



Leveraging Geospatial Technologies for Analysis, Decision Support, and Information Dissemination for Natural Disasters and Hazards

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Why Web-based Geospatial Technologies?

- **Integration of disparate databases that cannot normally "talk" to each other**
 - Flexible
 - Fast
 - Easily expandable
 - Open
- **Data Dissemination**
- **Modeling**
- **Collaboration**
- **Analytical**
 - Proximity Analysis
 - Performance Monitoring
 - Metrics Analysis
- **Enhanced Management by Exception**
 - Automated alerts
- **Real-time information**
 - Weather
 - Traffic
 - Sensors
 - Asset location



Fixed and Mobile Asset Management -- Web-based Geospatial Technologies

- Allows analysis beyond simply showing “dots on a map”
- Relate shipments/vehicles with other shipments (GPS, RFID), fixed assets, infrastructure
- Relate shipments with high risk features/zones, weather, traffic, construction
- Optimize routing of shipment movements



Example Geospatial Application - IRRIS

- Developed as a data integration, data sharing tool to help deal with variety of disparate datasets in an agency and across agencies.
- Focus is on Asset Tracking and Asset Intelligence
IRRIS tracks assets globally on road, rail, and ocean.
IRRIS also reports on asset utilization.
- Went into production in 1999
- Includes variety of real-time feeds including weather, camera feeds, traffic conditions.
- Has over 400 layers of infrastructure, environmental data, real time feeds, etc.
- Default logistics geospatial portal for US DOD, FEMA



IRRIS - Capability

- Role based, secure access
- Highly secure
- Robust mapping
- Map markup and annotation
- Map and query saving, sharing
- Cargo & Vehicle tracking
- Fixed Asset Status tracking/reporting
- Integrated Charting and data analysis
- PDA support for mapping, alerting, and query

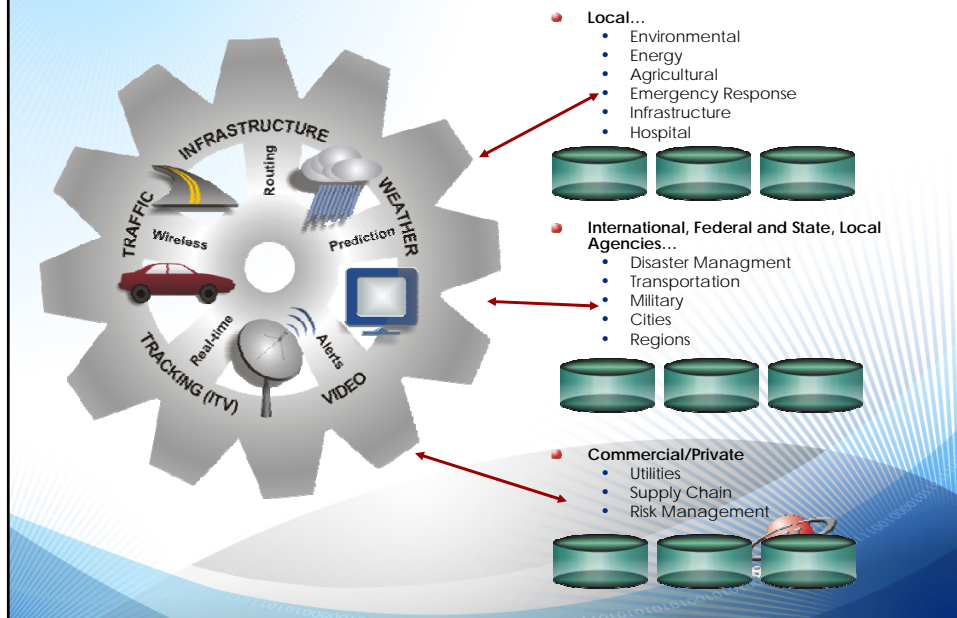


IRRIS - Capability

- Dynamic Geofencing
- Alert/Notification
- Point-to-Point routing for emergency personnel or evacuation
- Incident generation, reporting, alerting
- Shipment performance monitoring
- HAZMAT Plume modeling
- Advanced geospatial query
- Integrated PowerPoint builder
- Export to PDF, Excel, PowerPoint and other common formats



Multiple Stakeholder Integration Tool



Mobile and Fixed Asset Intelligence



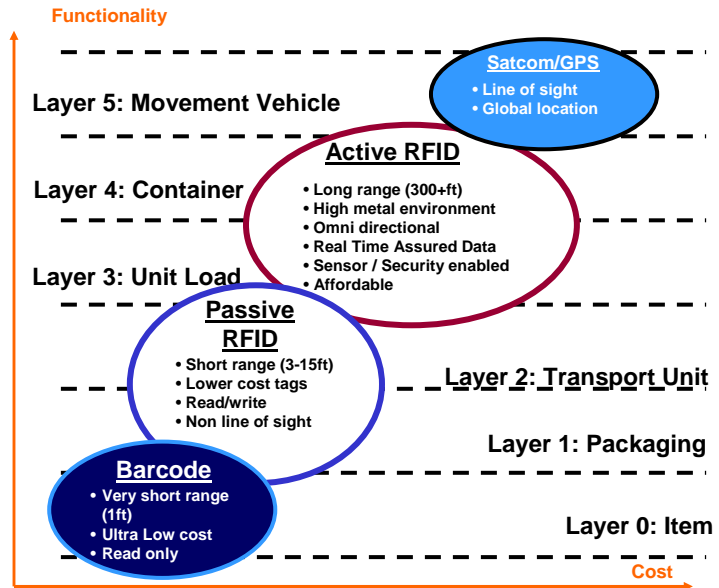
Tracking Requirements for Each Layer

(The Right Technology for Each Conveyance)

ISO has grouped supply chain goods into logistic unit hierarchy

Objects in each layer are handled in differently and have different requirements for each parts of the supply chain

Necessitates different requirements for each layer

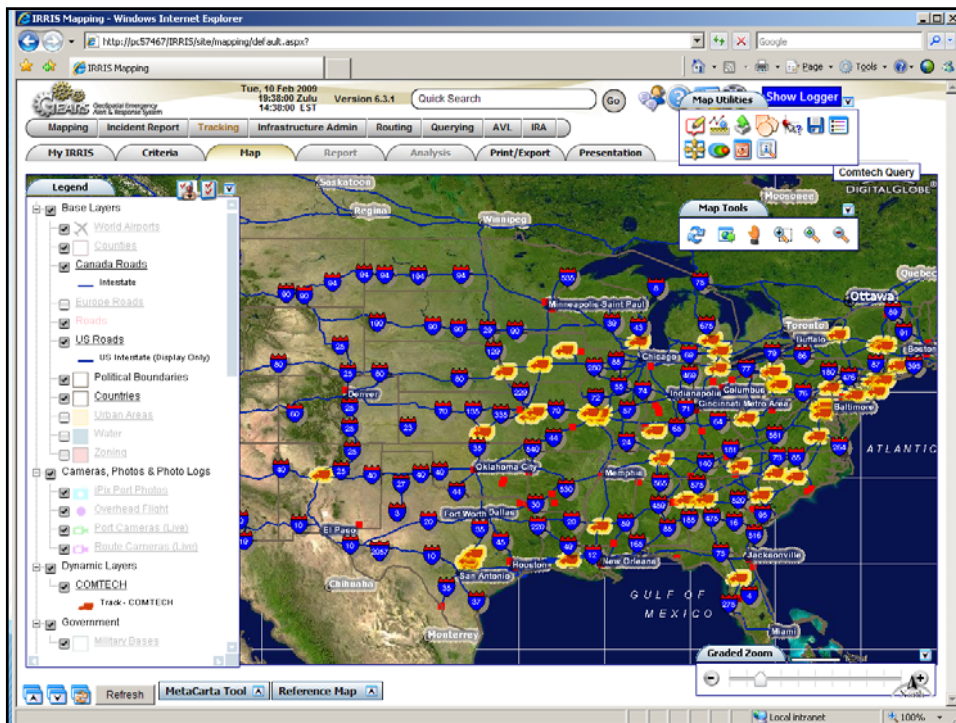


The Right Tracking Tools



Management By Exception

- Profile Sensors for “Normal” operation
- Tracking not “ALL” sensors, but only the ones that are not performing as profiled.
- Sensor data in relation to operational awareness and impact on “Total Asset Visibility and Performance”
- What impacts business processes
 - Slow traffic
 - Temperature, Humidity
 - Unauthorized stops
 - Leaving an area/route
 - Entering an area
 - Height
 - Weight
 - Pressure
 - Capacity
 - Performance
 - Predictive performance- notification of non performing assets



OnAsset Map Viewer - Windows Internet Explorer

http://secure.onasset.com/IRIS/ShowMapping/SAVR_default.aspx

Map Window Mon, 19 Jan 2009 07:53:12 Zulu 2:33:12 EST Version 2.0.0

Data Window Show Logger

Legend

- Base Layers
 - World Airports
 - 1:1100K Rail
 - 100K Rail In Service
 - 1:1100K Rail Abandoned
 - 100K Rail Rail Ferry
- Counties
- Europe Roads
- Mexico Roads
- Roads
- US Roads
- Political Boundaries

Data Detail Window 0000000000000517 | 1/7/2009 2:14:36 PM

View: Data Complete Track Uploaded Files Route Builder Alarm Builder Shipment Info

Tag ID: 0000000000000517
 Latitude: 32.863465999999995
 Insert Time: 2009-01-07T14:36:05-05
 Accel X: 0
 125 Exciter: 5555
 2.4GHz Exciter: 1234123412341234
 Position Report: 240
 Direction: 0
 Temperature: 0
 ATI Beacon RSSI: 0
 External Power Voltage: 0
 Message Date: 01/07/09
 Message Priority: 01
 Device Type Code: 7793
 Field Presence Bit: C358
 Sensor Status Bit: 00000000

Longitude: -96.987765
 Accel Y: 0
 Accel Z: 0
 Wake-up Interval: 105
 Speed: 0
 % Humidity: 0
 Air Pressure: 0
 Battery Voltage: 63
 Light Sensor: 0
 Analog 1: 0
 Message Time: 19:14:34
 Payload Type: P
 Extra Status Bit: 00000000

Temperature: 0
 Humidity: 0
 Accelerometer: 0
 Moving: 0
 Battery: 63
 Ext. Battery: 0
 Light Sensor: 0
 Flight: 0

Summary Report - Windows Internet Explorer

https://iris.geodecisions.com/IRIS/Client/OSAR1/SummaryReport.aspx

Commission for Environmental Cooperation Sun, 31 May 2009 12:26:41 Zulu 18:26:41 EDT

Mapping Incident Report Tracking Infrastructure Admin Routing Querying AVL IIR

My IRIS Criteria Map Report Analysis Print/Export Presentation

Vehicle Monthly Summary Report

Select a Vehicle: REXTON SS YOUNG Select Month Range: From Month: 2009 | May To Month: 2009 | May

Run Report

Vehicle ID: REXTON SS YOUNG Policy Number: +355692072561-isa Ags Asset Type: Car ESN: 011558000752836

Time Range	Distance in Kilometer	Speeding Times(over 90km)	IDLE(over 1min) Times	Hard Braking Times	Move Without Engine on Times
5/2009	1999	122	105	0	0

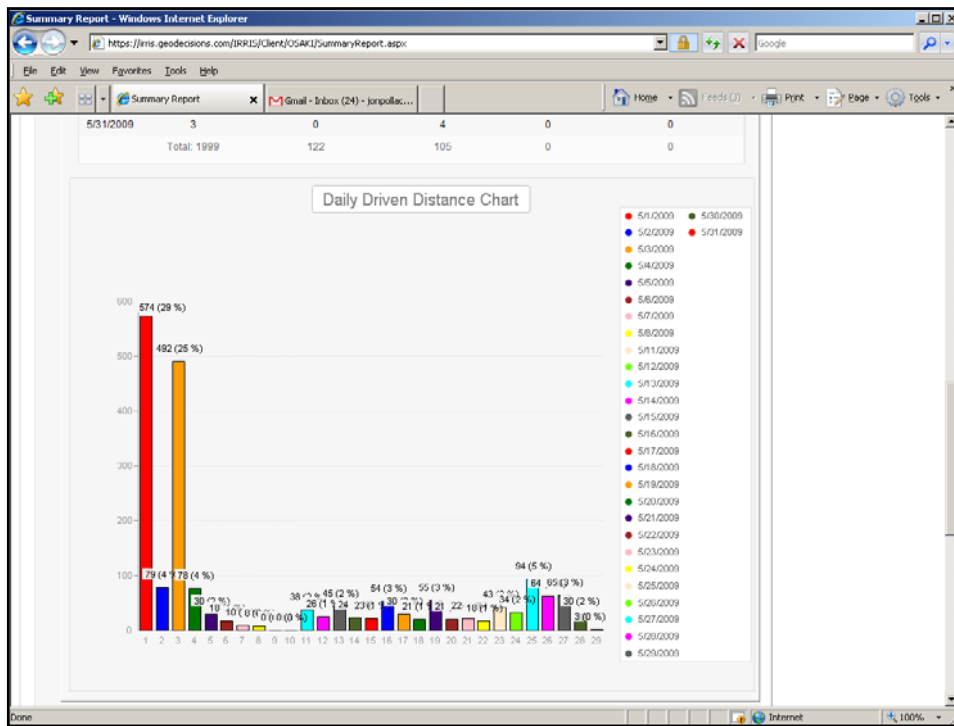
Time Range	Distance in Kilometer	Speeding Times(over 90km)	IDLE(over 1min) Times	Hard Braking Times	Move Without Engine on Times
5/12/2009	574	49	0	0	0
5/2/2009	79	0	0	0	0
5/3/2009	492	54	0	0	0
5/4/2009	78	8	0	0	0
5/5/2009	30	0	0	0	0
5/6/2009	18	0	0	0	0
5/7/2009	10	0	0	0	0
5/8/2009	8	0	0	0	0
5/11/2009	0	0	0	0	0
5/12/2009	0	0	0	0	0
5/13/2009	38	0	0	0	0

IRIS Demo AlertIdle Alert - Message (HTML)

From: IRIS Alerts [mailto:iristech@geodecisions.com] Sent: Mon 6/1/2009 5:31 AM
 To: Wagner, Robert W.; Pylant, John W.; Polack, Jonathan; Fisher, Kelly D.; Xu, Qing ("Sommy"); Arben Cavalli
 Cc:
 Subject: IRIS Demo AlertIdle Alert

The following vehicle has been idling for over 3 minutes:

Vehicle ID: MAN T32
 License Plate: FR8804C
 Asset Type: Truck
 ESN: 011558000750111
 Time: 6/1/2009 11:30 AM
 Speed: 0



IRRIIS - Windows Internet Explorer

https://iris.geodecisions.com/IRRIIS/Default.aspx

Wed, 3 Jun 2009 20:16:43 Zulu 16:16:43 EDT Version 6.3.1

Quick Search

Mapping Incident Report Tracking Infrastructure Admin Routing Querying AVL IRA

Go popups blockers for optimal performance.

My IRRIIS

Open Incidents

Incident Type	Headline	Status
Multiple	Tanker Spill	Under Control
Multiple	Tampico Incident	Open
Multiple	Rail Car Spills Chlorine	Open
Multiple	Train Derailment Closes Old City	Under Control
Multiple	HazMat Train Derailment	Under Control
Multiple	Train Derails then Explosion	Under Control

Alerts

Create new alert

Alert Name	Type
Weather Events for Zip 17112	Weather

Saved Maps

MYRRIS

aberddeen

Edit Map Delete Create as Wallpaper

Saved Tracking Data

Load Last Query Load Last Report

Queries Reports Category: Private

Queries: All Rail HAZMAT

Run Map Load Export Delete

HCP Calendar

June 2009

S	M	T	W	T	F	S
23	1	2	3	4	5	6
24	7	8	9	10	11	12
25	14	15	16	17	18	19
26	21	22	23	24	25	26
27	28	29	30	1	2	3
28	5	6	7	8	9	10

LEGEND: CALENDAR: Today Events; EVENTS LIST: Meeting Holiday Training Exercises

No Events Today

World Map

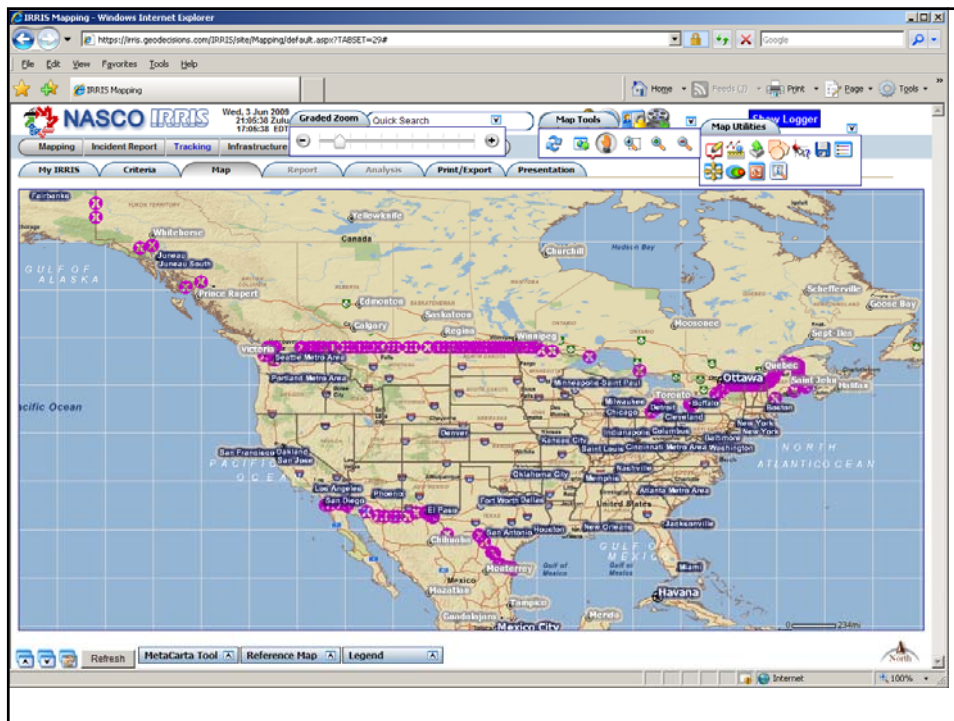
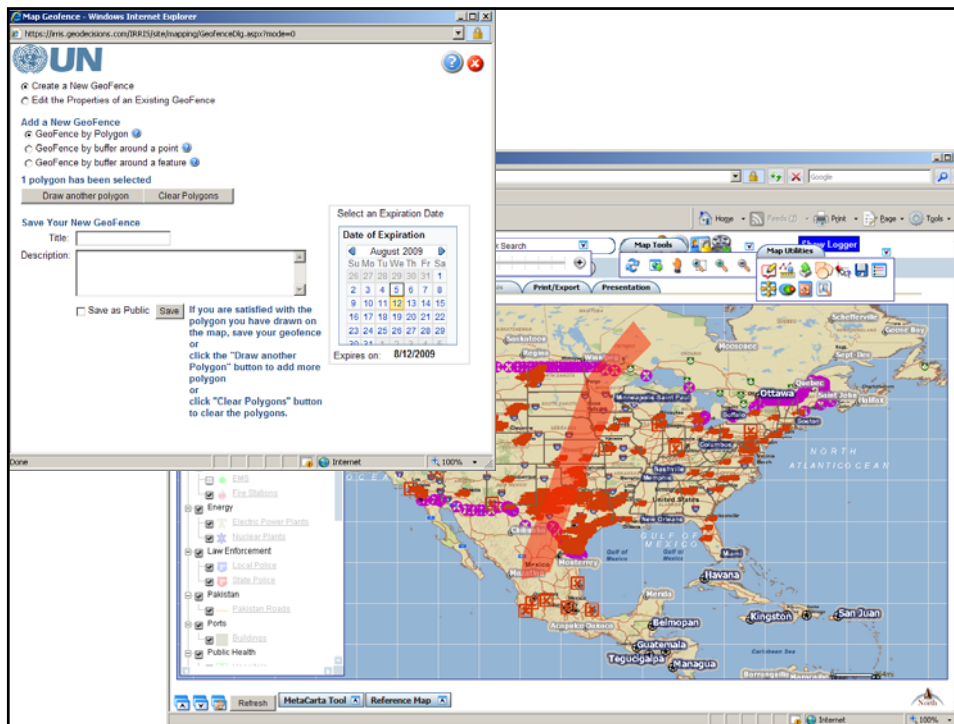
Saved Spatial Query

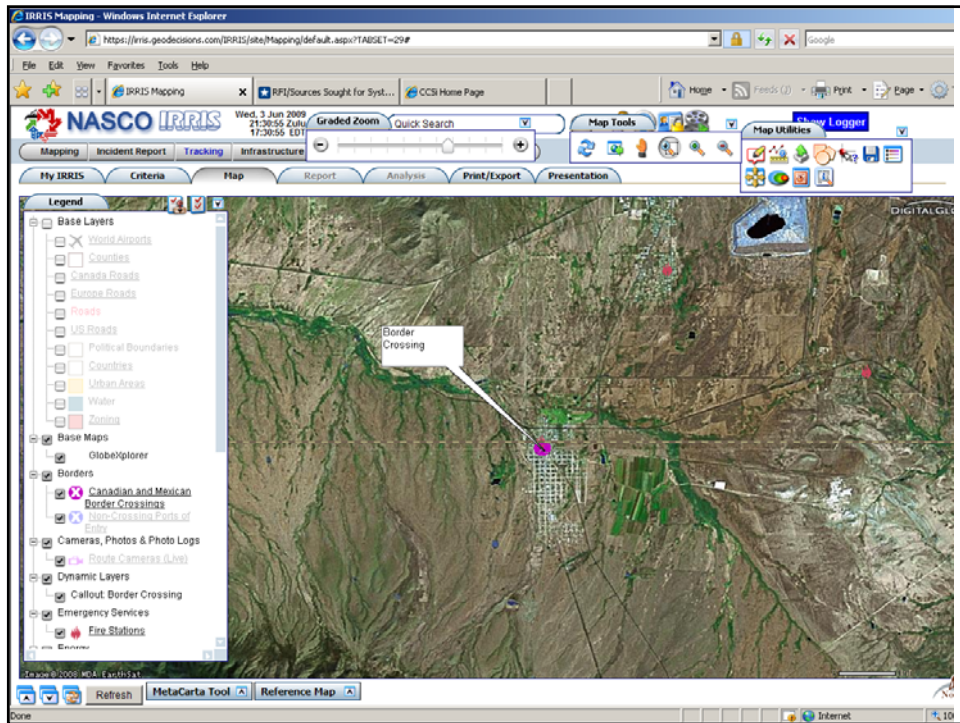
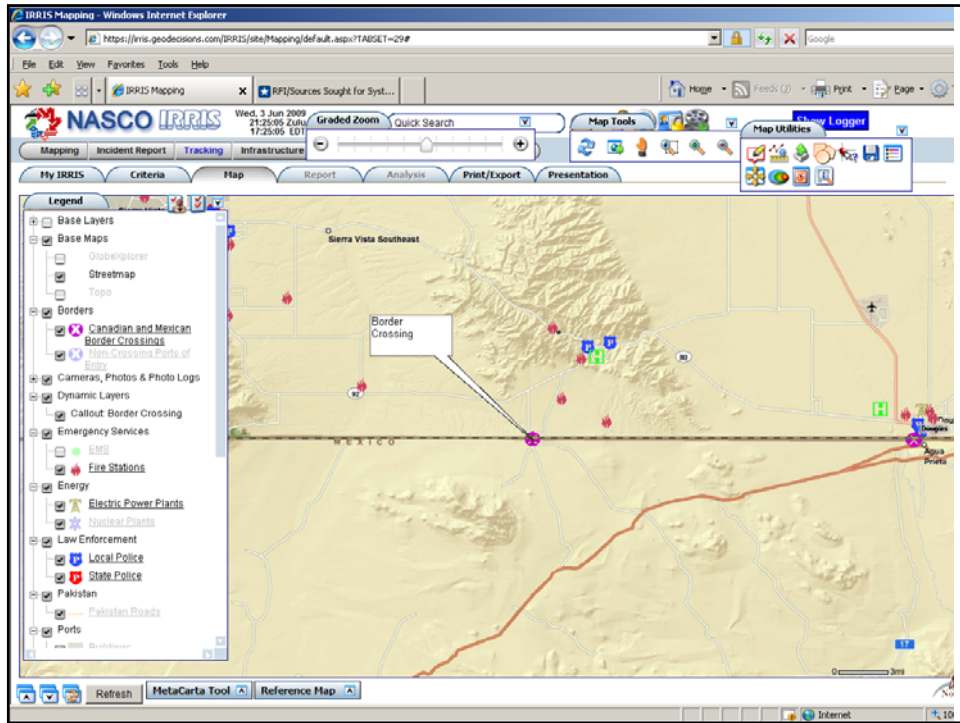
MYRRIS

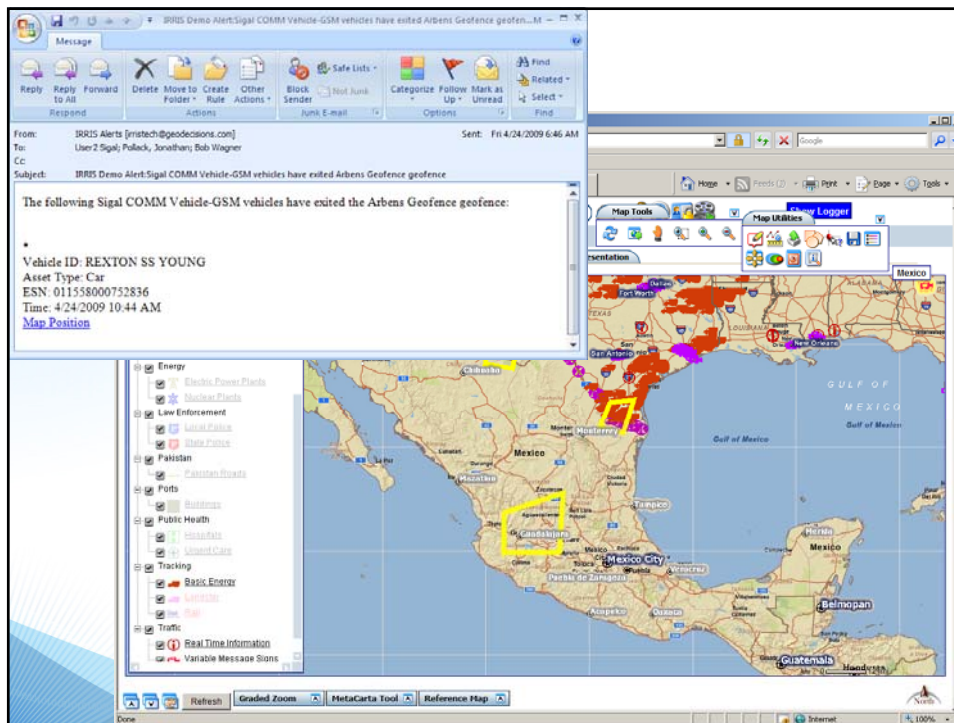
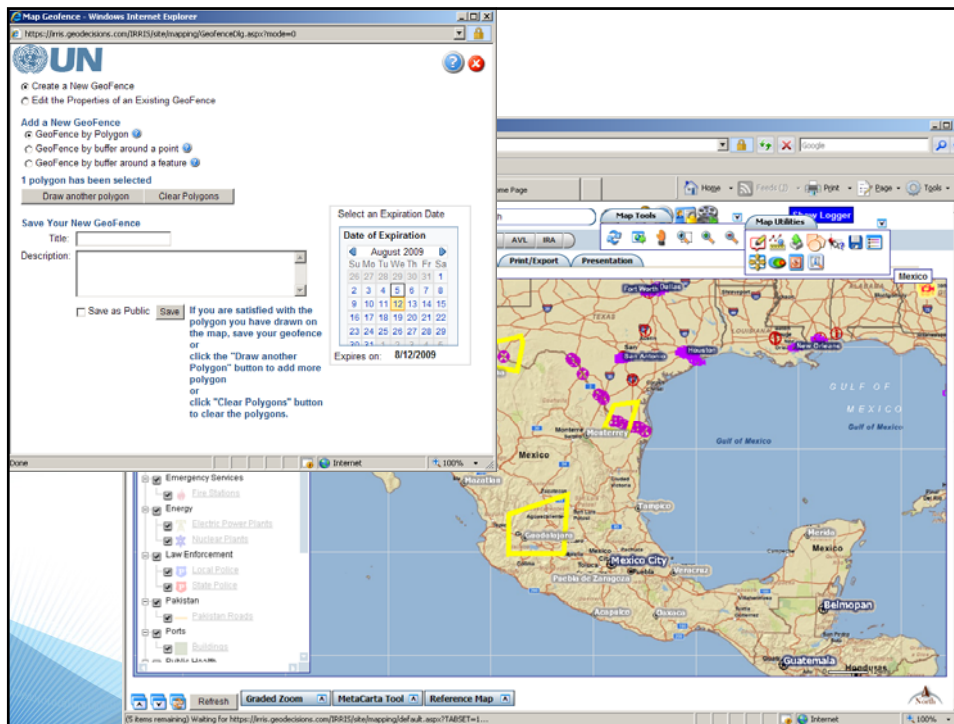
CEC Impacts

Run Map Load Export Delete Edit

Load saved query map if any







Incident Report - Windows Internet Explorer
 https://ms.geodacisions.com/3932/368/reporting/incidentreport.aspx

UN

Report | Detail Report | Grouping | Print | New Incident | Traffic/Incident

Incident List Report View will update every 5 minutes 365 record(s) found

Map Selected | Map All | Delete Selected | Print Selected | Email Selected | New Incident | Open Forum | Mobile

Optional Layer Template: Private - Select a layer template --

Go to Page 1 of 8 Page(s) 1 2 3 4 5 6 7 8

Selected	Detail	Incident ID	Incident Type	Incident Date/Time (Zulu)	Updated By	Headline	Current Process Status	Location
<input checked="" type="checkbox"/>	Detail/Update	na01041	Multiple	08/22/2008 03:35:15 PM	Bill Gatten	Rail Car Spills Chlorine	Open	La Gr...
<input type="checkbox"/>	Detail/Update	na01022	Multiple	01/19/2008 12:59:23 PM	Bill Gatten	Derailment in Downtown Bismarck	Close	Boonv...
<input type="checkbox"/>	Detail/Update	na01021	Multiple	03/21/2008 07:15:01 PM	Bill Gatten	Train Derailment Closes Old City	Under Control	Knowl...
<input type="checkbox"/>	Detail/Update	na01020	Multiple	03/01/2008 05:19:20 AM	Bill Gatten	HadMat Train Derailment	Under Control	North...
<input type="checkbox"/>	Detail/Update	na01019	Multiple	04/03/2008 09:23:55 AM	Bill Gatten	CSX Coal Train Derails	Close	Palmy...
<input type="checkbox"/>	Detail/Update	na01018	Multiple	08/15/2003 02:17:51 PM	Bill Gatten	CSX Train Derails	Close	Palmy...
<input type="checkbox"/>	Detail/Update	na01015	Multiple	01/12/2008 09:50:35 AM	Bill Gatten	BNSF Train Derails	Close	Willst...
<input type="checkbox"/>	Detail/Update	na01014	Multiple	01/05/2008 06:31:38 AM	Bill Gatten	Coal Train Derails	Close	Carroll
<input type="checkbox"/>	Detail/Update	na01013	Multiple	11/25/2007 05:19:25 AM	Bill Gatten	Three Hazmat's in Train Derailment	Close	Baltim...
<input type="checkbox"/>	Detail/Update	na01012	Multiple	03/13/2008 07:50:54 AM	Bill Gatten	Train Derails Then Explosion	Under Control	Onsdai...
<input type="checkbox"/>	Detail/Update	na01011	Multiple	03/25/2008 11:22:51 AM	Bill Gatten	CSX Freight Car Derails Canton MA	Close	Sharon...
<input type="checkbox"/>	Detail/Update	na01010	Multiple	03/27/2008 09:38:20 AM	Bill Gatten	LIRR Train Collision	Close	New Y...
<input type="checkbox"/>	Detail/Update	na01009	Multiple	03/27/2008 10:45:24 AM	Bill Gatten	CSX Derailment Disrupts Amtrak	Close	East...
<input type="checkbox"/>	Detail/Update	na01008	Multiple	01/12/2008	Bill Gatten	Three Train Collision East of	Close	Augsb...

Done

Map Utilities | Legend | Layers | Refresh | Graded Zoom | MetaCarta Tool | Reference Map

Incident Report - Windows Internet Explorer
 https://ms.geodacisions.com/3932/368/reporting/incidentreport.aspx

UN

Report | Detail Report | Grouping | Print | New Incident | Traffic/Incident

Incident Information

Date(Zulu) 08/05/2009
 Time(Zulu) 04:59:31 PM
 Incident Type Multiple
 Incident Headline
 Incident Description

Location Information

Geometry Type Point
 Locating Method Get Lat, Lon from Map
 Lat, Lon Datum
 Get Lat, Lon from Map

Process Information

Incident Status Open
 Process Comments

Save Incident Map

Map Title
 Save Map

Incident Documents

Select Remove
 Add Delete
 Upload File(s)

Urgency Immediate
Severity Severe
Probability High
Information Source
Mode Select a Mode
Event Time Frame morning 4-11:59am
Events Natural Catastrophe - Epidemic/Pandemic, Earthquake/Volcano, Flooding, Wildfire, Blizzard, Hurricane/Tornado, Fog, Criminal

Member Co Name

Done

Map Utilities | Legend | Layers | Refresh | Graded Zoom | MetaCarta Tool | Reference Map

Incident Report - Windows Internet Explorer
 https://ems.geodocs.com/IRRIS/StateReporting/IncidentReport.aspx

Report | Detail Report | Grouping | Print | New Incident | Traffic/Car Incident

Incident Information

Date(Zulu) 08/05/2009
 Time(Zulu) 04:59:31 PM
 Incident Type Multiple
 Incident Headline
 Incident Description
 Agency Immediate
 Severity Severe
 Probability High
 Information Source
 Mode Select a Mode
 Event Time Frame morning 4-11:59am
 Events
 Member Co Name

Location Information

Geometry Type Point
 Locating Method Get Lat/Lon from Map
 Lat/Lon Datum
 Get Lat/Lon From Map

Process Information

Incident Status* Open
 Process Comments

Save Incident Map

Map Title
 Save Map
 Add Delete

Incident Documents

Select Remove
 Add Delete
 Upload File(s)

Incident Documents

Select Remove
 Add Delete
 Upload Document

Modify Incident Location

Post Updates

Proximity Information

Nearest Hospital LAGRANGE MEMORIAL HOSPITAL Phone: 352-1200 Direction: 2.20 miles at NE
 Nearest Fire Station LA GRANGE FD Phone: 579-2339 Direction: 0.80 miles at NE
 Nearest Police Station LA GRANGE POLICE DEPT HEADQUARTERS Phone: 579-2334 Direction: 0.80 miles at NE

Note: Columns with * are updatable fields.

Incident Report - Windows Internet Explorer
 https://ems.geodocs.com/IRRIS/StateReporting/IncidentReport.aspx

Report | Detail Report | Grouping | Print | Traffic/Car Incident

Incident Status

Incident Status* Open
 Comments*

Save Incident Map

Map Title
 Save Map

Incident Documents

Select Remove
 Add Delete
 Upload Document

Modify Incident Location

Post Updates

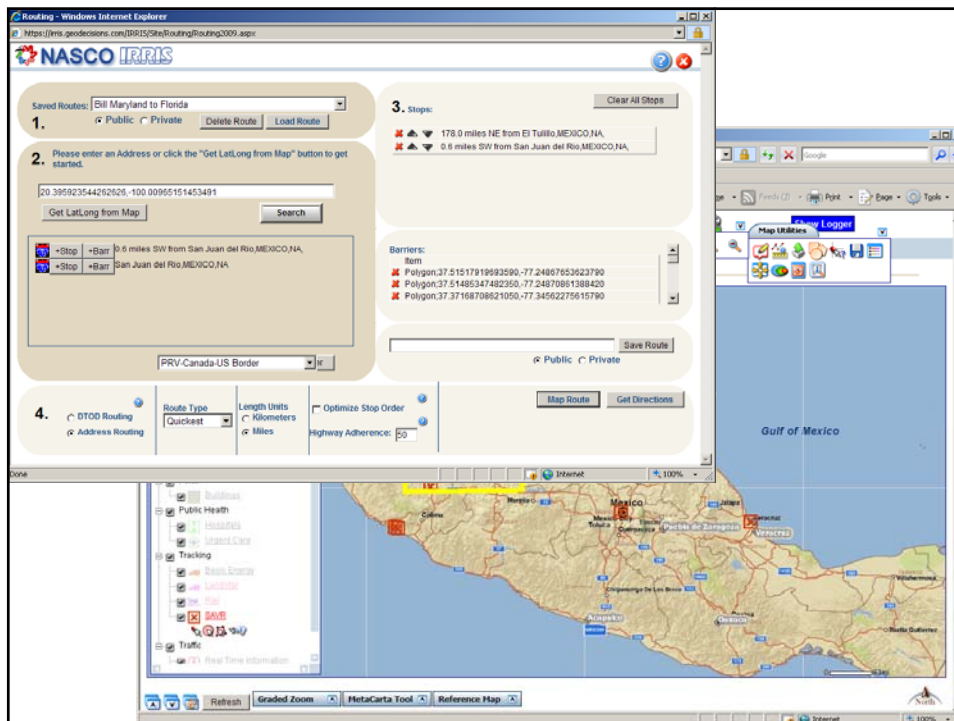
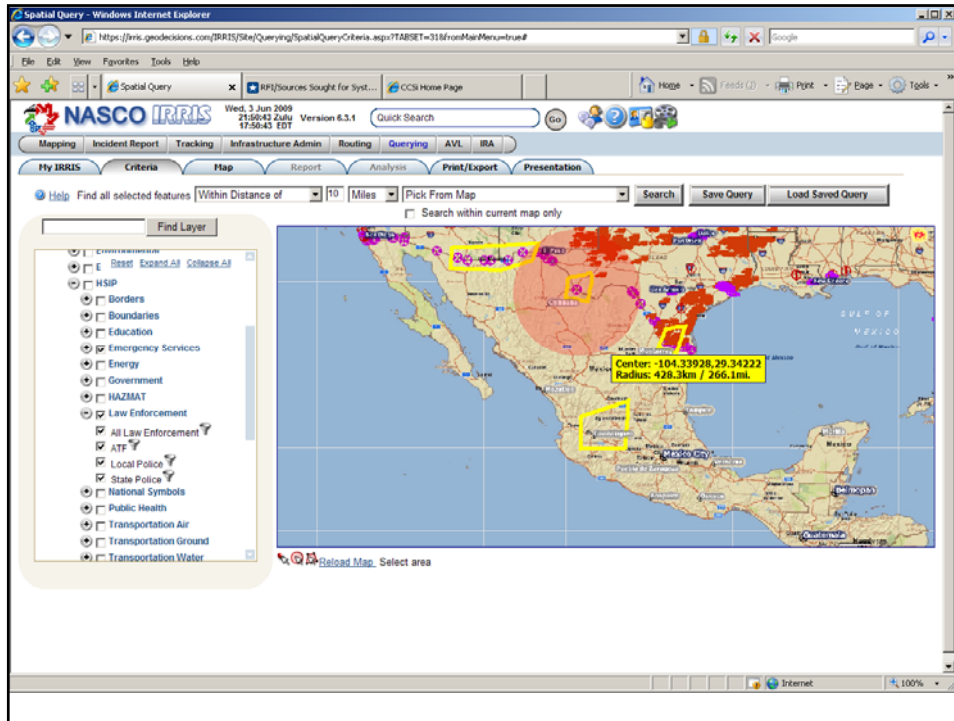
Incident Information

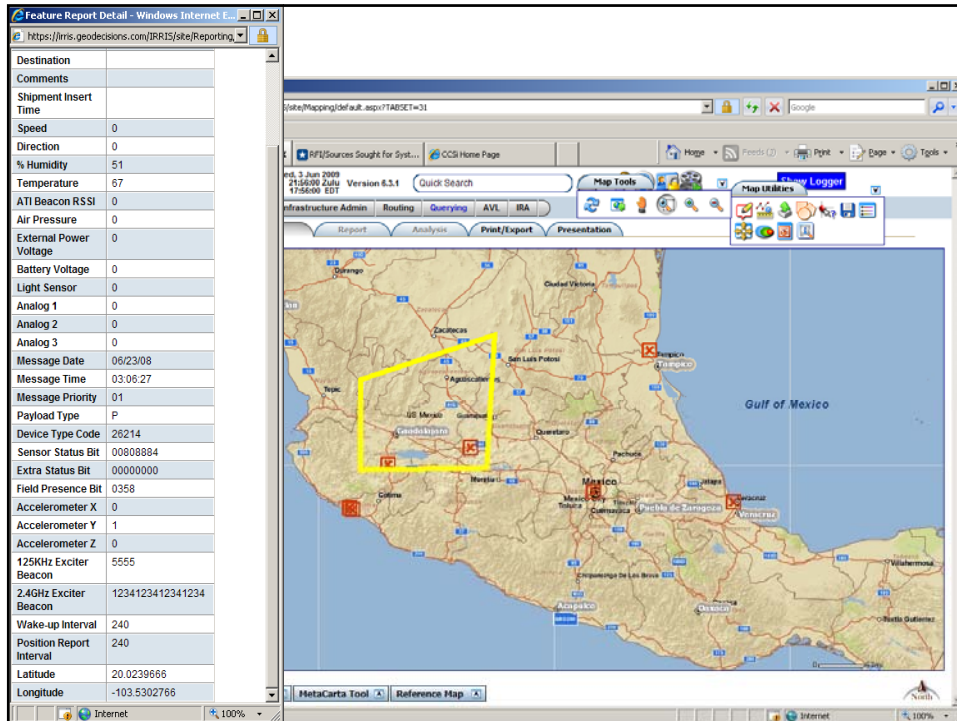
Incident ID nat01041
 Incident Type Multiple
 Incident Date 8/2/2008 12:00:00 AM
 Incident Time 03:32:15 PM
 Incident Headline Rail Car Spills Chlorine
 Incident Description Several Rail Cars derail causing chlorine exposure
 Urgency* Immediate
 Severity* Severe
 Probability* Low
 Information Source www.test.incident.com
 Mode Intermodal
 Event Time Frame morning 4-11:59am
 Events Crash
 Member Co Name Bill Galten
 Member Co Subscriber# 0
 Member POC Name
 Member POC Phone#
 Incident Area 47-862032,41-815639

Proximity Information

Nearest Hospital LAGRANGE MEMORIAL HOSPITAL Phone: 352-1200 Direction: 2.20 miles at NE
 Nearest Fire Station LA GRANGE FD Phone: 579-2339 Direction: 0.80 miles at NE
 Nearest Police Station LA GRANGE POLICE DEPT HEADQUARTERS Phone: 579-2334 Direction: 0.80 miles at NE

Note: Columns with * are updatable fields.





Summary

- **Geospatial Logistics technologies allow decision support beyond “dots on a map”**
 - Integrate data from different sources, different modes, different formats
 - Integrate shipment data with sensitive areas, high risk areas, populations, urban areas, infrastructure
- **Management by exception approach allows the important information to be brought to attention.**
- **Provides multi-use return including security, incident management, and environmental monitoring.**



Questions

