

# ***Mobile GIS in Emergency Response: Technology Primer and Case Study***

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**Environmental Science Services, Inc.**

**OSPR/Chevron Oil Spill Response Technology Workshop**

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# Environmental Science Services, Inc. (Es<sup>2</sup>)

- Registered engineering firm in the State of Louisiana, Established in 1996.
- Provides a wide range of environmental consulting and science support services for industry and government.
- Specializing in current and accurate map-based applications and geodatabases to meet today's environmental challenges.
- Two full-time GIS Professionals (GISP) on-staff.
- Over 20 years of spill response experience.





# GIS Platform for Emergency Response

## Web Common Operating Picture (COP)

Incident Management  
Situational Awareness  
Interagency Viewing



## Mobile

Field Data Collection  
Connected / Disconnected  
Real-Time Updates  
Windows Mobile, iOS, Android



## Desktop

Planning  
Analysis  
Data Management  
QA/QC



On Premise

In the Cloud

## Online Data

Basemaps  
Meteorological  
Background data



## GIS Server

Enterprise GIS Data  
Web Services  
Dynamic Sensor Data (AIS, vehicles tracking, etc.)



# GIS Platform for Emergency Response

- **Connected** – Real-Time updates from the field to the command center.
- **Rapid** – Deploy in days, not weeks or months.
- **Hosted (Cloud-Based)** – Secured in a state of the art facility. Data is sequestered and only available to authorized users.
- **Enterprise Class** – Built on industry standard platforms including ESRI ArcGIS Server and Microsoft SQL Server database.
- **Flexible** – Scale up & scale down projects.
- **Cost Effective** – You control the cost.





# Mobile GIS for Emergency Response

- **Connected** – Upload data from the mobile device to the server in real-time. Ability to cache the data when disconnected.
- **Rapid** – Mobile device downloads the project and data from the server. No pre-loaded data required.
- **Hosted (Cloud-Based)** – When connected, all data is instantly transmitted to the server. If the device is lost, the data is safe.
- **Enterprise Class** – Powerful mobile applications built on the ESRI platform.
- **Flexible** – Mobile device for all needs: Trimble, Android, iOS.
- **Cost Effective** – Ability to utilize existing mobile devices.



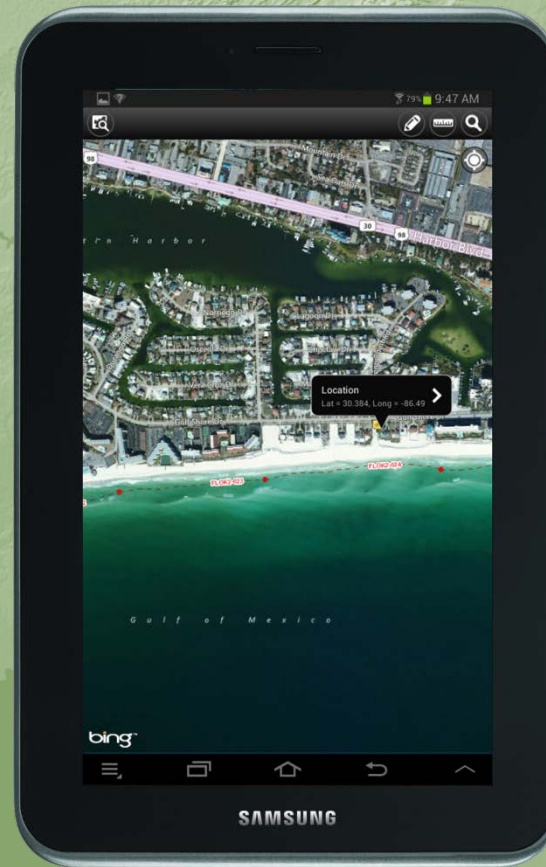
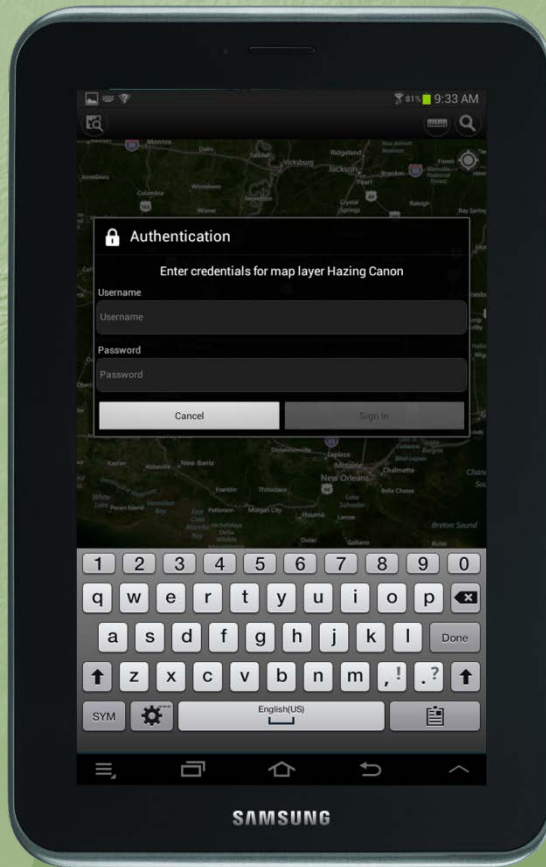


# Mobile GIS – Trimble Juno

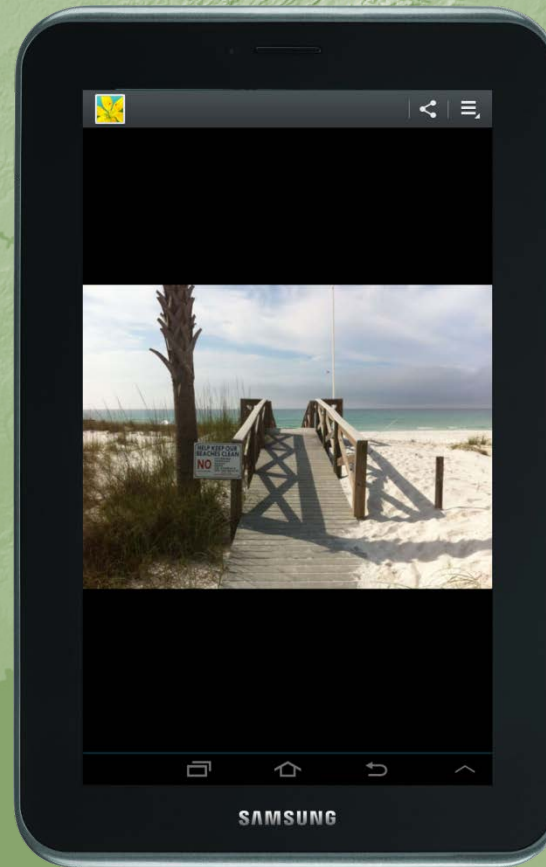
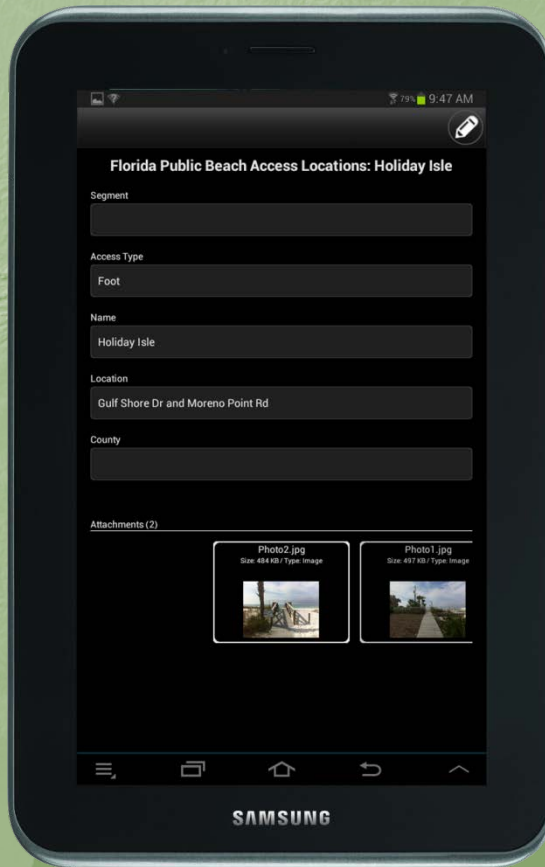




# Mobile GIS – Android Tablet

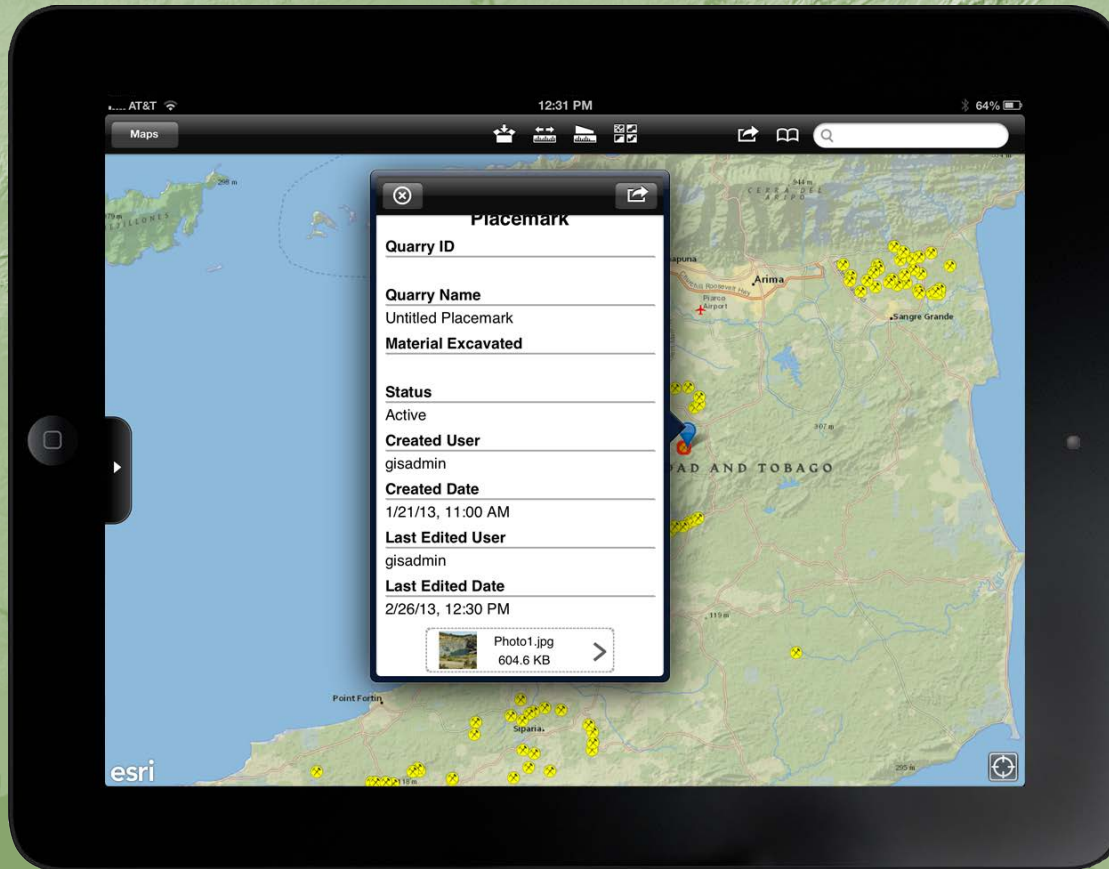


# Mobile GIS – Android Tablet

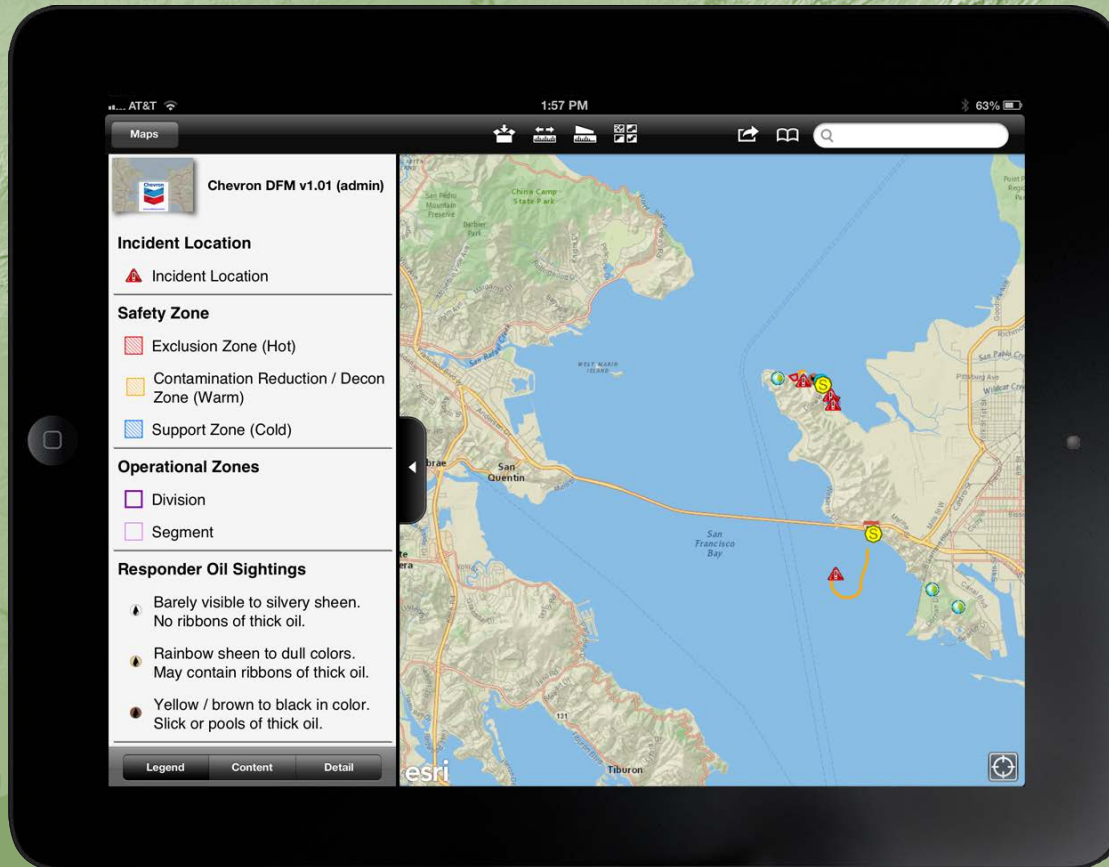




# Mobile GIS – iPad

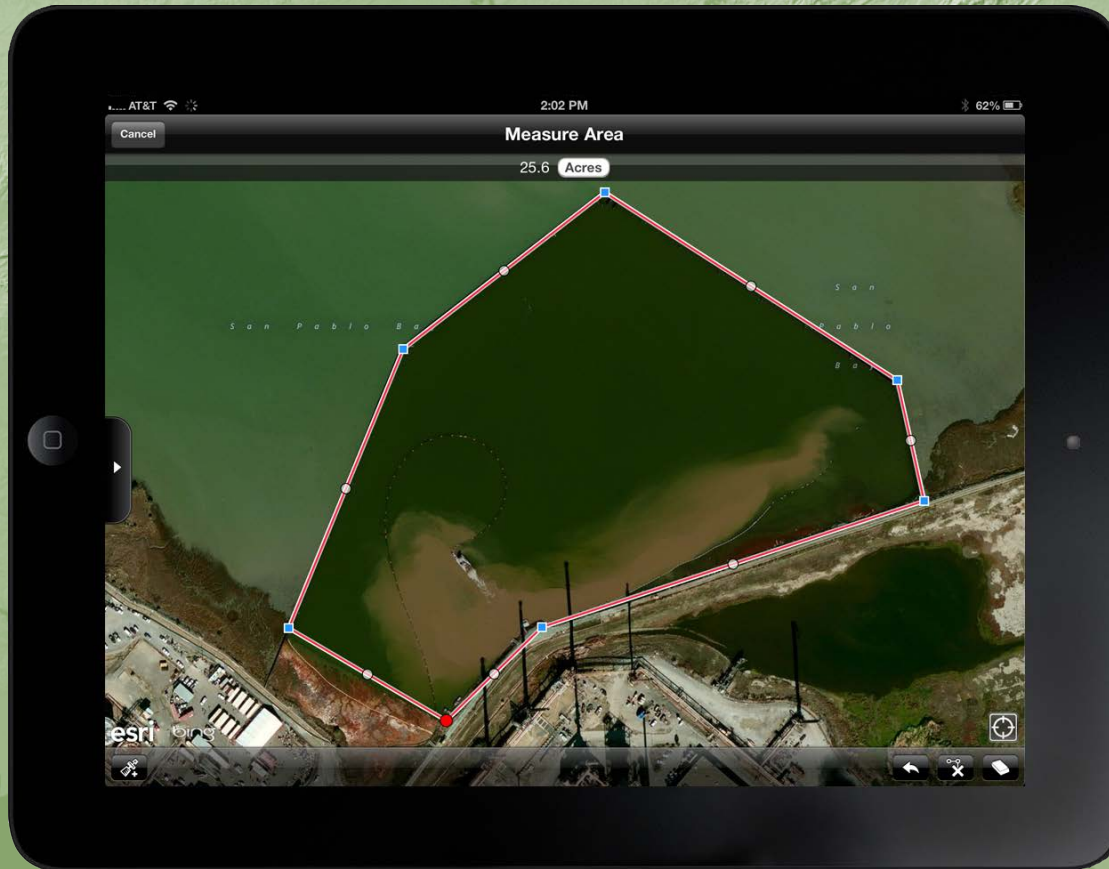


# Mobile GIS – iPad





# Mobile GIS – iPad



## Web GIS for Common Operating Picture (COP)

- **Real Time** – Display data as it is collected.
- **Secure** – Assign security based on user roles.
- **Customizable** – Display as much or as little data as desired.
- **Powerful** – Perform GIS display and analysis on the web.
- **Flexible** – Windows and Macintosh compatible.
- **Cost Effective** – No client software required.





# COP Web Application

Chevron Shipping Company  
Dynamic Field Mapping

webmaps.es2-inc.com/flexviewers/dfm\_chevron/

Sign In

Please sign in to access dfm\_fs/Group\_Wildlife on webmaps.es2-inc.com:6080

Username

Password

Your password will be sent unencrypted.

OK Cancel

Esri





# COP Web Application

The screenshot displays the COP Web Application interface within a browser window. The browser's address bar shows the URL `webmaps.es2-inc.com/flexviewers/dfm_chevron/`. The page header includes the Chevron Shipping Company logo and the text "Dynamic Field Mapping".

The interface features a map of San Francisco Bay with several toolbars and pop-up windows:

- Layer List:** A panel on the left showing layer visibility options for "USGS Global Tide Stations", "Area Contingency Plans GIS Data", and "ERMA GIS Data".
- Edit:** A central pop-up window titled "Edit" with the heading "Select template to create feature". It lists three templates: "temporary storage", "Boom" (checked), and "containment". Below these are "sorberent" and "Wildlife Observation" (checked) options, along with various editing icons.
- Attributes:** A pop-up window titled "Attributes" for a selected feature. It contains the following fields:
  - Boom Type: `containment` (dropdown)
  - Size: `18"` (dropdown)
  - Section Length: `50'` (dropdown)
  - Number of Boom Sections: `1` (input field)
  - Comments: A text area.
  - Added By: (empty)
  - Date Added: (empty)
  - Edited By: (empty)Buttons for "Delete" and "OK" are at the bottom.

The map shows San Pablo Bay to the north and San Francisco Bay to the south. A scale bar in the bottom left indicates 1 mile. The bottom right corner contains the Esri logo and a list of data sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, iPC, NRCAN, Esri Japan, METI, Esri China (Beijing), Esri (Thailand), Swisstopo, and TomTom. The Esri logo is also present in the bottom right corner of the overall image.





# COP Web Application

Attributes Table

Oil Distribution	Oil Band Width	Oil Thickness	Oiling Category	Area (square meters)	Perimeter (meters)
Patchy (11 - 50%)	Medium (3m - 16m)	Coat (0.01cm - 0.1cm)	Moderate	908.1237446513205	201.77037741650387
Patchy (11 - 50%)	Medium (3m - 16m)	Coat (0.01cm - 0.1cm)	Moderate	165.7758919273845	67.30314054314844
Spontic (1 - 10%)	Medium (3m - 16m)	Coat (0.01cm - 0.1cm)	Light	223.99216251608192	68.94434241064323
Spontic (1 - 10%)	Medium (3m - 16m)	Coat (0.01cm - 0.1cm)	Light	806.6952433941883	154.4565652294715
Trace (1%)	Medium (3m - 16m)	Stain or Film (0.01cm)	Very Light	2504.2976927961885	463.802058652052596
Distrib (11 - 50%)	Narrow (0.5m - 2m)	Coat (0.01cm - 0.1cm)	Light	261.07426756862733	71.84878186418666





# COP Web Application

Chevron Shipping | Dynamic Field Maps | DWH Eastern States | webmaps.es2-inc.com/flexviewers/dwh\_scat/

DWH Eastern States  
SCAT Segments & Logistics

Search for Segment or Beach Access

Search layer: SCAT Segment

Search for Segment

FLOK2-031

Search Clear

MSHR1 MSHR2 MSHR3 MSHR4 MSHR5 MSJK1 MSJK2 MSJK3 MSJK4 ALM01 ALM02 ALM03 ALBA1 ALBA2 ALBA3 ALBA4 FLES1 FLES2 FLES3 FLOK1 FLOK2 FLWA1 FLWA2 FLBA1 FLBA2 FLBA3 FLG01 FLG02 FLG03 FLFK1 FLFK2 FLFK3 FLFK4 FLWK1 FLWK2

Es<sup>2</sup>

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# COP Web Application

The screenshot displays a web browser window with the URL `webmaps.es2-inc.com/flexviewers/dwh_scat/`. The application title is "DWH Eastern States" with the subtitle "SCAT Segments & Logistics". The main map area shows an aerial view of a coastline with a red line segment labeled "FLOK2-031". A search panel on the left is titled "Search for Segment or Beach Access" and shows "Features selected: 1" with details for "FLOK2-031" and "Length (m): 502.11599423". A popup window over the red line also displays "FLOK2-031" and "Length (m): 502.11599423" with a "Zoom to" button. The bottom left corner features the Es<sup>2</sup> logo and a scale bar. The bottom right corner contains the text "POWERED BY esri" and copyright information: "© 2013 Microsoft Corporation, © 2010 NAVTEQ, © AIG".





## Any Questions or Comments?

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