

Using ArcGIS Server, Blackberry, and the FlexViewer to Combat Graffiti



Outline

- Background Information
- Definition of Terms / Types of Graffiti
- Developing the Application
- Collecting Data
- Viewing Data Collected
- Prosecuting Offenders / Removing Graffiti

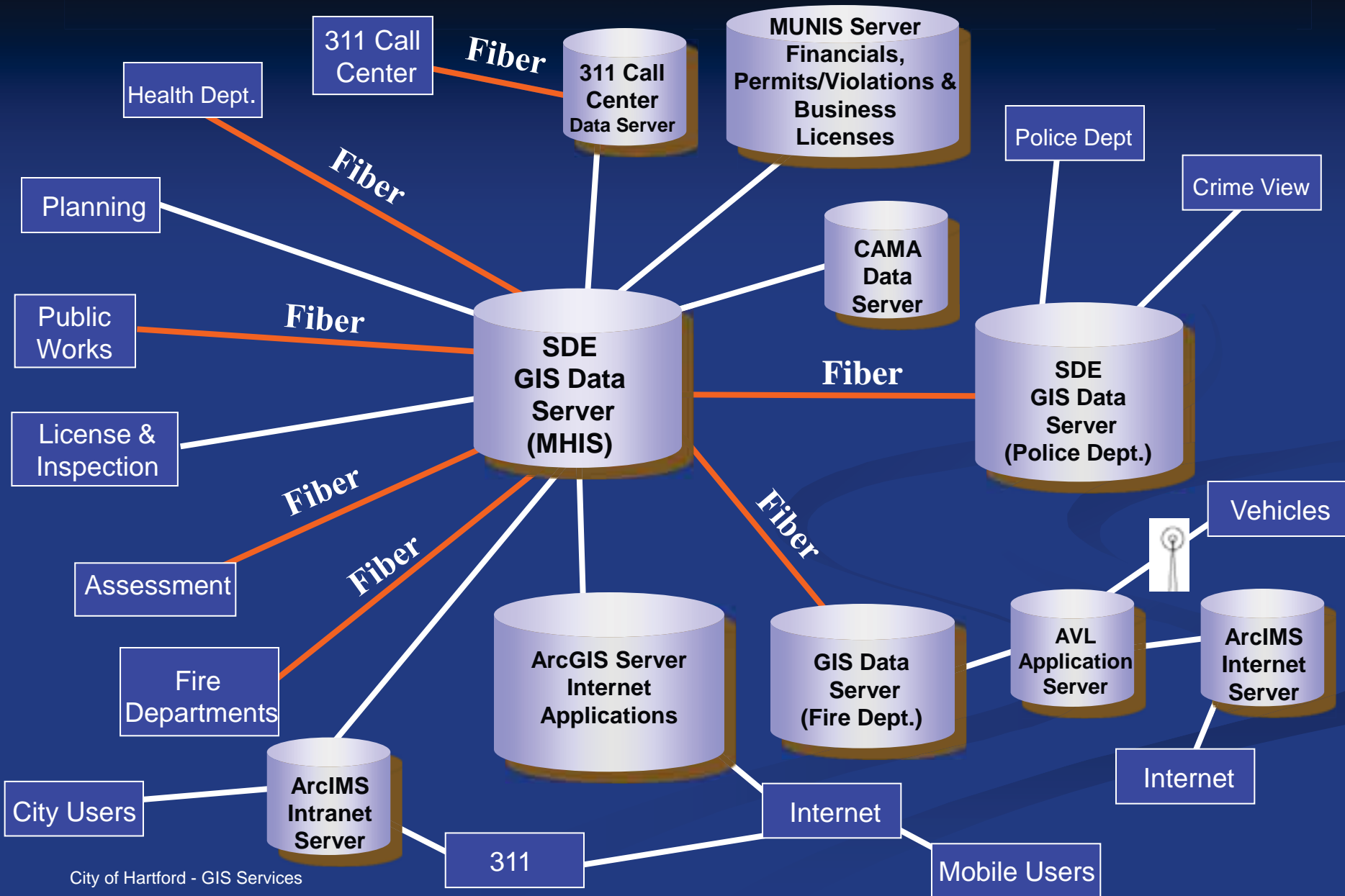
Where we are From



Background Information

- 18 Square Miles
- Population 125,000 night time & 450,000 Daytime
- Thirteen Different Neighborhoods
- In the Summer 2010 the Mayor announced an initiative to reduce the amount of graffiti in the City
- Specialized Assignment to Major Crimes Division

City of Hartford GIS Network Infrastructure



Definition of Terms

- Tag - Graffiti Vandal's Unique Name or Symbol
- Bomb – More Detailed Tag
- Piece – Detailed Tag Usually Multiple Colors
- Tagging / Bombing – Slang for Spraying Graffiti
- Crew – Group of Graffiti Vandals

Types of Graffiti

Tag



Types of Graffiti cont...

Bomb



Types of Graffiti cont...

Piece



Types of Graffiti cont...

Crew



Developing the Application

Hardware / Software Used

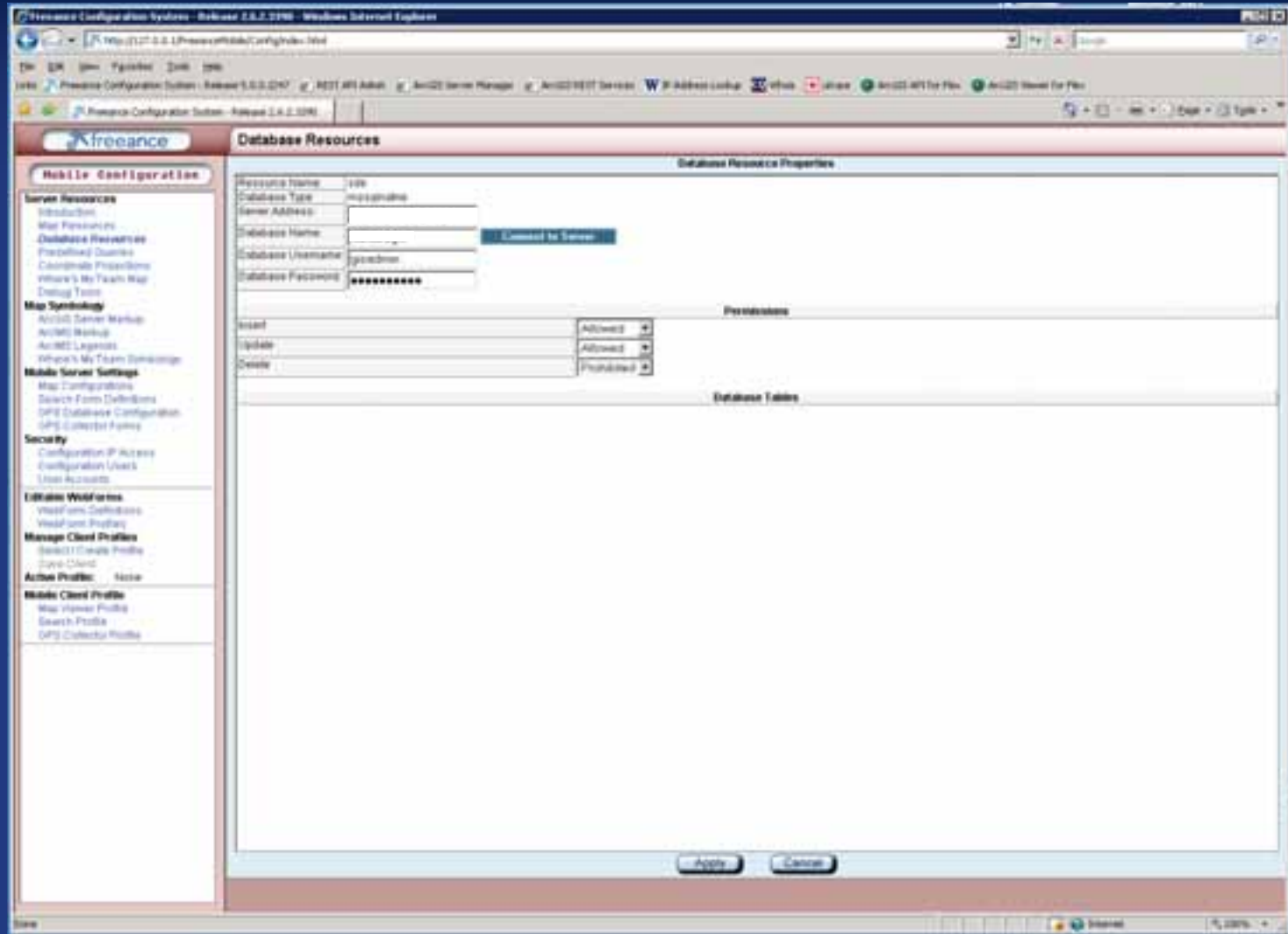
- Blackberry Bold 9650
- Freeance Mobile v2.6.2
- ArcGIS Server
- SDE Database
- SQL Server 2005

Developing the Application cont...

- Freeance Mobile Uses ArcGIS Server
- Use Either PostGreSQL or SQL Server Database
- Create a Table in SQL Server with an ObjectID Field
- Use Identity Property in SQL Server to increment ObjectID
- Create Additional Fields as Needed for Data Capture
- Security is Managed at the Firewall

Developing the Application cont...

Connect Freance Mobile to SDE



Developing the Application cont...

Define GPS Database Configuration

The screenshot displays the 'GPS Collection Properties' window in the Fresance Configuration System. The window is titled 'GPS Collection Properties' and shows the configuration for a collection labeled 'GPS Pictures'. The 'Database Resource' is set to 'gis'. The 'Table' is 'HTED_GRAFFITI_DATA_COLLECTION'. The 'Input Fields' section lists various fields with their corresponding database column names and data types.

Field Label	Column Name	Not Null
DeviceID	BlackBerry_Pis	false
PhoneNumber	BlackBerryPhoneNumber	false
UserName	Tagger	false
RECORD_LOCKED	Not Used	false
RECORD_TIMESTAMP	Timestamp_when_record_is_made	false
GPS_LAT	Latitude	false
GPS_LON	Longitude	false
GPS_SATCOUNT	GPS_SATCOUNT	false
GPS_HOOP	Not Used	false
GPS_HORIZACCURACY	GPS_HORIZACCURACY	false
GPS_TIMESTAMP	Timestamp_of_GPS_Location	false
CollectionName	Not Used	false
FORM_Tag	TagName	false
FORM_Draw	CrimeName	false
FORM_Plane	Plane	false
FORM_Out	Description	false
FORM_Address	Address	false
FORM_Town	Town	false
FORM_State	State	false
FORM_Phone	PhoneNumber	false
FORM_Alt	Alt	false
FORM_Acc	Acc	false
FORM_Photo	Photo	false

Buttons at the bottom of the window include 'Add Field', 'Apply', and 'Cancel'.

Developing the Application cont...

Define GPS Collector Form

Fireeance Configuration System - Release 2.4.1.2390 - Windows Internet Explorer

http://217.8.0.1/FireeanceWeb/ConfigIndex.asp

Fireeance Configuration System - Release 2.4.1.2390

GPS Collector Form Definitions

GPS Collector Form Properties

Form Name: Graffiti Locations

Collection Name: Graffiti Pictures

Database Name: GIS

Table: HTDC_GRAFFITI_DATA_COLLECTION

Active Interval: 0 seconds (Set to 0 if desired, otherwise)

Map GPS on Record Save: Continue Running GPS

Field Name	Input Label	Input Type	Max Size	Default Value	Percent on Save	List Values	Field Order
Tag	Tag	Text	1024		<input type="checkbox"/>	<input type="checkbox"/>	<input type="button" value="Down"/>
Crew	Crew	Text	1024		<input type="checkbox"/>	<input type="checkbox"/>	<input type="button" value="Down"/>
Name	Name	Text	1024		<input type="checkbox"/>	<input type="checkbox"/>	<input type="button" value="Down"/>
DOB	DOB	Text	768		<input type="checkbox"/>	<input type="checkbox"/>	<input type="button" value="Down"/>
Address	Address	Text	1024		<input type="checkbox"/>	<input type="checkbox"/>	<input type="button" value="Down"/>
Town	Town	Text	1024		<input type="checkbox"/>	<input type="checkbox"/>	<input type="button" value="Down"/>
State	State	Text	1024		<input type="checkbox"/>	<input type="checkbox"/>	<input type="button" value="Down"/>
Phone	Phone	Phone	1024		<input type="checkbox"/>	<input type="checkbox"/>	<input type="button" value="Down"/>
AFD	AFD	Text	1024		<input type="checkbox"/>	<input type="checkbox"/>	<input type="button" value="Down"/>
AFD	afid	Text	1024		<input type="checkbox"/>	<input type="checkbox"/>	<input type="button" value="Down"/>
Photo	Photo	Picture	1024		<input type="checkbox"/>	<input type="checkbox"/>	<input type="button" value="Down"/>

Developing the Application cont...

Deploying the Application



Collecting Data

Blackberry Bold 9650



Collecting Data cont...

Blackberry Bold 9650



Collecting Data cont...

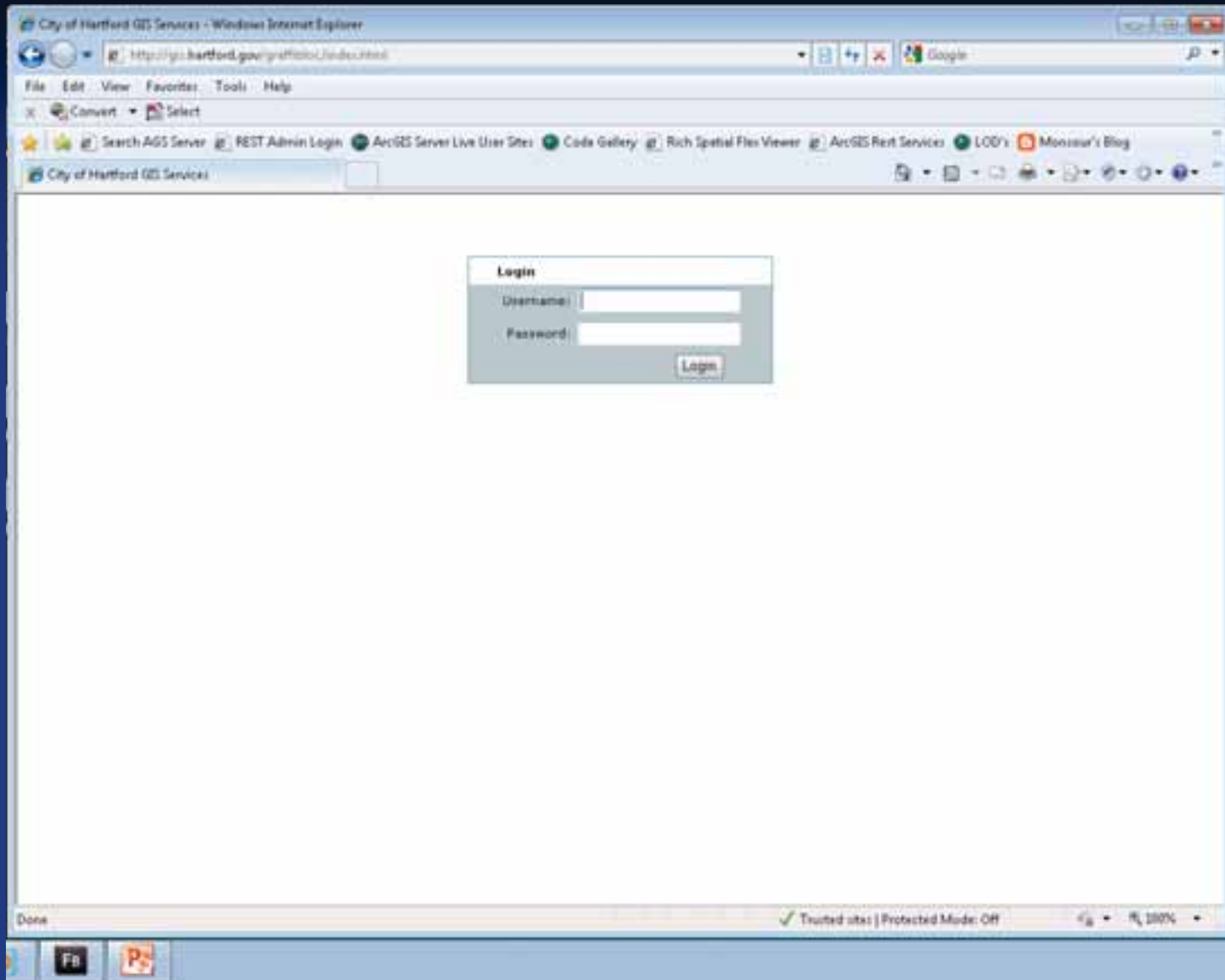
When a Record is Saved

- Attributes are Written to SQL Table Using the Internet
- Time is Stored as GMT
- Image Name is Written to the SQL Table
- Image is Uploaded Using the Internet to ArcGIS Server
- Use SQL Trigger to Populate with Server Time
- Use SQL Trigger to Create a Hyperlink Field

Viewing Data Collected

- Create a ArcMap Document
- Set Projection to be GCS_WGS_1984
- Add Points as XY Event Theme Using Lat Long Fields
- Create ArcMap Document to be used as Basemap
- Publish both Map Documents as Map Services
- Create ArcGIS Flexviewer Project to Display Information
- Secured Using HTML Wrapper and Proxy Page

Viewing Data Collected cont...



Viewing Data Collected cont...

The screenshot shows a web browser window displaying a GIS application titled "City of Hartford GIS Services". The browser's address bar shows the URL <http://gis.hartford.gov/graffitiloc/index.html>. The application interface includes a top navigation bar with the "City of Hartford GIS Services" logo and a "Current Action: Identify" dropdown. The main map area displays a street map of Hartford, CT, with several green lines representing graffiti locations. A scale bar in the bottom left corner indicates 3 km and 2 mi. On the right side, there are three interactive panels: "Identify", "Search", and "Search By Date".

Identify Panel: This panel provides instructions: "Use the identify tool to select the Camera icons on the map to show information associated with the Graffiti. Put your mouse on the text to open a dialog box with the Picture of the Graffiti:". It includes two camera icons for selection.

Search Panel: This panel allows searching by tag name. It features a "Search Layer:" dropdown menu set to "Tag Name". The instructions state: "Search by Tag Name [Example: minis] Enter minis to return all of the Tag Names that contain minis. Once the Tag Names are displayed you can Put your mouse on the text to open a dialog box with the Picture of the Graffiti:". It includes a search input field, a "Search" button, and a "Clear" button.

Search By Date Panel: This panel allows searching by date range. The instructions state: "Search by begining and ending date Once the Names are displayed you can Put your mouse on the text to open a dialog box with the Picture of the Graffiti:". It includes input fields for "Beginning Date" and "Ending Date", a "Search" button, and a "Clear" button.

Viewing Data Collected cont...

The screenshot shows a web browser window displaying a GIS application for the City of Hartford. The browser's address bar shows the URL <http://gis.hartford.gov/graffiti/index.html>. The application interface includes a toolbar with various navigation and tool icons. A map of Hartford, CT, is displayed, showing streets such as Capitol Av, Arbor St, Orange St, Cherry St, and Hazel St. A red circle highlights a specific graffiti location on the map. Two pop-up windows are visible:

- Identify**: A window showing metadata for the selected graffiti location.
 - Graffiti Data Collection
 - X & Y: 1,013,836.10, 837,831.27
 - Tag Name: OMEGA
 - Crew Name:
 - Name:
 - Date Of Birth:
 - Address:
 - Team:
 - State:
 - Phone Number:
- Graffiti Data Collection**: A window showing a photo of the graffiti and its metadata.
 - Graffiti Data Collection
 - X & Y: 1,013,836.10, 837,831.27
 - Tag Name: OMEGA
 - Crew Name:
 - Name:
 - Date Of Birth:
 - Address:
 - Team:
 - State:
 - Phone Number:
 - 461
 - KID:
 - 465
 - Mail:
 - Phone: 843212562-1283364100735299
 - Photo Date: 9/1/2010 2:01:38 PM

The bottom of the browser window shows the status bar with "Internet | Protected Mode: Off" and a zoom level of 100%.

Prosecuting Offenders

- Statute of Limitations for Misdemeanor is 1 Year
 - Property Damage Under \$1,500
- Statute of Limitations for Felony is 5 Years
 - Property Damage Greater than \$1,500
- Simple Description of the Application Included in the Warrant
- Pictures of Graffiti and Map are Provided to the Court
- Cases are Prosecuted in the Hartford Community Court
- Vandals Sentenced to Restitution, Community Service and/or Jail

Removing Graffiti

- City Contracts for Removal with Knox Park Foundation
- Cost for Removal – (rate \$45 per hour)
 - Street Sign - \$45
 - Utility Box - \$70
 - Building Exterior Wall - \$1,500
 - Bridge or Overpass - \$1,500
 - Railroad Tunnel - \$2,500

Note: Costs are Approximate.

Questions ?



Brett Flodine, GISP
bflodine@hartford.gov
Detective Renee LaMark-Muir
lamar001@hartford.gov