FamilyID=20686a1d-97a8-4f80-bc6a-ae010e085a6e&displaylang=en
How to use the Windows Mobile SDK	http://www.lancelhoff.com/how-to-emulate-windows-mobile-6/
How to incorporate a Mobile View in the MVC Framework	http://videos.visitmix.com/MIX09/T20F