

AMFM GIS Italia - Conferenza 25 settembre 2014

LA GEOLOCALIZZAZIONE COME ELEMENTO

UNIFICANTE DELLE AZIONI E DELLE INFORMAZIONI PER I SERVIZI AI CITTADINI



# Geolocalizzazione e GEOspatial INTelligence

*Andrea Fiduccia*

Intergraph Italia LLC – SG&I Division



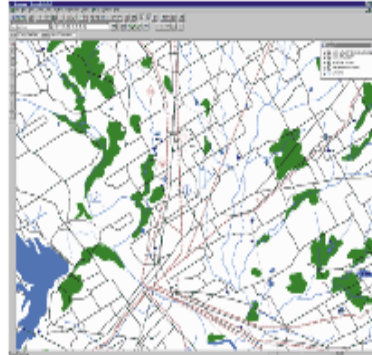
**Geospatial Intelligence is defined as “the exploitation and analysis of imagery and geospatial information to describe, assess and visually depict physical features and geographically reference activities on the Earth.”**

**Source: NIMA Capstone Concept,  
March/ April 2003**

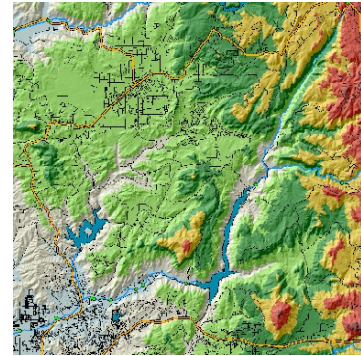




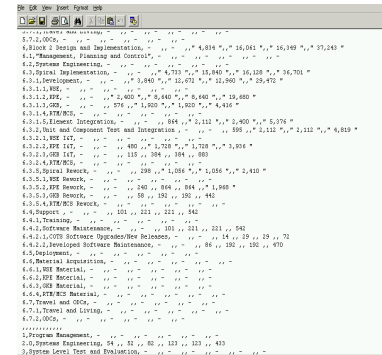
**Pixel**



**Feature**



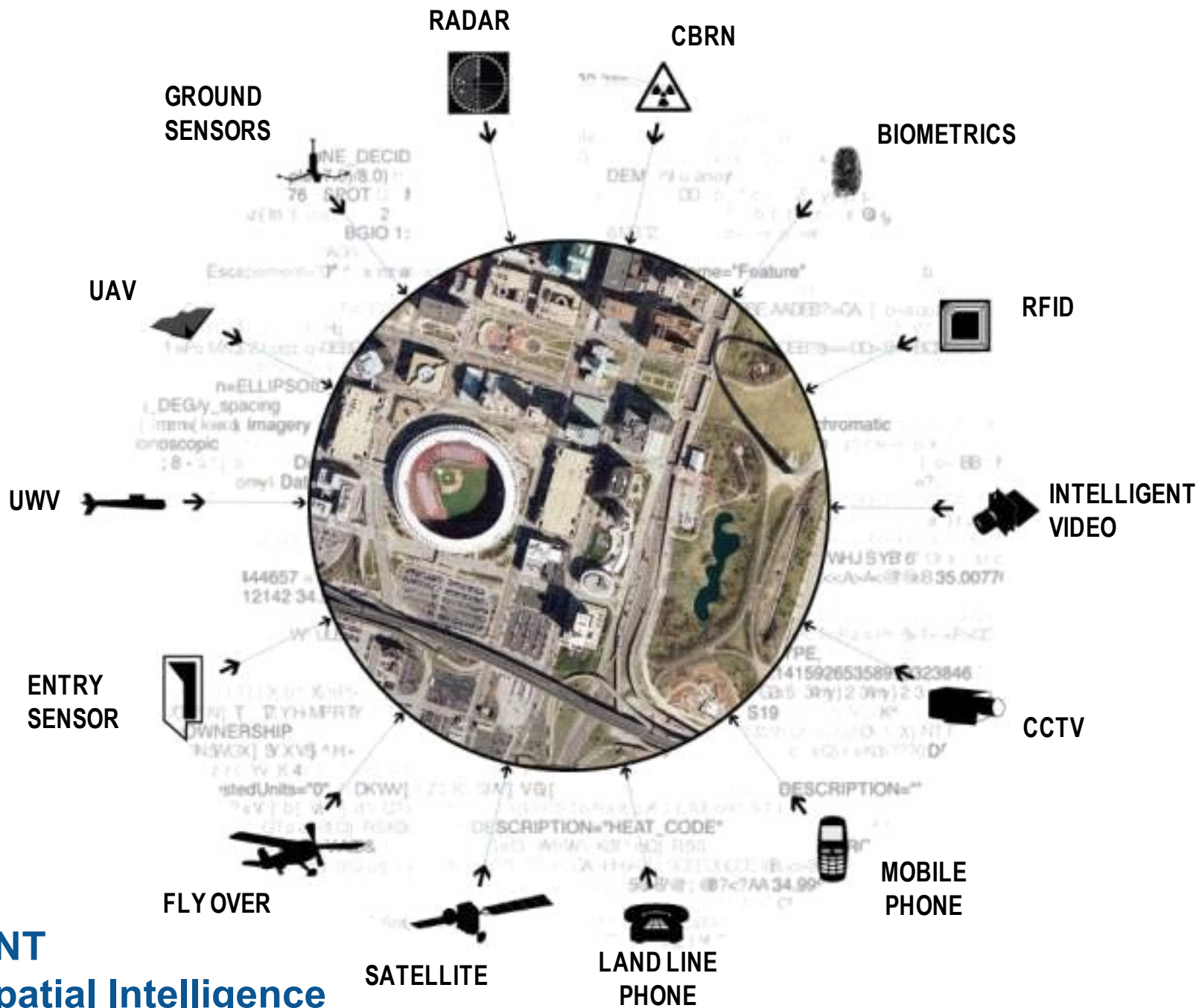
**Surface**



**Text**

1. Pixel (immagini satellitari, ortofoto, streaming video degli UAV)
2. Feature (cartografia numerica)
3. Surface (modelli digitali di elevazione, cartografia 3D)
4. Text (informazione testuale strutturata o non strutturata)





## GeoMedia



## ERDAS IMAGINE / SAR Interferometry



Imagine Photogrammetry  
ImageStation

GeoMedia Smart Client  
GeoMedia WebMap  
ERDAS APOLLO  
Geospatial SDI  
Geospatial Portal



**HEXAGON**



## HEXAGON'S APPLICATION AREAS

INTERGRAPH

SG&I  
PP&M

HEXAGON  
GEOSPATIAL

### METROLOGY

Stationary and Portable  
Industrial Metrology Systems

Accuracy, precision, and  
improvements in manufacturing  
processes

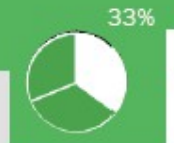


### TECHNOLOGY

Engineering and Geospatial  
Technologies

Geospatially powered software for  
the management and visualization  
of vast amounts of location-based  
data

Enterprise software for managing  
engineering design and data  
critical to physical plant assets



### GEOSYSTEMS

Measurement and Positioning  
Systems

Capturing and recording the world around us,  
mainly in the development and protection of  
infrastructure



Hexagon's strength is in its single  
research and development vision and  
the resulting synergies emerging from  
its foundational technologies.

HEXAGON

Leica  
Geosystems

Z/I  
IMAGING

ZEISS



## Enterprise Engineering Software



**Process, Power & Marine (PP&M)**  
Intergraph® PP&M is the world's leading provider of enterprise engineering software dedicated to the Process, Power & Marine industries.

## Geospatially Powered Solutions



**Security, Government & Infrastructure (SG&I)**  
Intergraph Security, Government & Infrastructure (SG&I) is the leader in smart solutions for emergency response, utilities, transportation, and other global challenges.



### Vision:

To simply be the **best geospatial platform** for 'Making Sense' of our dynamically changing world.  
To be the geospatial platform of choice for SG&I, Hexagon Business's and our Partners' Network for building Geospatial solutions.

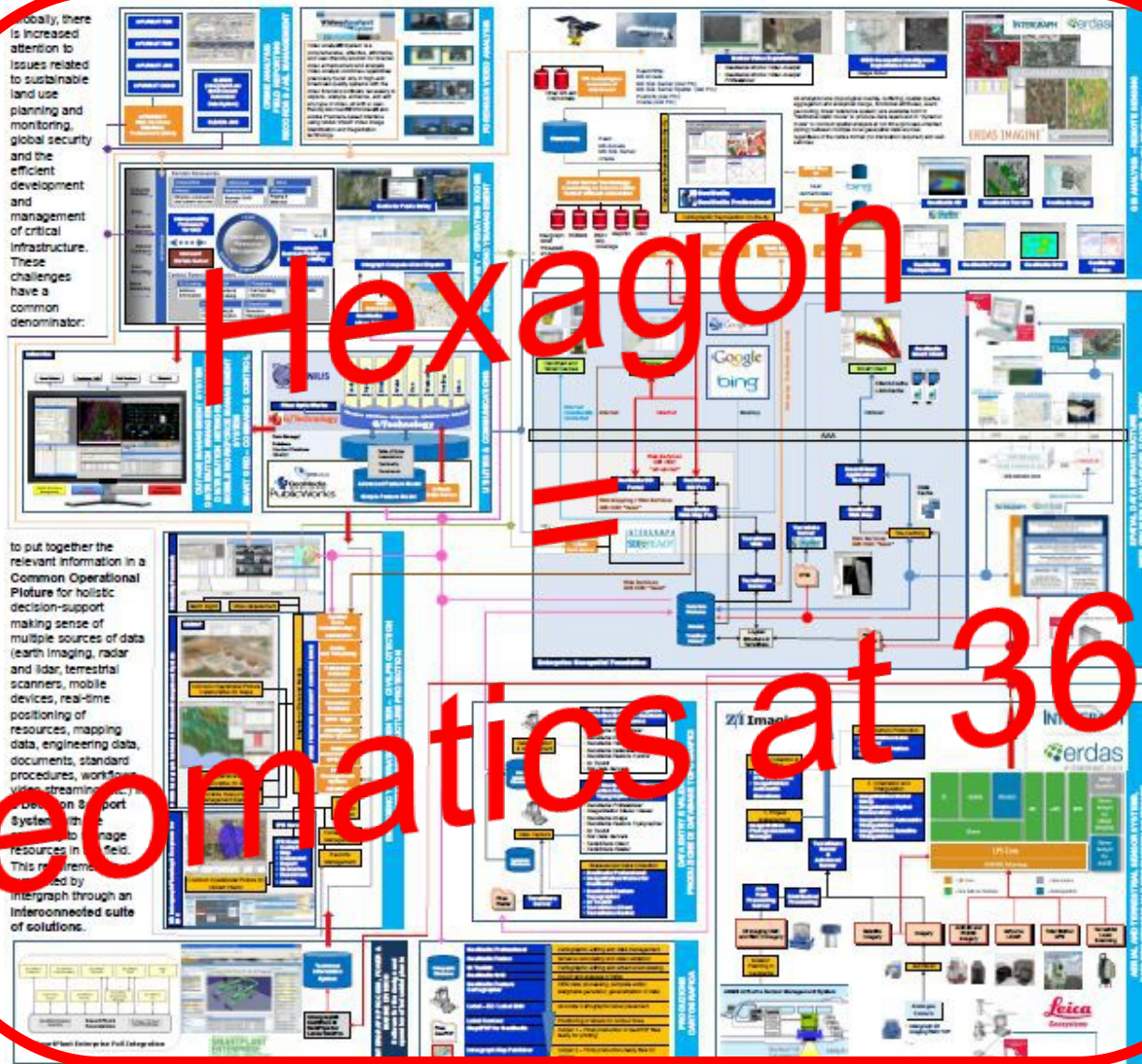
### Mission:

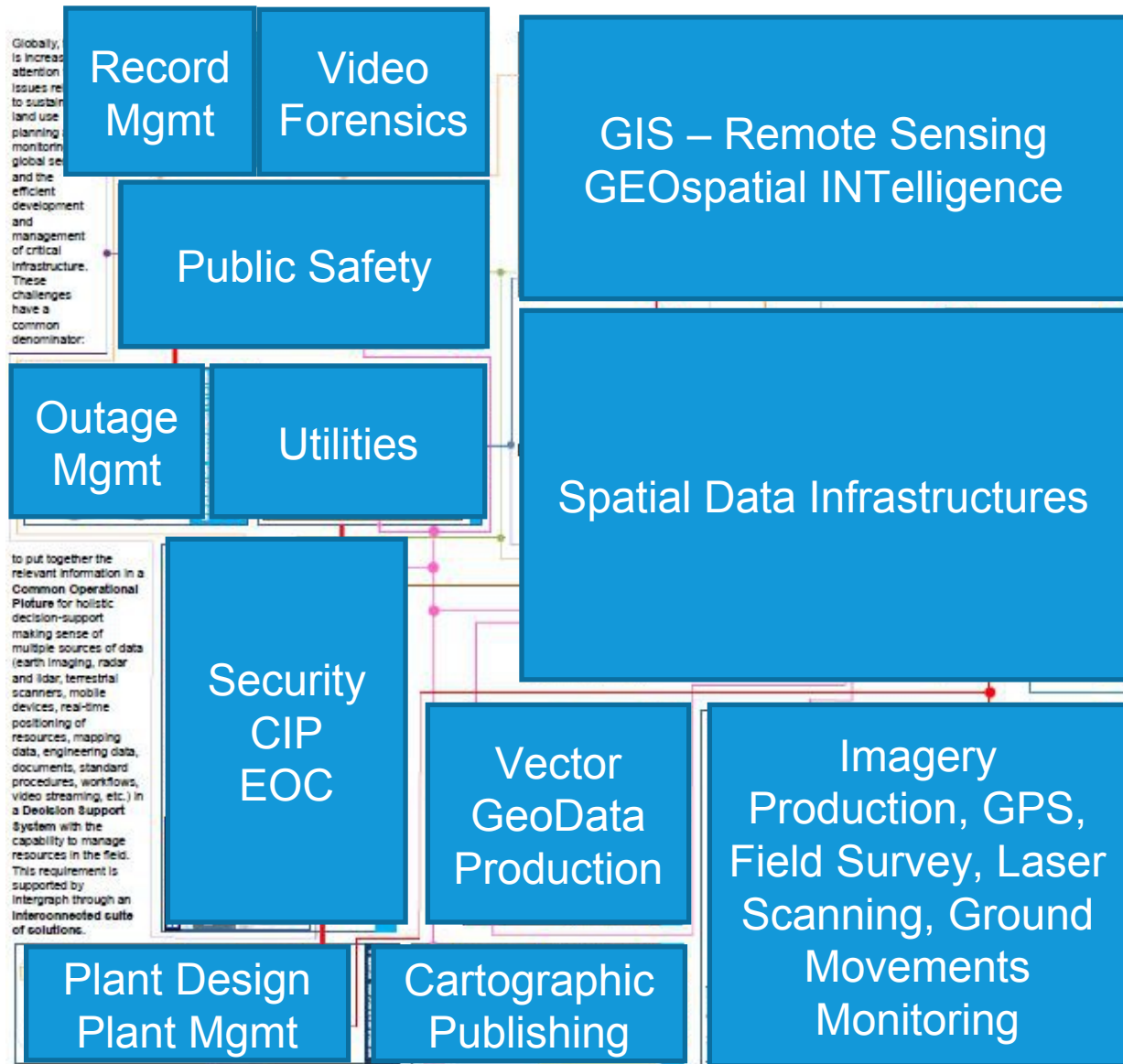
Shorten the Lifecycle from 'Sensing' to 'Action'  
Make it Easy  
Make it Human  
Make it Dynamic

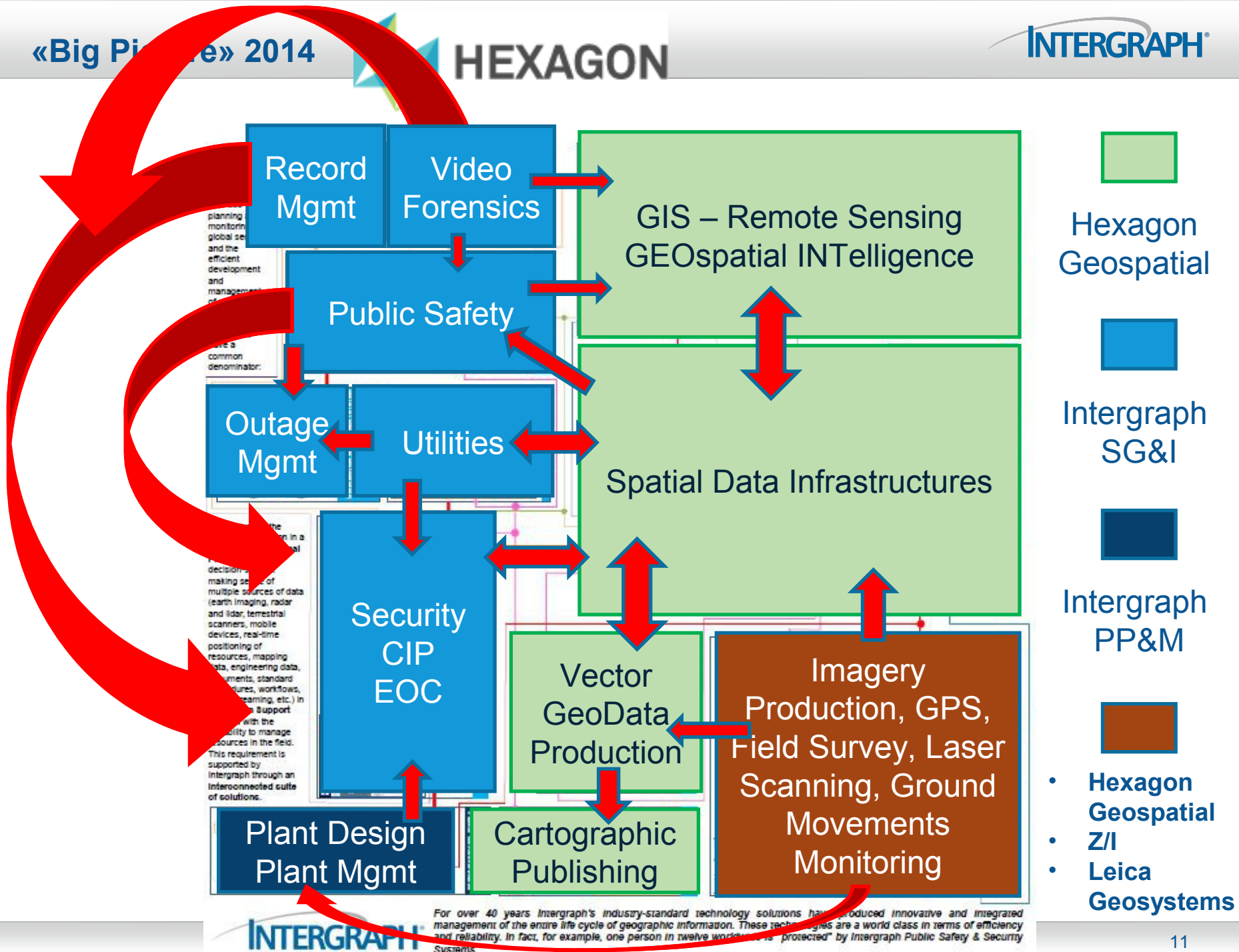
### Strategy:

Address Big Data Challenge  
Streamline Analytics  
Get Mobile  
Do it on the Cloud





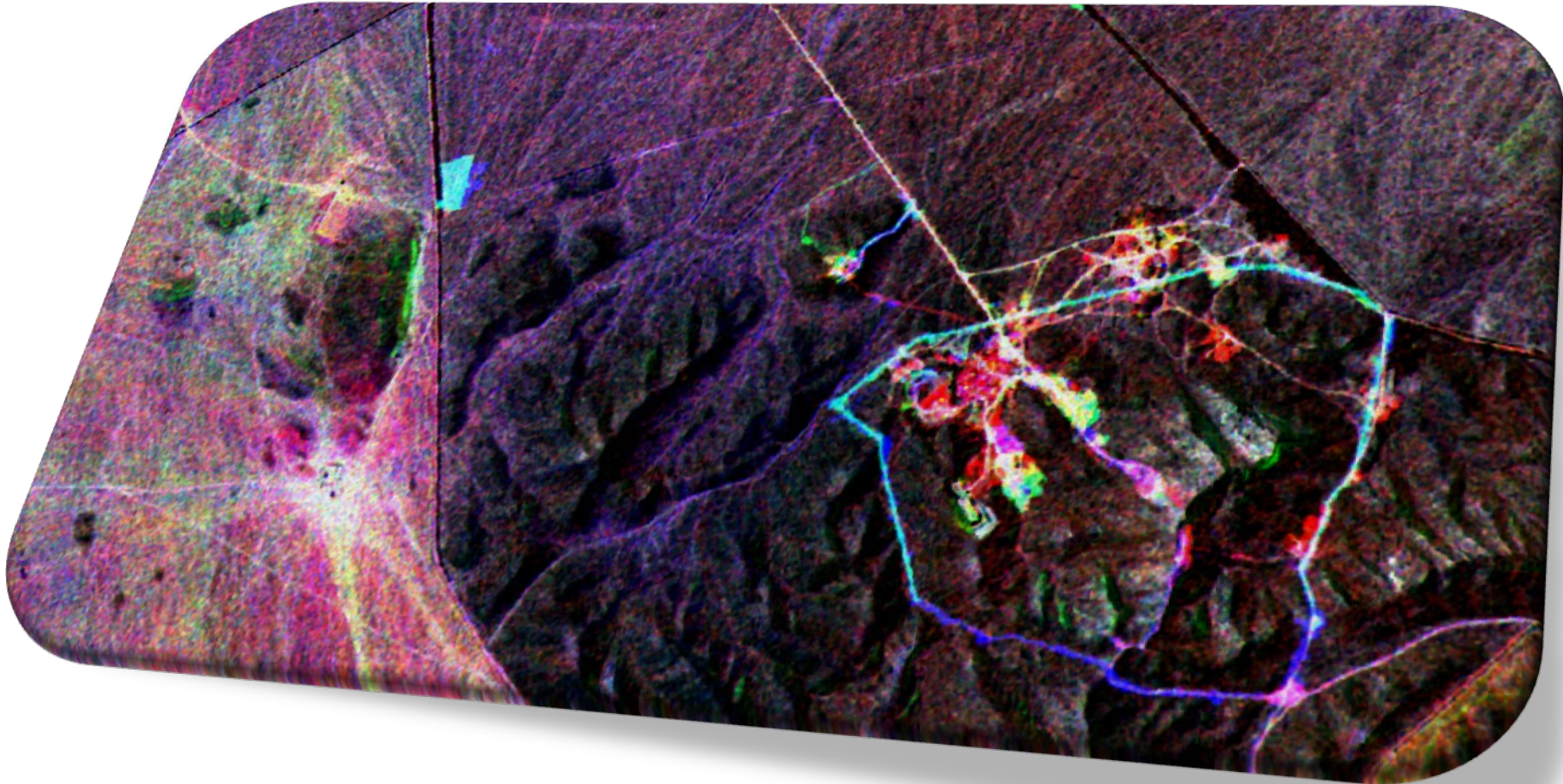






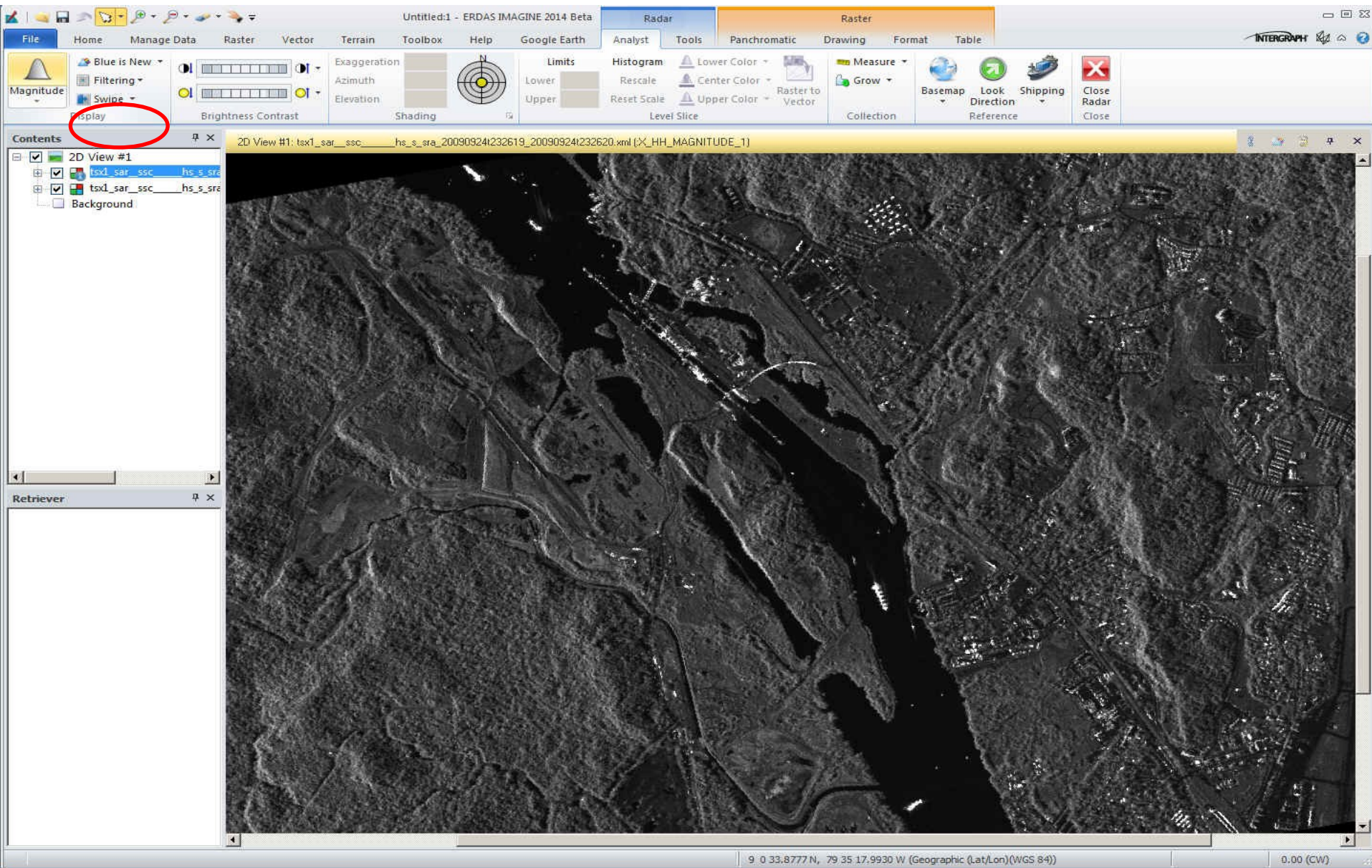
### Radar Analysis

Starting from an Optical Image and deriving information from a Radar Image to discover new activities in place

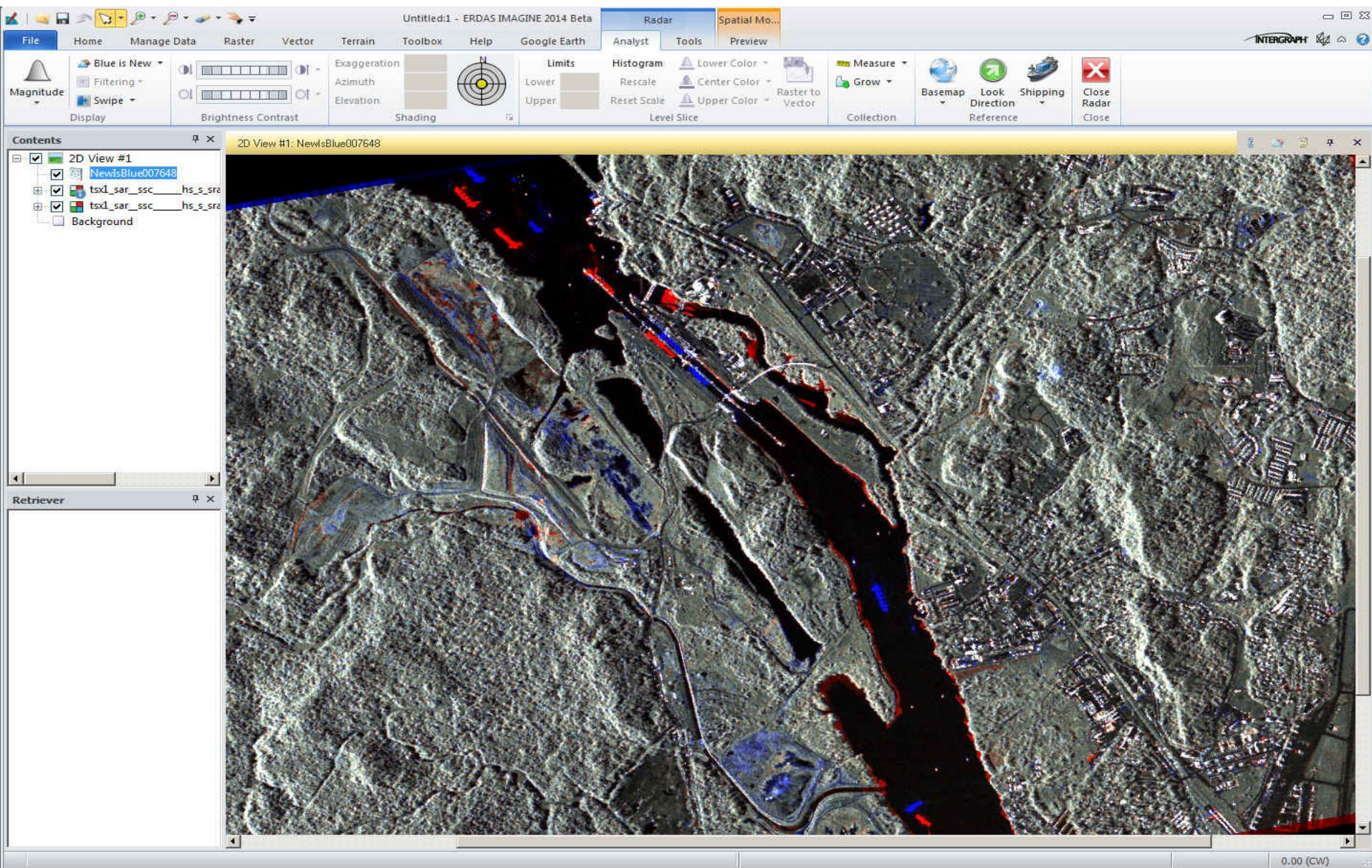




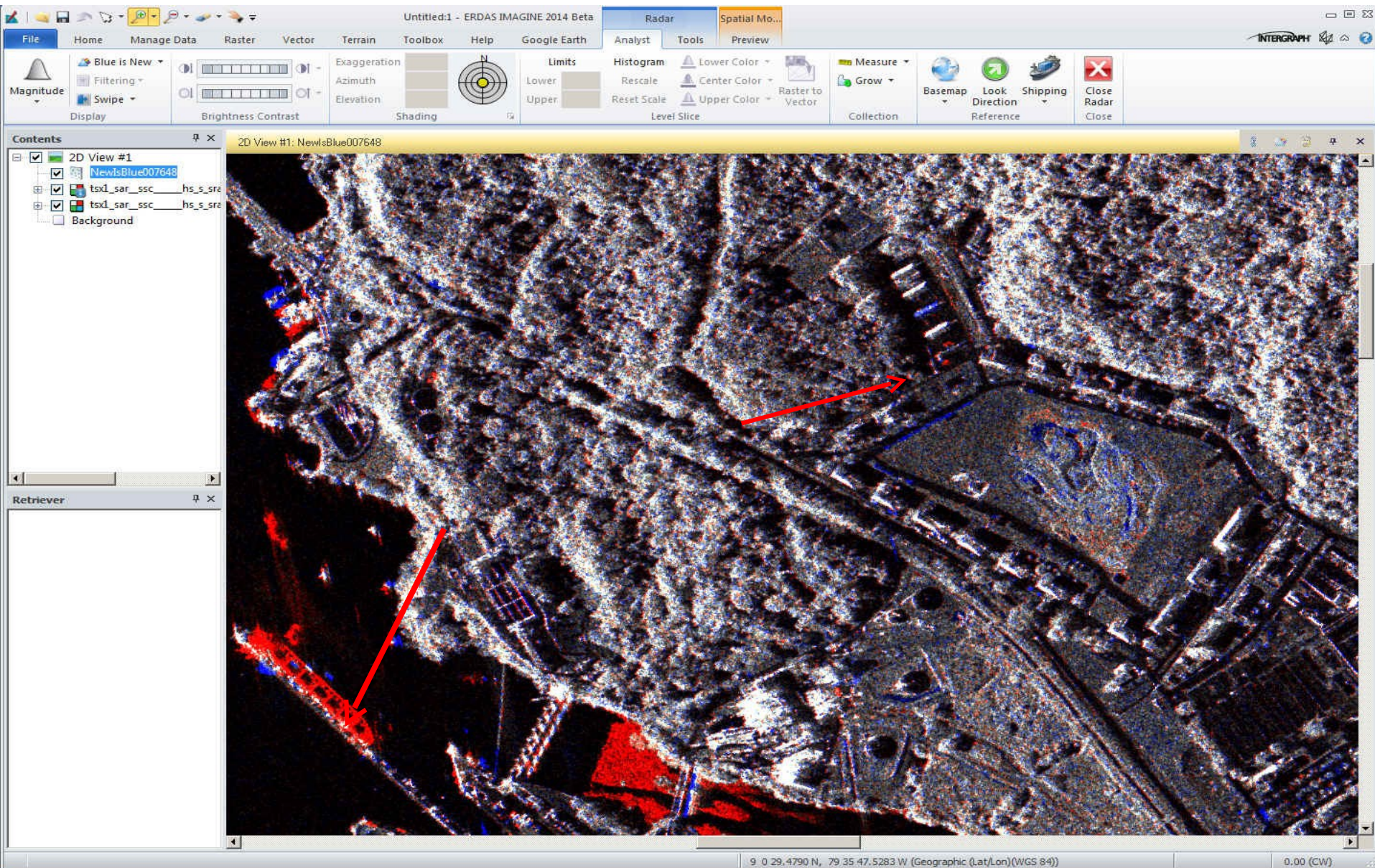
**Blue-is-New** performs a 2-image change detection directly into the Viewer... on-the-fly!





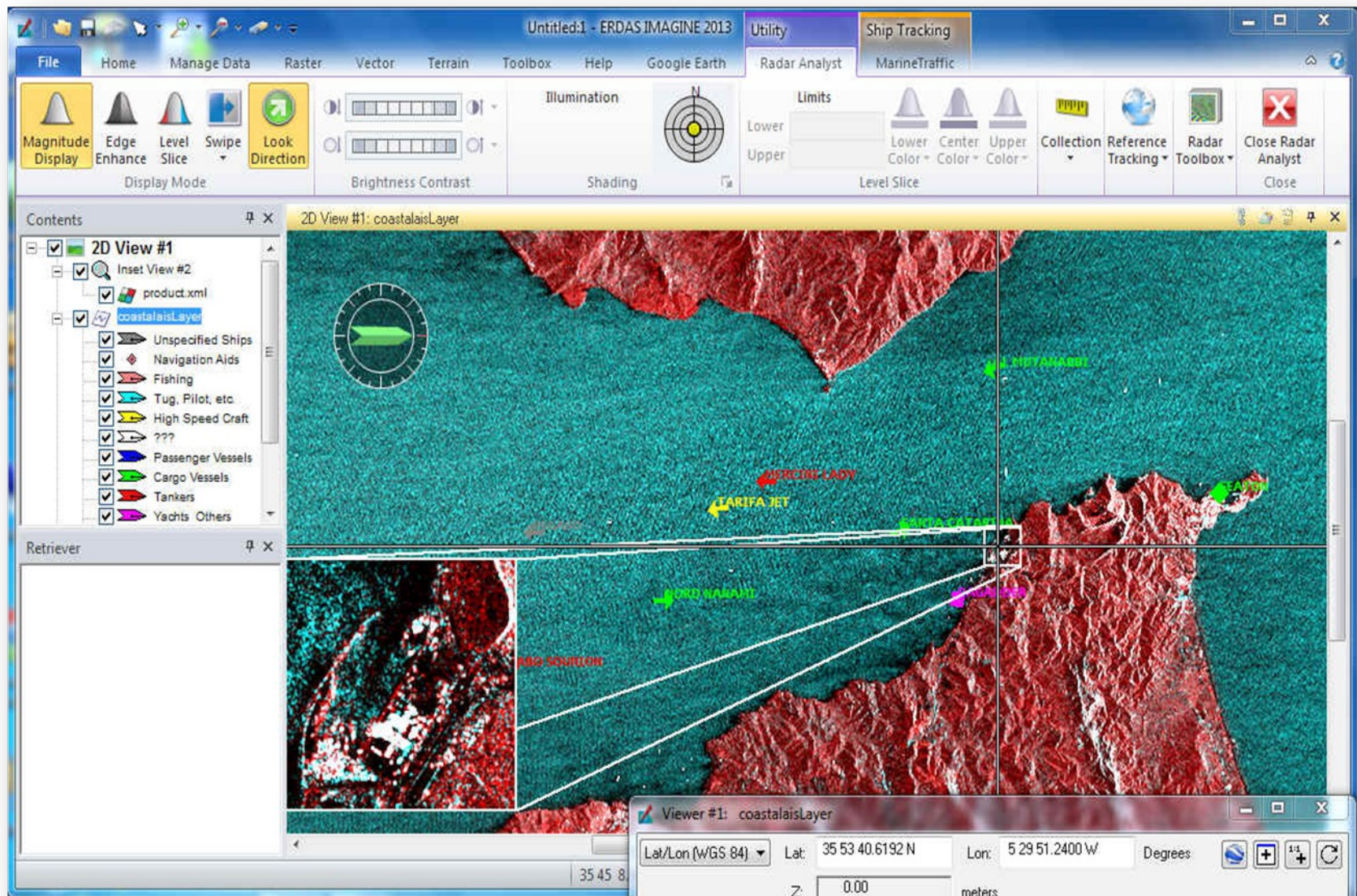








# Radar Analyst Workstation: Real-time Ship Tracking



# Temporal Analysis with Advanced GeoSpatial Intelligence

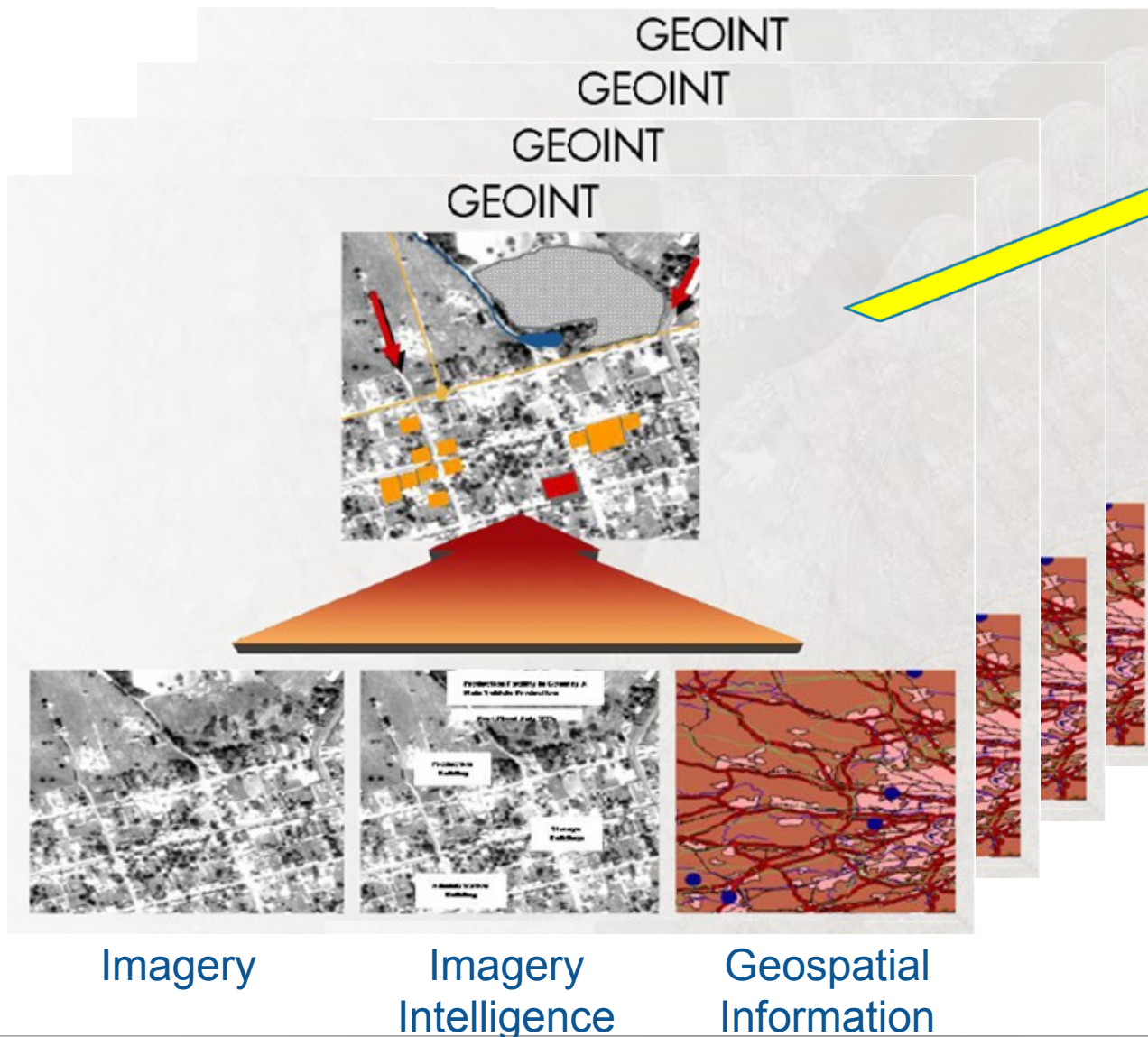


Every day the  
World changes...

AND

Every day a  
constellation of  
sensors record  
the change





Geospatial intelligence -  
“The exploitation and analysis of imagery and geospatial information to describe, assess, and visually depict physical features and geographically referenced activities on the Earth. GEOINT consists of imagery, imagery intelligence, and geospatial information.”



The Project Manager is the tool used to compile and visualize the temporal dataset.

Once the sources are compiled, the Project Manager renders a standard digital video.

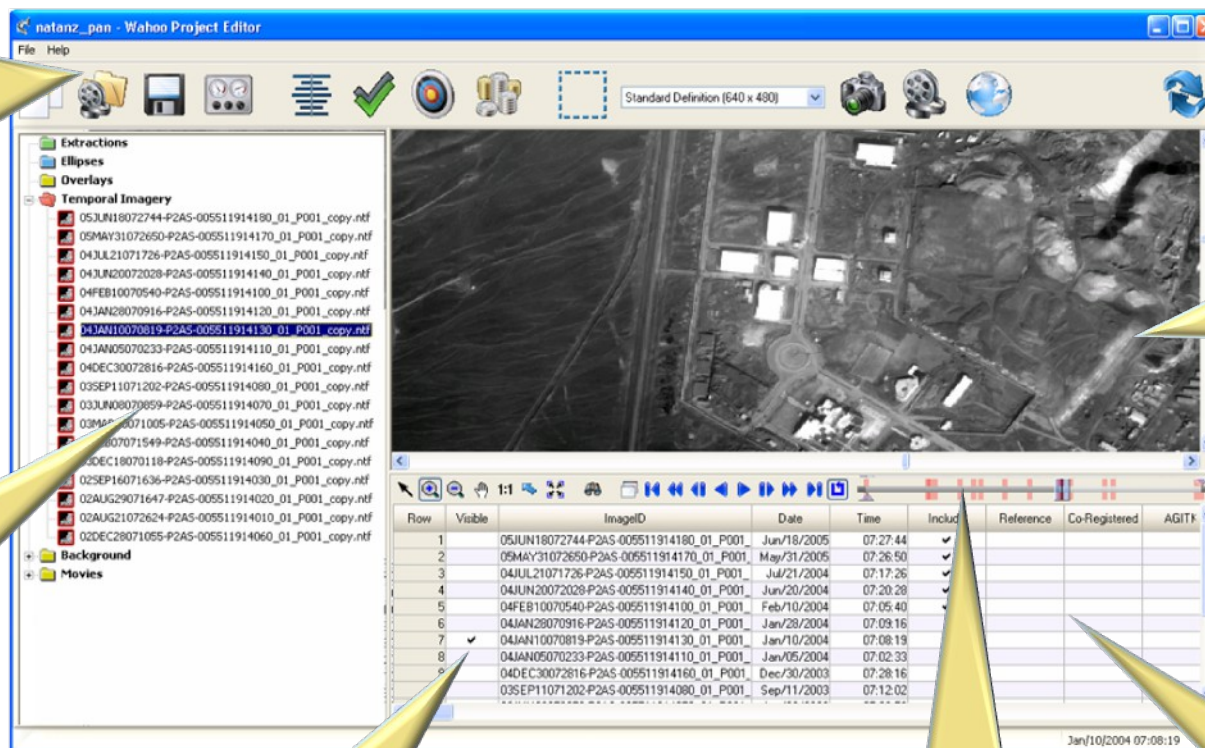


# The TEMPO Project Editor Interface

Graphical, easy to use interface provides the capabilities needed to set up a TEMPO project. Once set, the project runs fully autonomous.

Control bar used to set the various parameters of each project

Refresh Tool used to render a new video after changes



Project Folders store all the images and other source files

Dynamic Display windows supports pan and zoom

Dynamic Checkmark indicates the active image

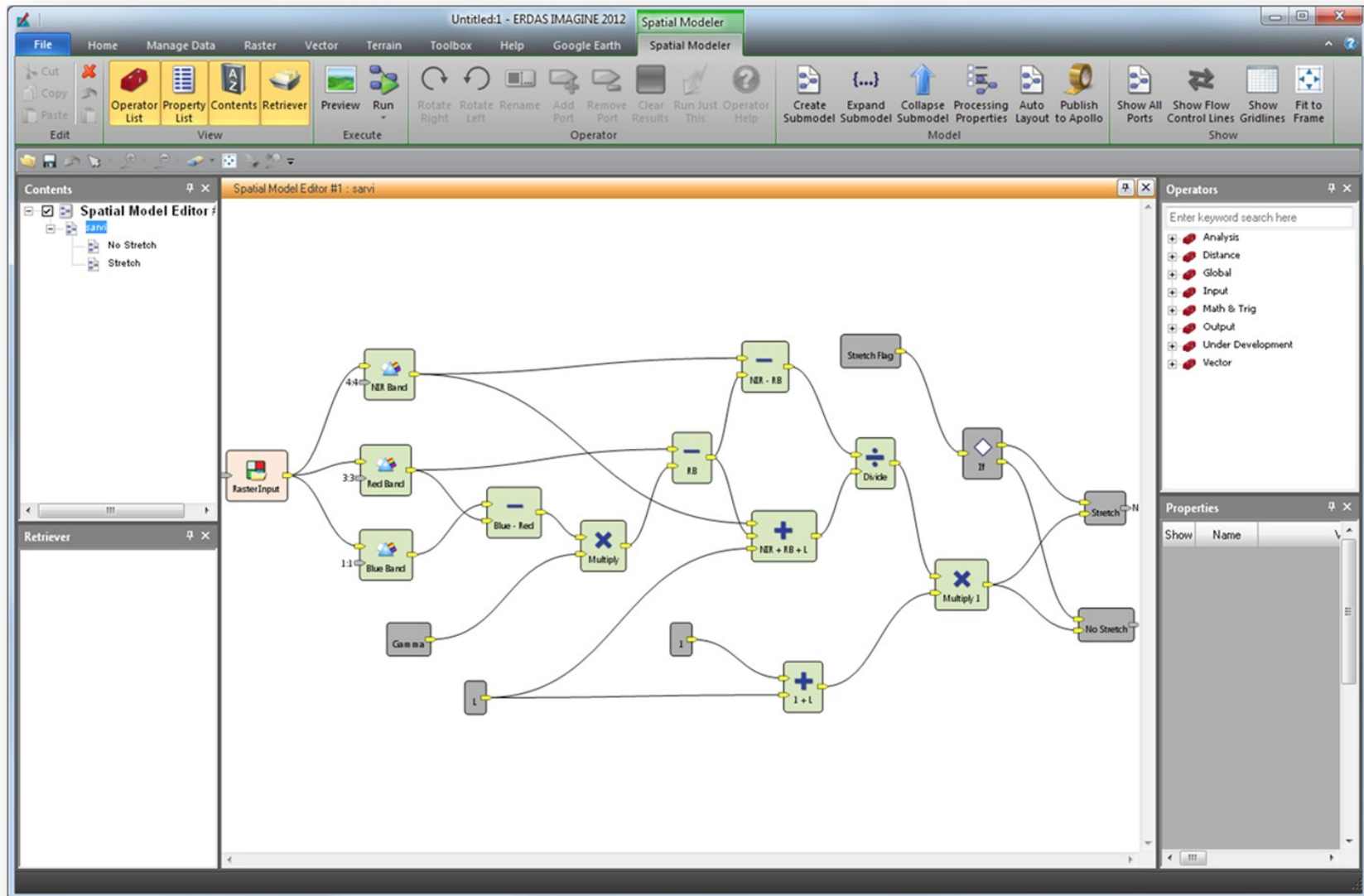
Timeline Bar shows the full temporal range of the time series

Processing markings indicate what processes have been run on the data

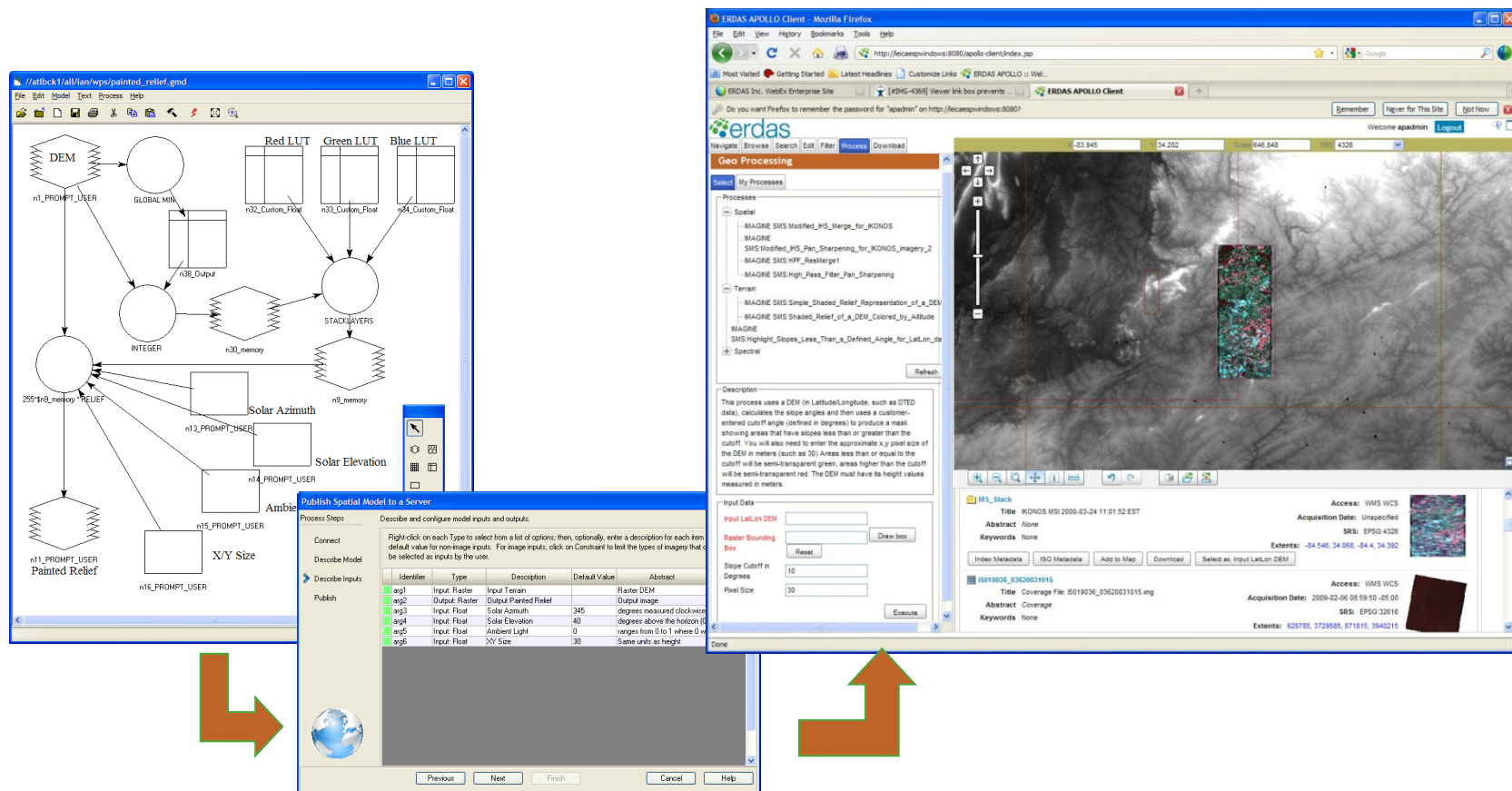


TEMPO time series imagery can be fused with other intelligence sources such as SIGINT intercepts





- Create geospatial processes (spatial models) in **ERDAS IMAGINE**
- Publish models to **ERDAS APOLLO** using a WPS-compliant interface
- Discover and execute WPS from thin client front ends including the **ERDAS APOLLO Web Client**





**Full Motion Video**

**SMARTER**DECISIONS

# Real-time Video Surveillance



GeoMedia Professional - TACTIC.gws

Home Manage Data Analysis Vector Labeling Raster Toolbox Table Grid 3D GeoDEX Image Pro Video Pro

Select Unselect All Map Display Coordinate System Geometry WMS Info Measure Distance Measure Angle Legends Styles Insert Edit Delete Undo Redo Display Location Fit Pan Zoom to Arrange Windows Add / Show Windows TACTIC Properties

Shadowts preview

Display Playback Enhancements

Data Display Clipmarks Enhancements

Data Name	Value
Video URL	
KLV URL	
Mission ID	
Vehicle Name	
Vehicle ID	
Latitude	
Longitude	
Altitude	
Platform Roll	
Platform Pitch	
Platform Yaw	
Classification	
Time Stamp	
GC 1 Lon	
GC 1 Lat	
GC 2 Lon	
GC 2 Lat	
GC 3 Lon	

☒ Show MGRS  
☒ Use ground points if available  
Camera designation:  
Default

0:00 00:02:58 00:05:58 00:08:58 00:11:57 00:14:56 00:17:55

1:18 AM 1:25:17 AM 1:28:16 AM 1:31:15 AM 1:34:14 AM 1:37:14 AM 1:40:13 AM

☒ Auto scroll ☒ Show clipmarks ☒ Show registrations

Stopped 8 seconds

EVENTS STATUS

TARGET IDENTIFICATION

TIMESTAMP_UTC	NAME	DESCRIPTION	GEOREFERENCEDSNAPSHOTFILE	GEOCODEDSNAPSHOTFILE	STATUS
6/4/2009 4:40:27 PM	Hostile_Armored_Vehicle	A hostile armored vehicle was detected	C:\Temp\Snapshots\Hostile_Armored_Vehicle_002.tif	C:\Temp\Snapshots\Hostile_Armored_Vehicle_003.tif	OPEN
3/31/2012 1:26:52 AM	Hostile_Armored_Vehicle	A hostile armored vehicle was detected	C:\Temp\Snapshots\Hostile_Armored_Vehicle_000.tif	C:\Temp\Snapshots\Hostile_Armored_Vehicle_001.tif	OPEN
3/31/2012 1:23:01 AM	Friendly_Radar	A friendly radar station was detected	C:\Temp\Snapshots\Friendly_Radar_000.tif	C:\Temp\Snapshots\Friendly_Radar_001.tif	OPEN
3/31/2012 1:25:55 AM	Hostile_Light_Machine_Gun	A hostile light machine gun was detected	C:\Temp\Snapshots\Hostile_Light_Machine_Gun_000.tif	C:\Temp\Snapshots\Hostile_Light_Machine_Gun_001.tif	OPEN
3/31/2012 1:36:43 AM	Friendly_Civilian_Vehicle	A friendly civilian ground vehicle was detected	C:\Temp\Snapshots\Friendly_Civilian_Vehicle_000.tif	C:\Temp\Snapshots\Friendly_Civilian_Vehicle_001.tif	OPEN

No Active Filter

Lon,Lat(d,m,s) -114:21:37.017, 33:06:39.768

Press F1 for Help.

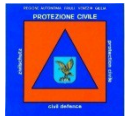
1:40,152

# Civil Protection Operative Centre the **Regional Operative Room**



- h24 control room
- Monitoring networks and logistic
- Coordinates the operations of civil protection
- Connected with DPC

**CIVIL PROTECTION OF FRIULI VENEZIA GIULIA REGION**





The screenshot displays the UAS Web-Client interface within a Firefox browser window. The address bar shows the URL `http://gim/apollo-client/ApolloFis.aspx`. The interface features a top navigation bar with the 'GEO SYSTEMS' logo and a 'Powered by INTERGRAPH' label. Below this, a horizontal menu contains options like 'Datenquelle', 'Werkzeuge', 'Auswahl', 'Bearbeiten', 'Ziel', 'Messung durchführen', and 'Anwendung'. The main map area shows a topographic map of a region with roads, rivers, and landmarks. A compass is visible in the top-left corner of the map, and a scale bar is in the bottom-right. The left sidebar contains a 'Karteninhalt' menu with options like 'Ebenen', 'Google Maps', and 'Google Earth'. The bottom status bar indicates the user is logged in as 'admin' and provides a link to 'Übermittlung Daten festlegen'.





# Getting Smarter with Activity-Based Intelligence

Brad Ward, Senior VP – Geospatial Solutions, Intergraph Government Solutions (IGS)  
Robert Zitz, Senior VP – National Security Sector, Leidos

# What is Activity-Based Intelligence (ABI)?

***“A discipline of intelligence where the analysis and subsequent collection is focused on activity and transactions associated with an entity, population or area of interest.”***

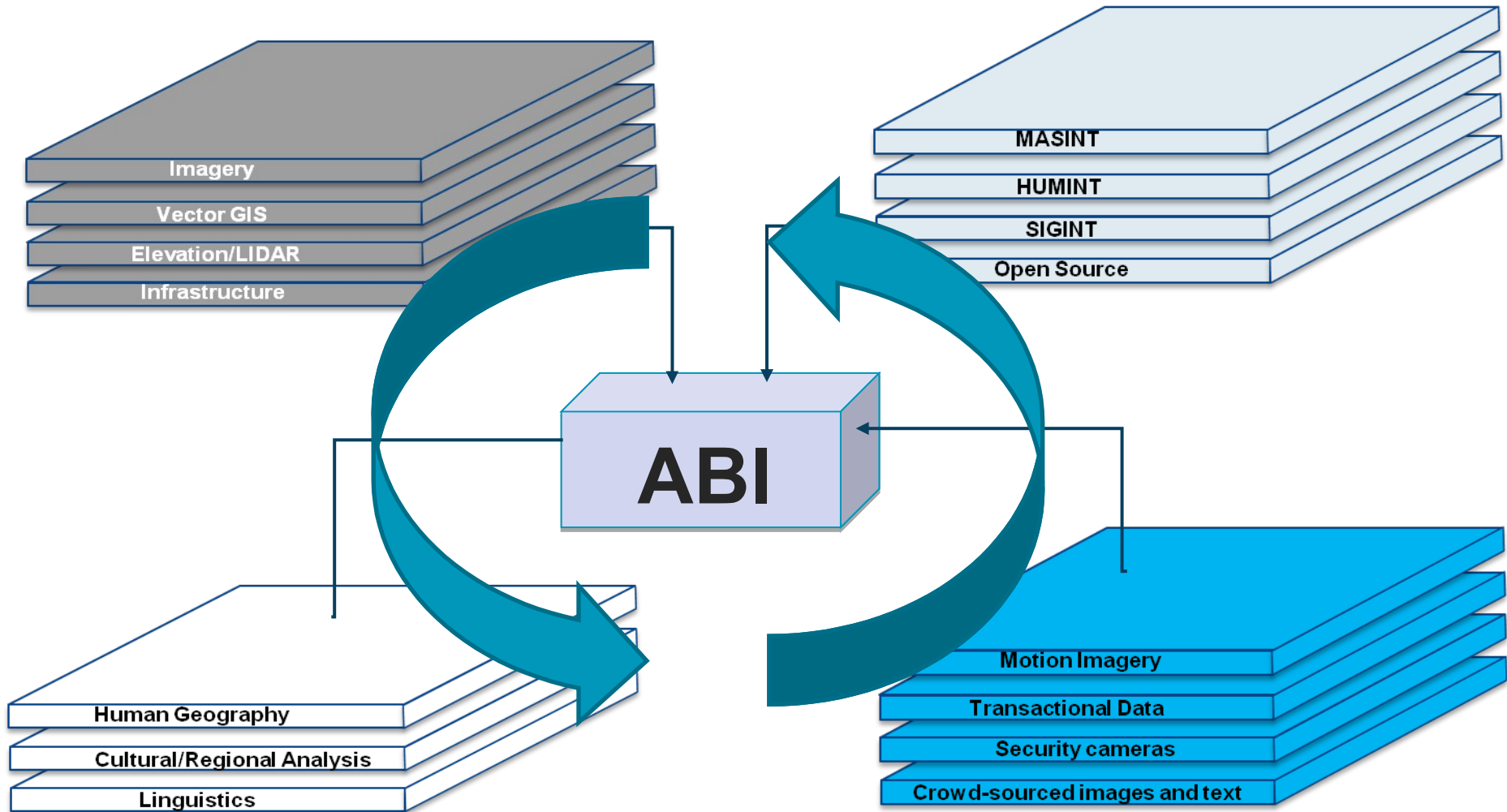
**US Under Secretary of Defense  
for Intelligence**

- Adds the time dimension to analysis
- Evolution of special operations forces' successful application of persistent collection and “Multi-INT” integration
- Combines multiple sources of information related to a single location on the Earth
- Merges data from past and present to anticipate what may happen next
- Intent is to use same approach across all high interest intelligence issues



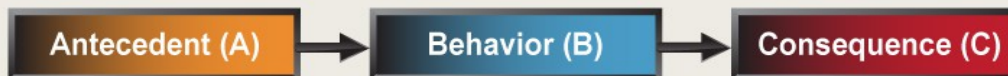
# ABI Combines Real Time Monitoring with Forensic Information

## *Geospatial Information is the Foundation*



## Example Solutions for ABI – Predictive Analytics

- Combines forensic information and real time event monitoring
- Patterns and behaviors
- Advances in the field involve Automated Behavioral Analysis techniques
- Builds upon decades of clinical psychology
- “AuBA” technology has modified, extended, and **automated** applied behavior analysis to include prediction, influence, pattern classification, and analysis of situations



- Antecedent — Any event or situation occurring before the occurrence of the behavior that is logically related to the behavior
- Behavior— The actual definable and observable occurrence of the behavior of interest
- Consequence— Any event or situation immediately following the occurrence of the behavior that is logically related to the behavior



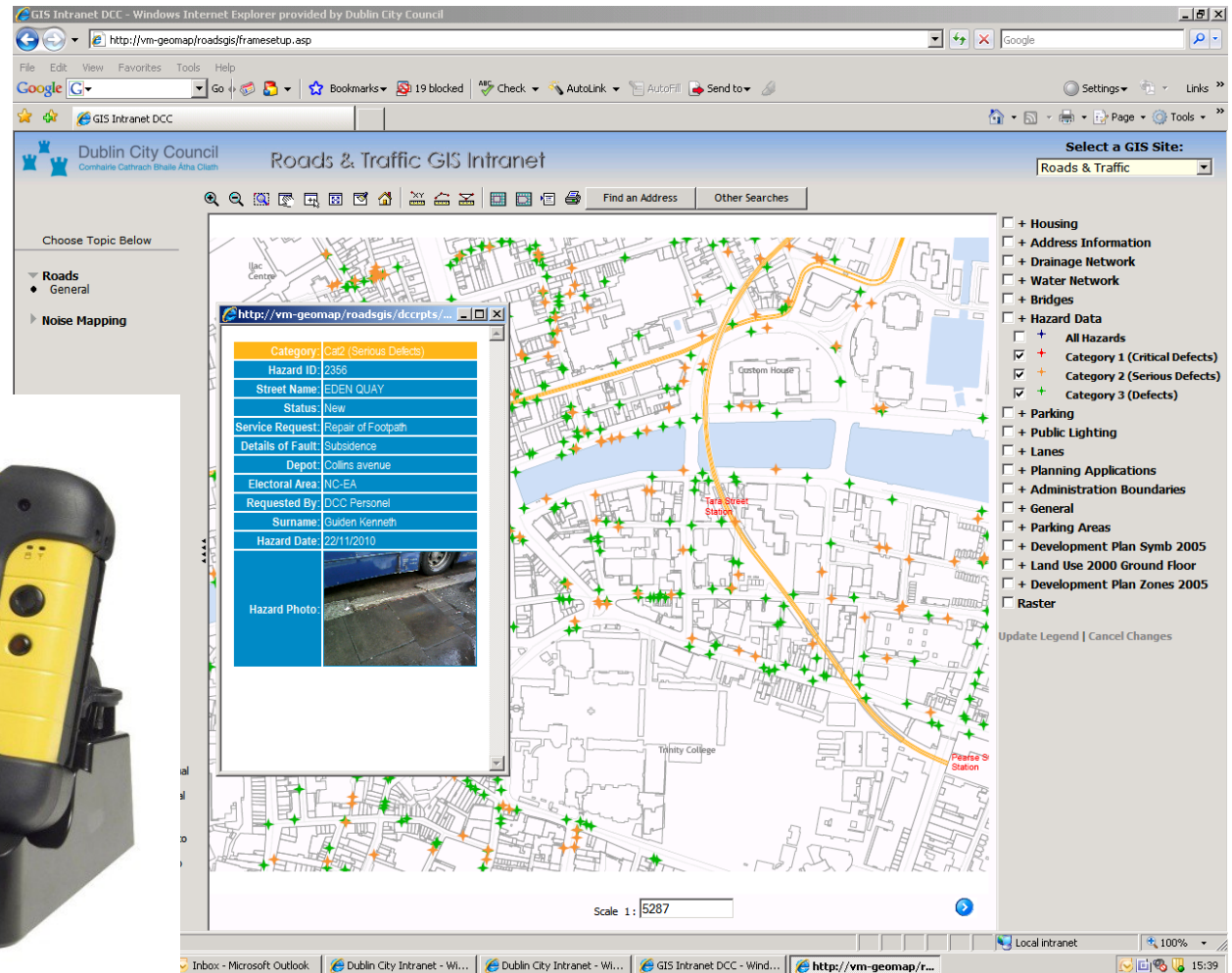
**Mobile**

**SMARTER**DECISIONS

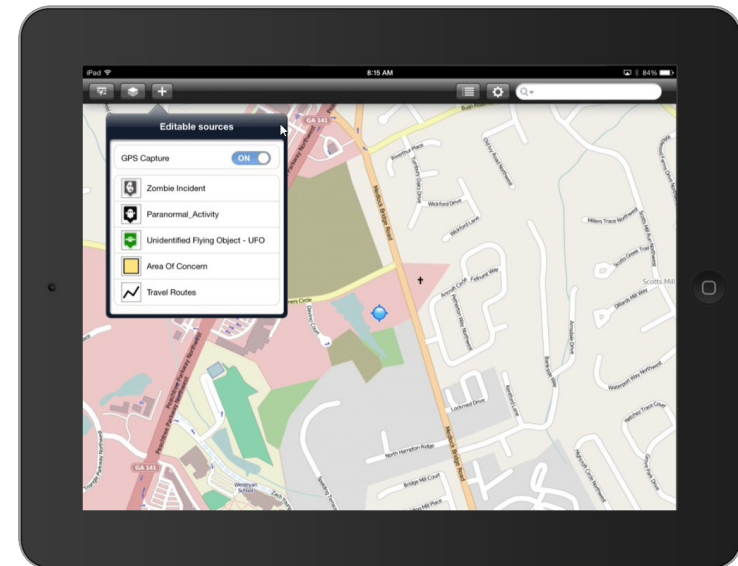
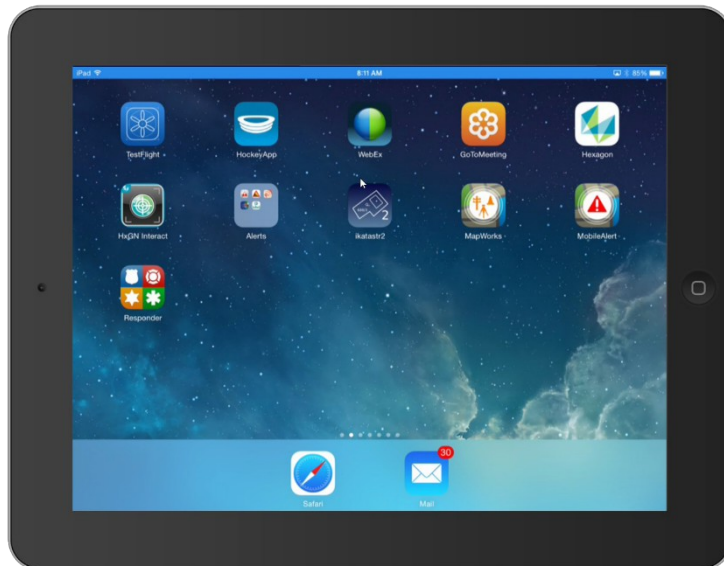
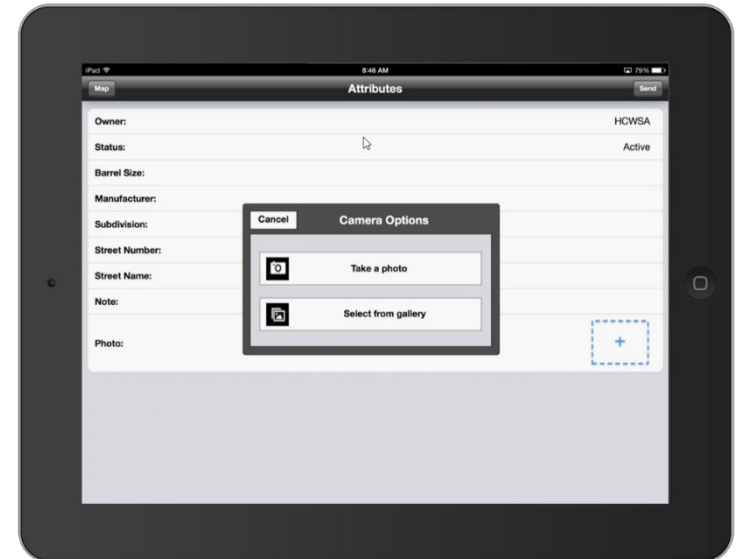
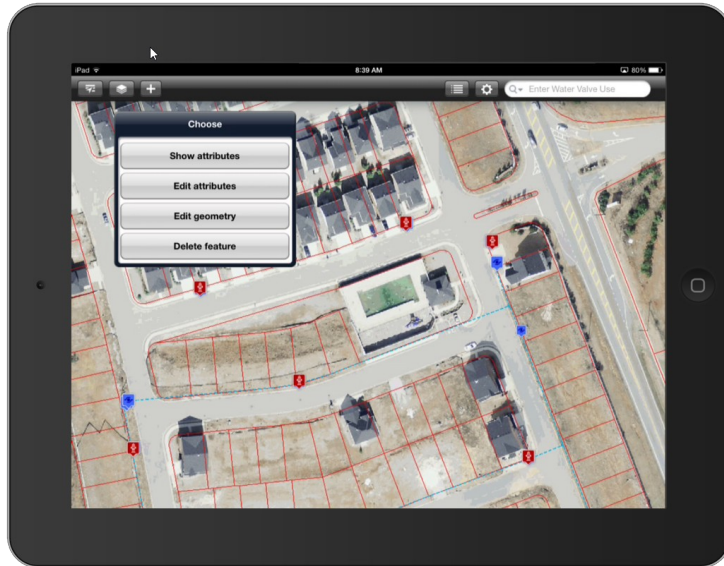
# GeoMedia Mobile Applications: “mobile GIS”

IMGS – Dublin City Council

Asset Management means to the Roads & Traffic Department



# Mobile MapWorks: a tablet-based app



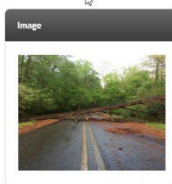


# Mobile Alert: a “pure” app

16360	Illegal Parking	La Harpe Blvd, Little Rock, AR 72201	Received	Tue, Apr 29 2014 10:07 PM	 
16359	Streetlight Problem	151 Rolling Lea Pl, Madison, AL 35758	Received	Tue, Apr 29 2014 8:18 PM	 
16358	Tree- Obstruction	County Road 8-32, Vina, AL 35593	Received	Tue, Apr 29 2014 6:34 PM	 
16355	Other	37 E Pershing Rd, Kansas City, MO 64108	Received	Tue, Apr 29 2014 2:49 PM	 

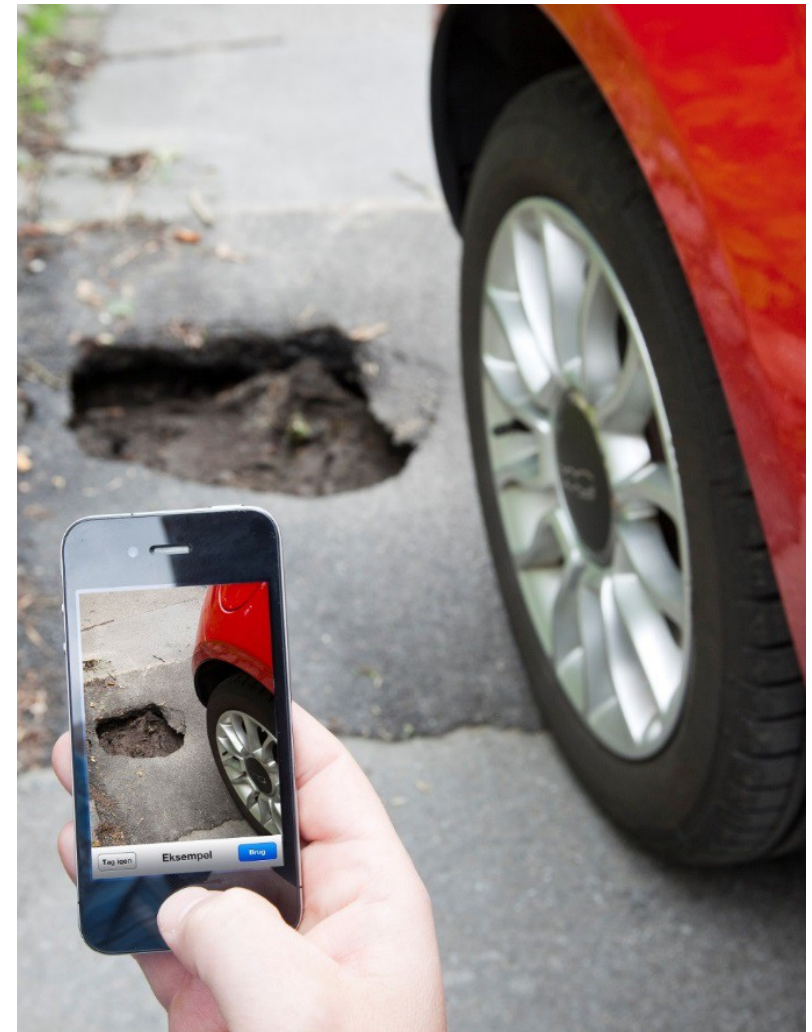
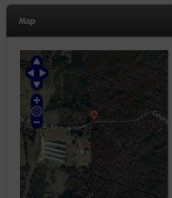
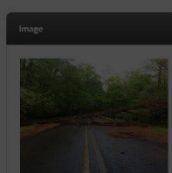
## Details

Category: Tree- Obstruction  
Comment: Big pine tree  
Address: County Road 8-32, Vina, AL 35593 (approx. 5 meters from point)  
Longitude: -88.0210255366638  
Latitude: 34.3657608842797  
Camera Heading: -1 degrees (0 degrees is north)  
Accuracy: 10 meters  
Status: Received



## Details

Category: Tree- Obstruction  
Comment: Big pine tree  
Address: County Road 8-32, Vina, AL 35593  
Longitude: -88.0210255366638  
Latitude: 34.3657608842797  
Camera Heading: -1 degrees (0 degrees is north)  
Accuracy: 10 meters  
Status: Received



# Questions?

**SMARTER**DECISIONS