Integrating Analytic Talent for Intelligence Analysis

David Attaway

John Fry

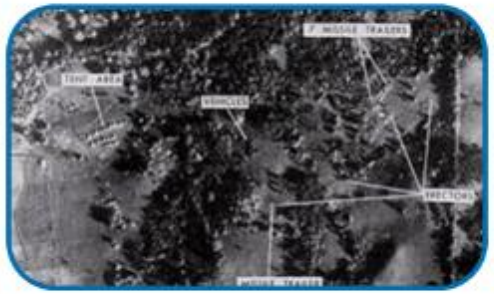
Global Challenges

A Dynamic World Creates Complex Intelligence Challenges

First Age
1944-1962

- Rise of communism
- Human intelligence
- Single threat focus

First professional intelligence



Second Age
1962-2001

- Cold war; nation-states
- Technical collection
- Single threat focus

Stovepipe intelligence

Third Age
2001-2014

- Terrorism and regional conflict
- Info tech, UAV's and web tools
- Threats on the homeland

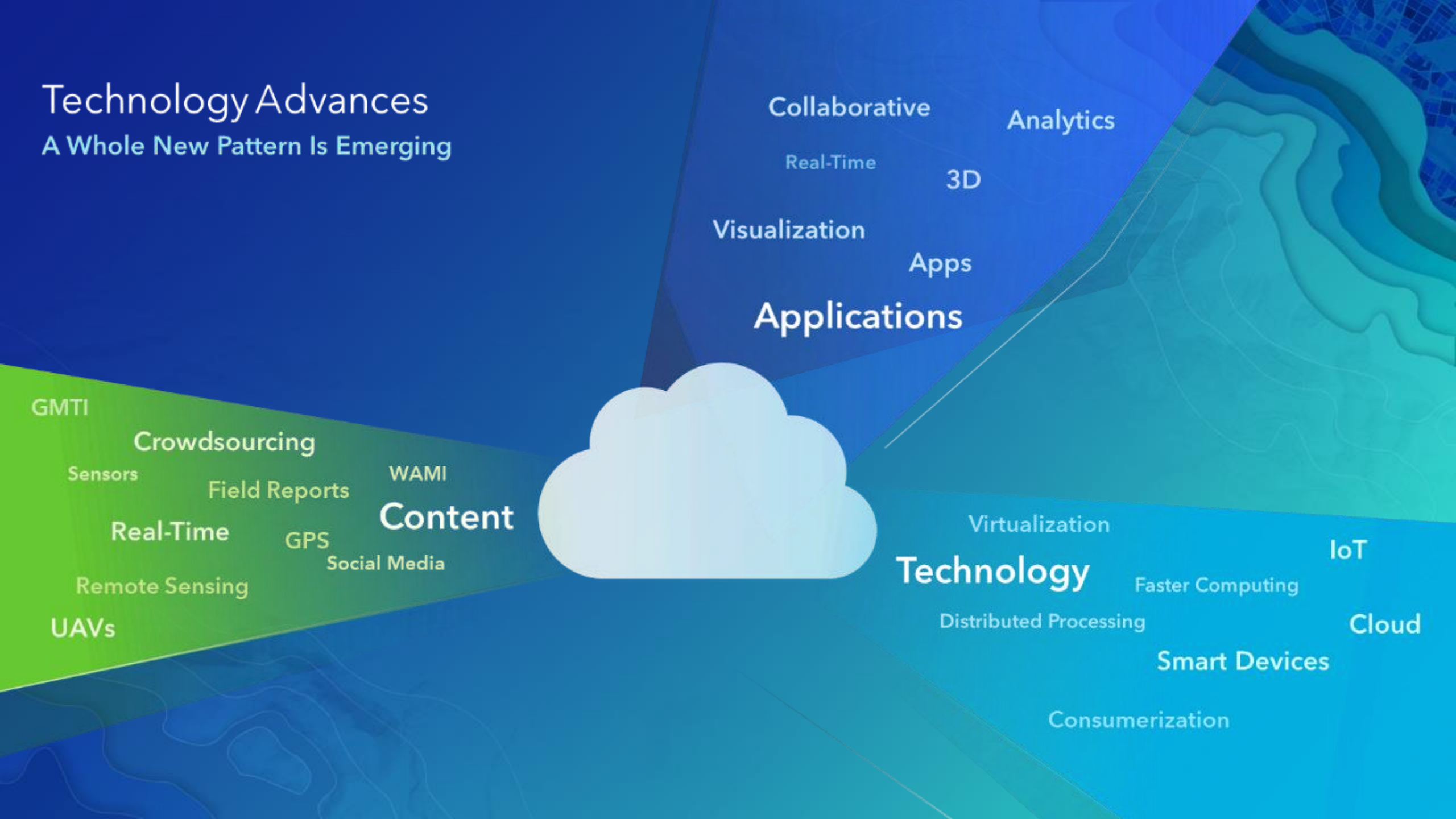
Distributed intelligence

Fourth Age
2014+

- Terror, cyber and WMD
- Multi-int & big data analytics
- Diverse distributed groups

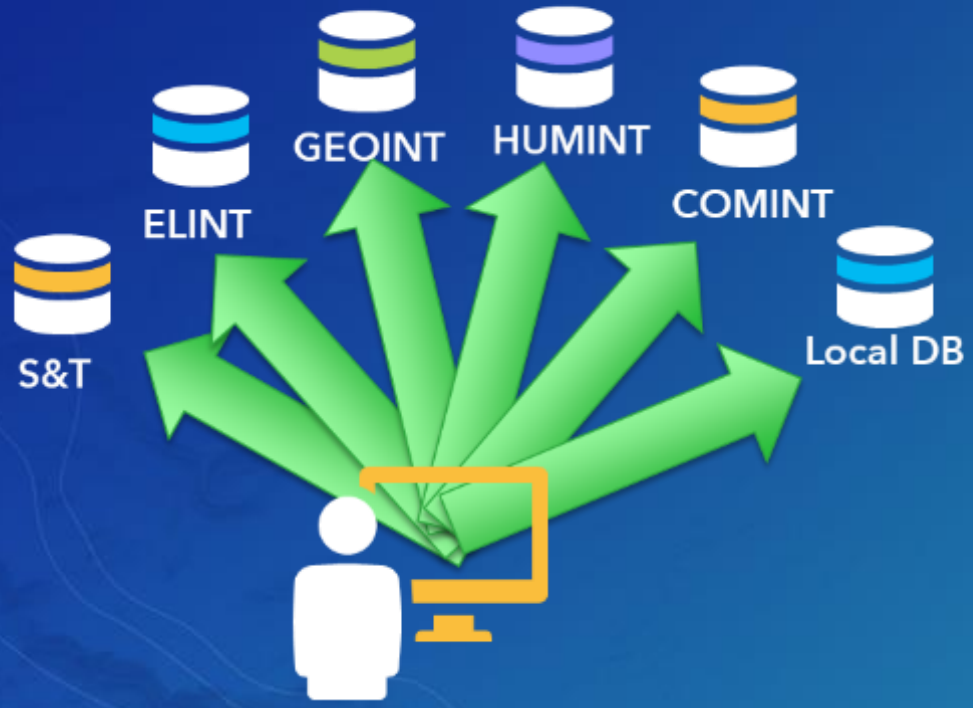
Integrated intelligence

Increasing Change and Rates of Change


Technology Advances
A Whole New Pattern Is Emerging
Collaborative
Analytics
Real-Time
3D
Visualization
Apps
Applications
GMTI
Crowdsourcing
Sensors
WAMI
Field Reports
Content
Real-Time
GPS
Social Media
Remote Sensing
UAVs
Virtualization
IoT
Technology
Faster Computing
Distributed Processing
Cloud
Smart Devices
Consumerization

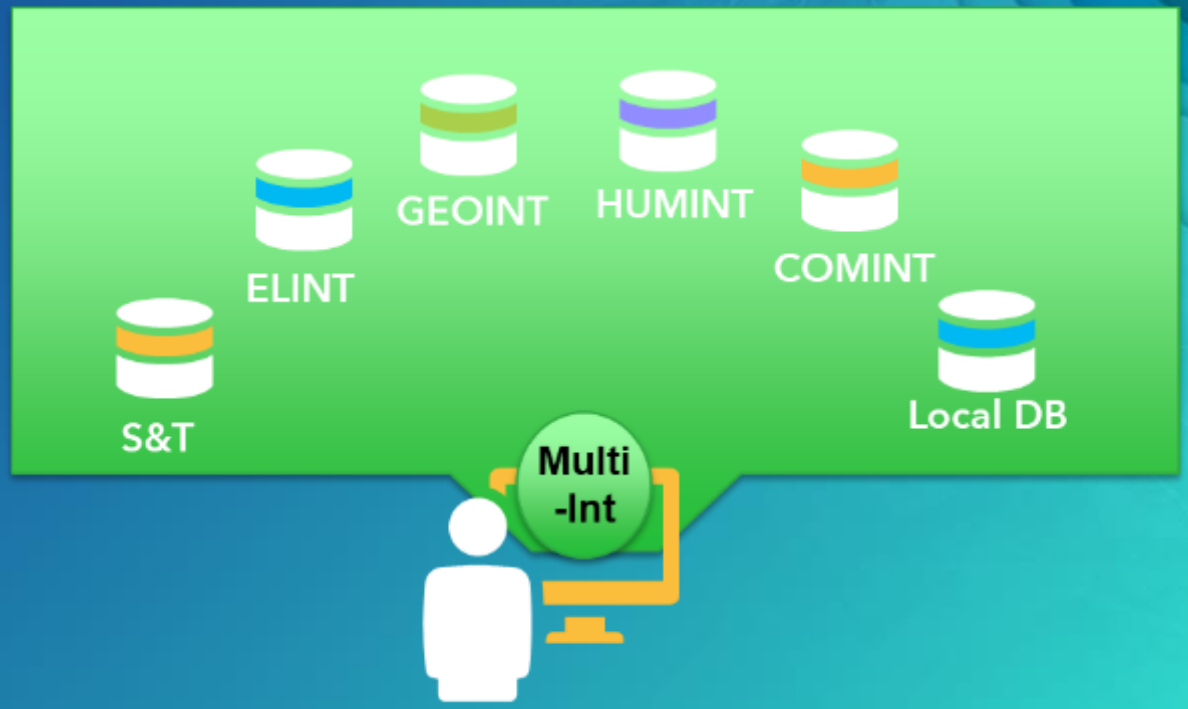
Multi-Int Approach

Current Approach
Intelligence Organization by INT



Intelligence discovery requires accessing numerous data sources across the IC

Multi-Int Fusion Approach to Analysis



Intelligence across disciplines for a specific target

Location, Mapping and GIS Are Becoming Essential

A Fundamental Language
for Understanding and
Managing Our World

Providing Content
and Context

About Everything

GIS Provides the Framework and Process

For Enabling a Smarter World

Science

Data Integration and Management

Visualization and Mapping

Analysis and Modeling

Understanding

Planning and Design

Decision-Making

Action

Collaborating

Transforming How We Think and Act . . .
. . . Creating a More Sustainable Future

GIS Connects Everyone

Creating a System of Engagement

Supporting Real-Time Awareness and Collaboration

Communities

Organizations

People

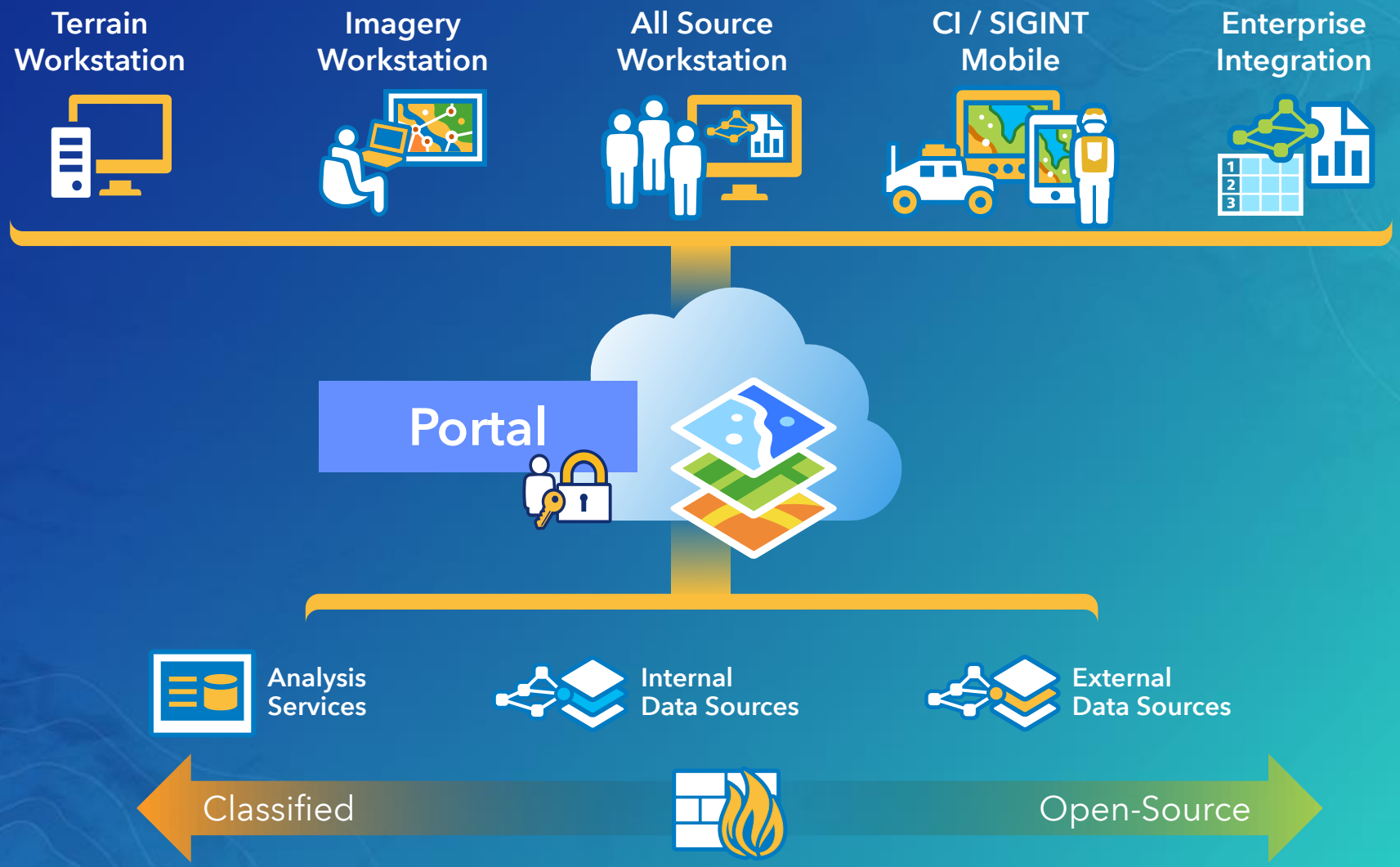
GIS Provides a Common Language for Communication

GIS Embeds Advanced Analytics and Visualization

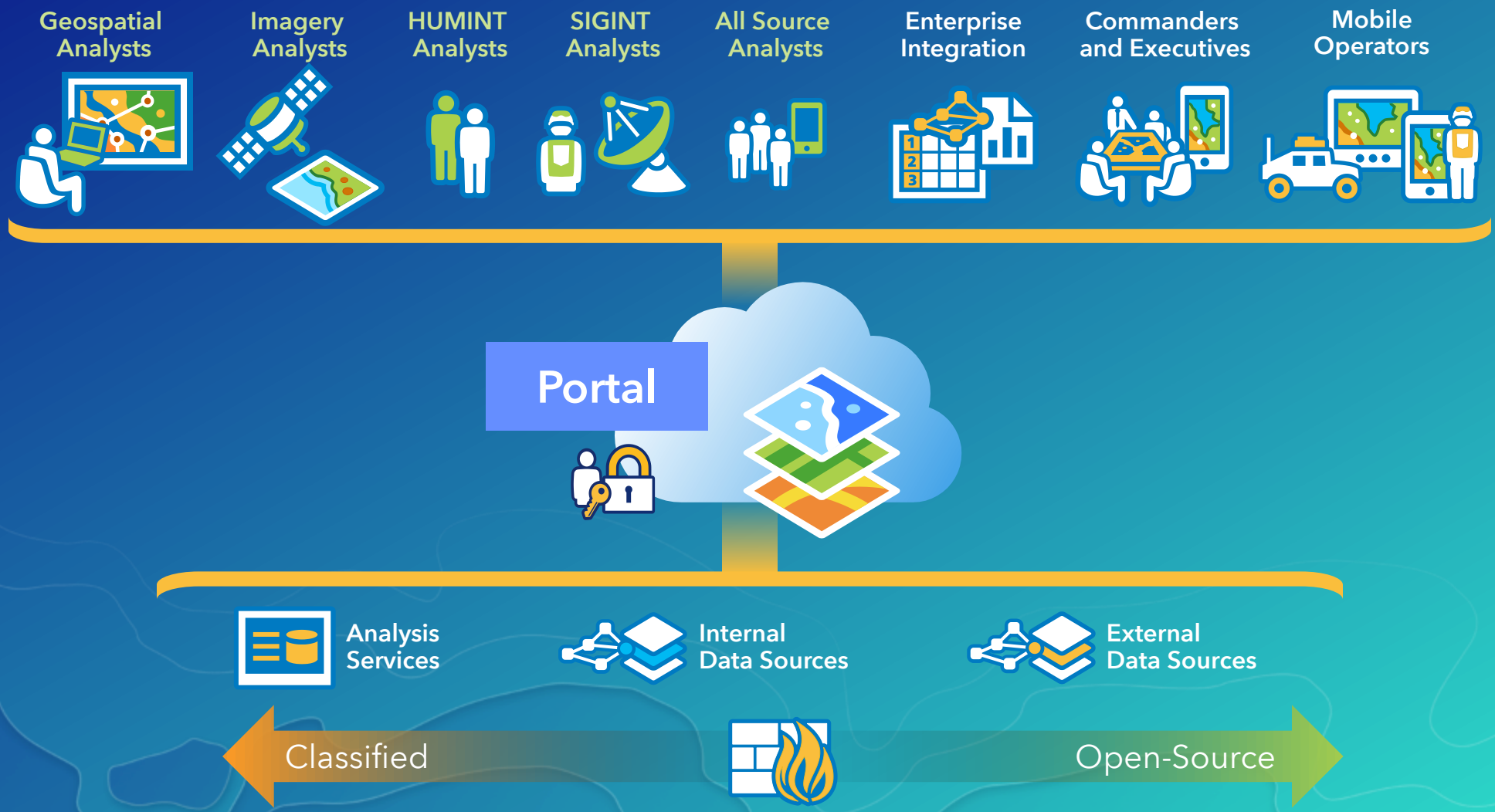
Providing a System of Insight

What does this mean?

GIS is a Multi-Int Platform

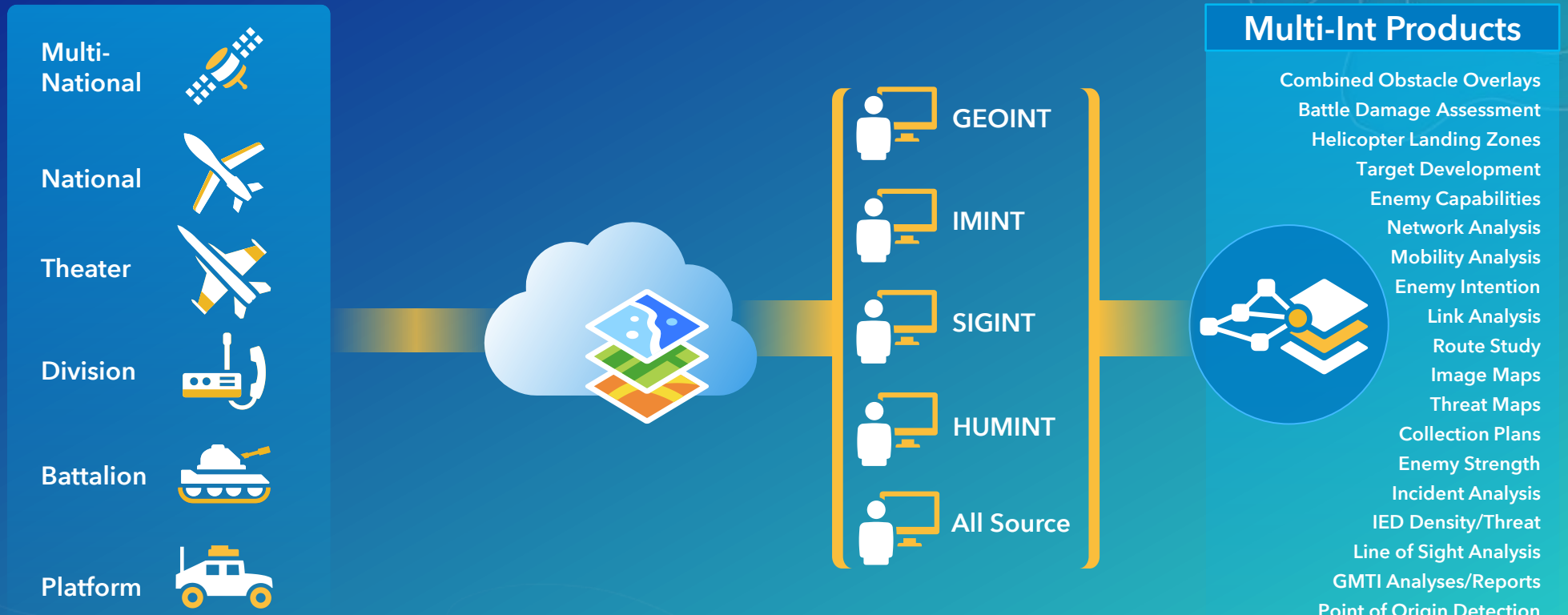


GIS Integrates Intelligence and Operations

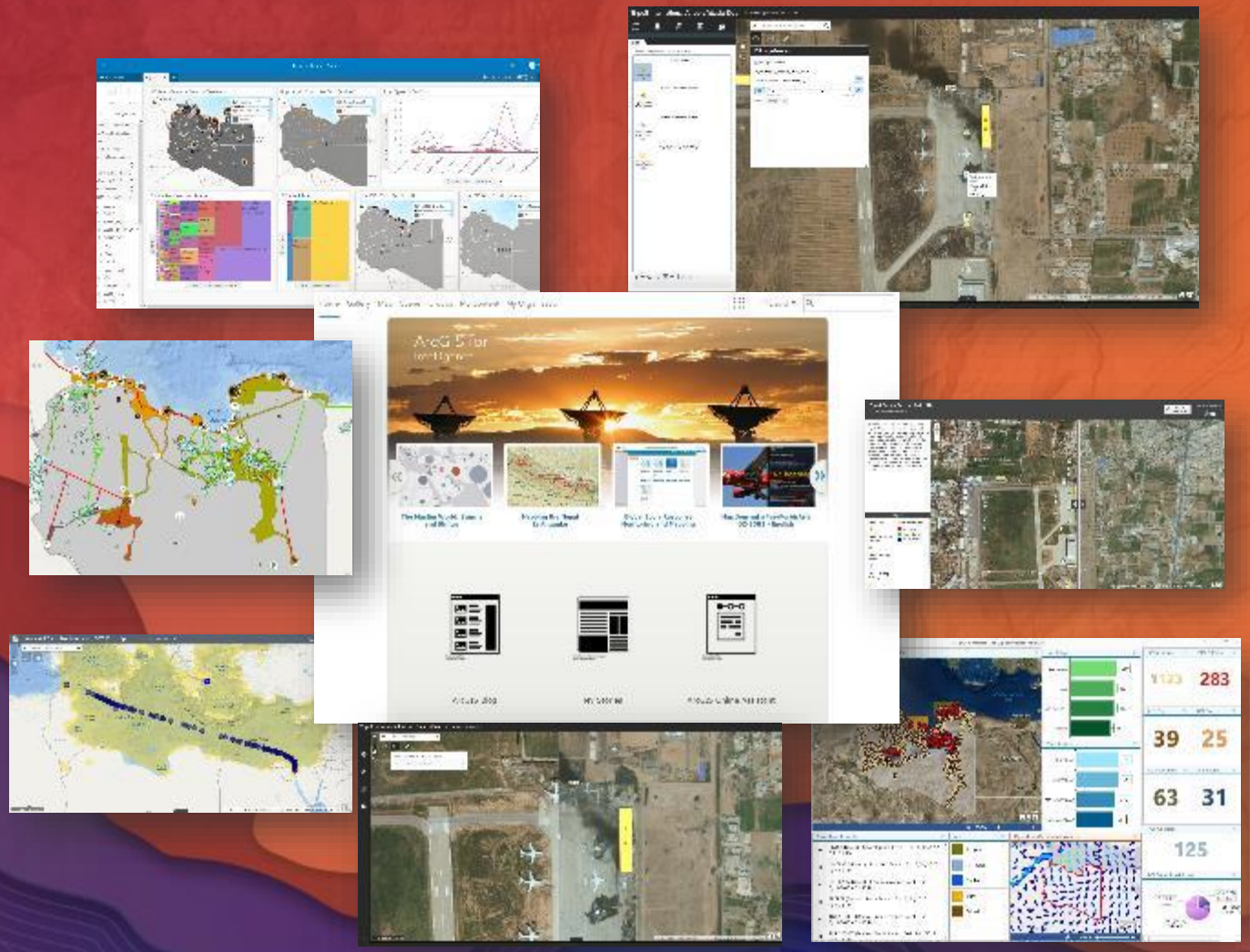


Intelligence Platform

ArcGIS Can Provide the Intelligence Platform



From Raw Data to Finished Intelligence



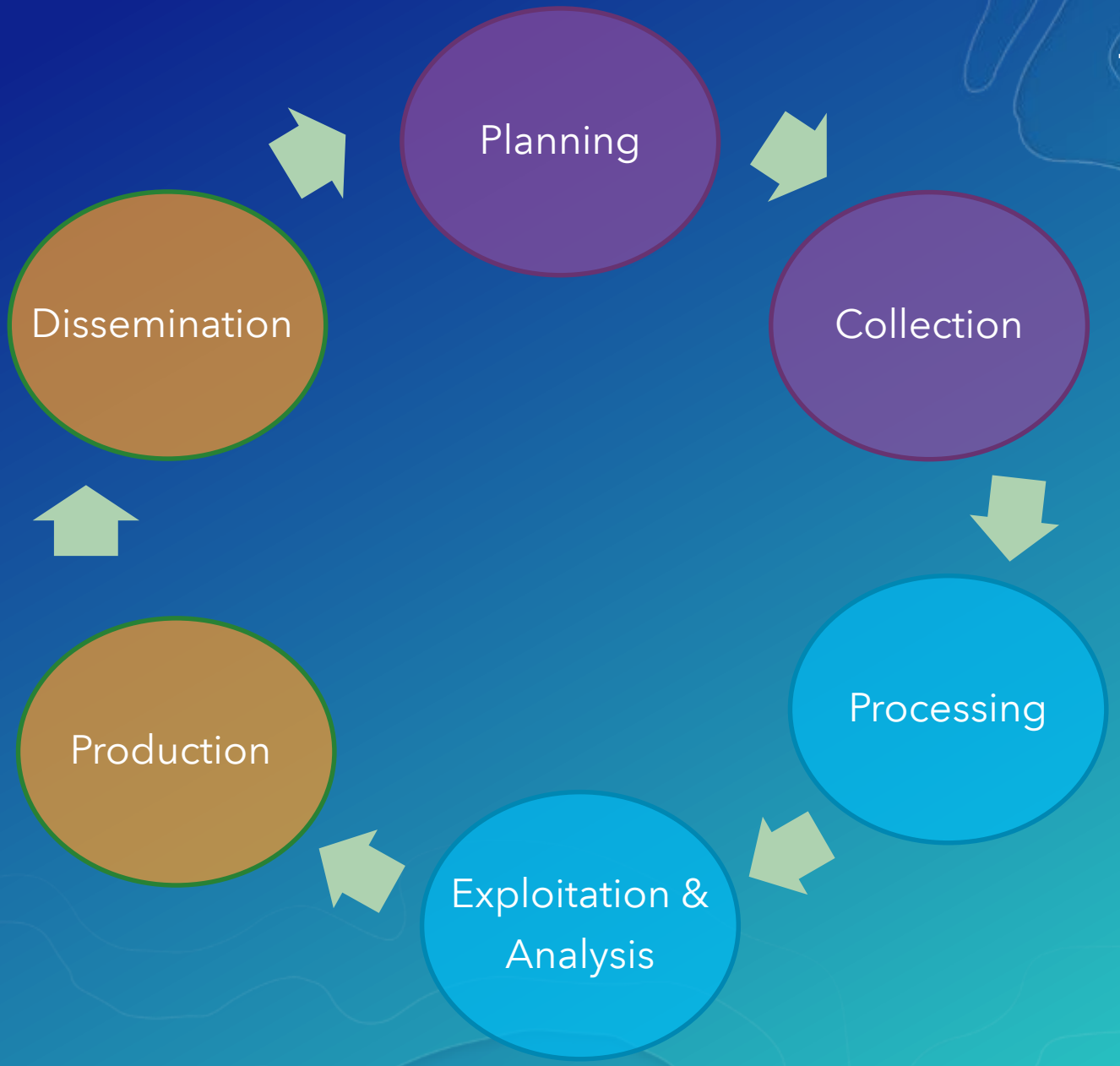
Multi-Intelligence Platform

David Attaway

Intelligence Support to Operations

Decision Advantage Gained
When, where and how likely is it to happen?
Anticipatory Analytics
What might happen?
Forecasting
Statistical Analysis
Why did it happen?
Query/Drill Down
What are the specific causes?
Visualization
Where? How Many? How Often?
Tailored Reports
Where? How Many? How Often?
Standard Reports
What Happened?
Alerts
Something Happened
Analytic Effort Required

The Intelligence Cycle



Apps | For Every Phase of the Cycle

Planning & Collection

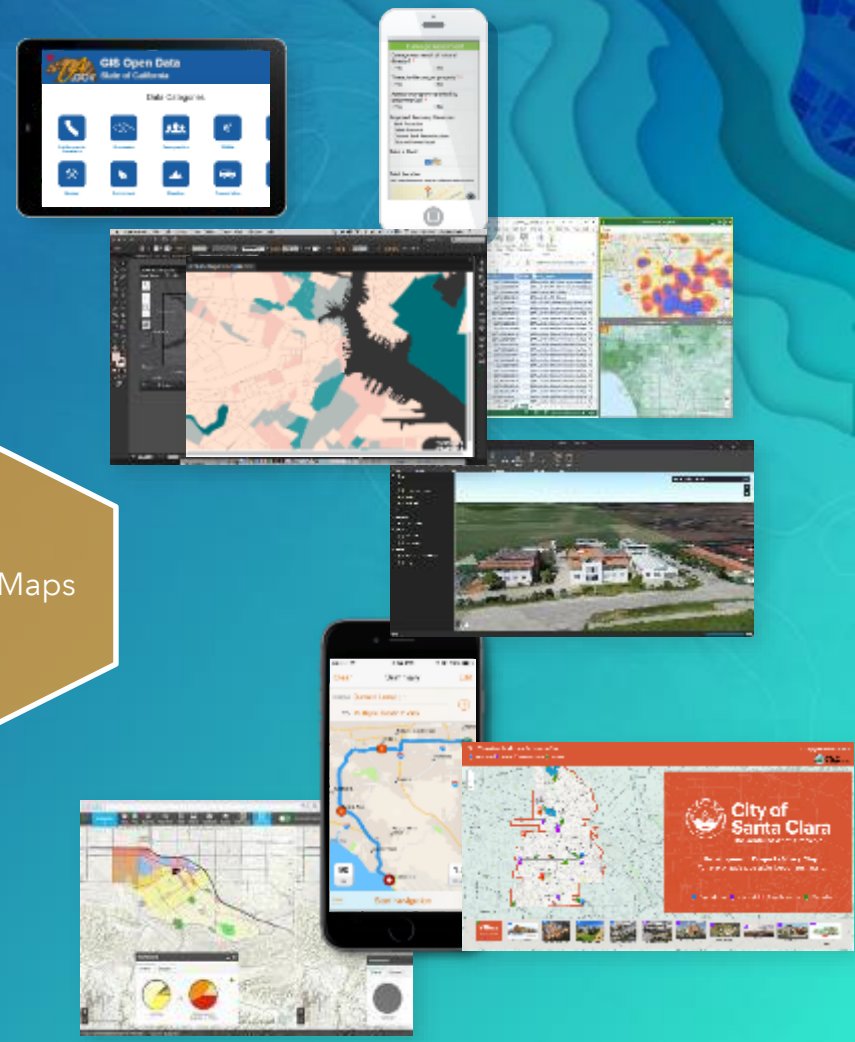
- Geoform
- Collector
- GeoEvent
- Workforce
- Crowd Source
- Survey123

Exploitation & Analysis

- Insights
- Pro
- Geo Planner
- Operations Dashboard
- Maps for Office
- Geo-Analytics

Production & Dissemination

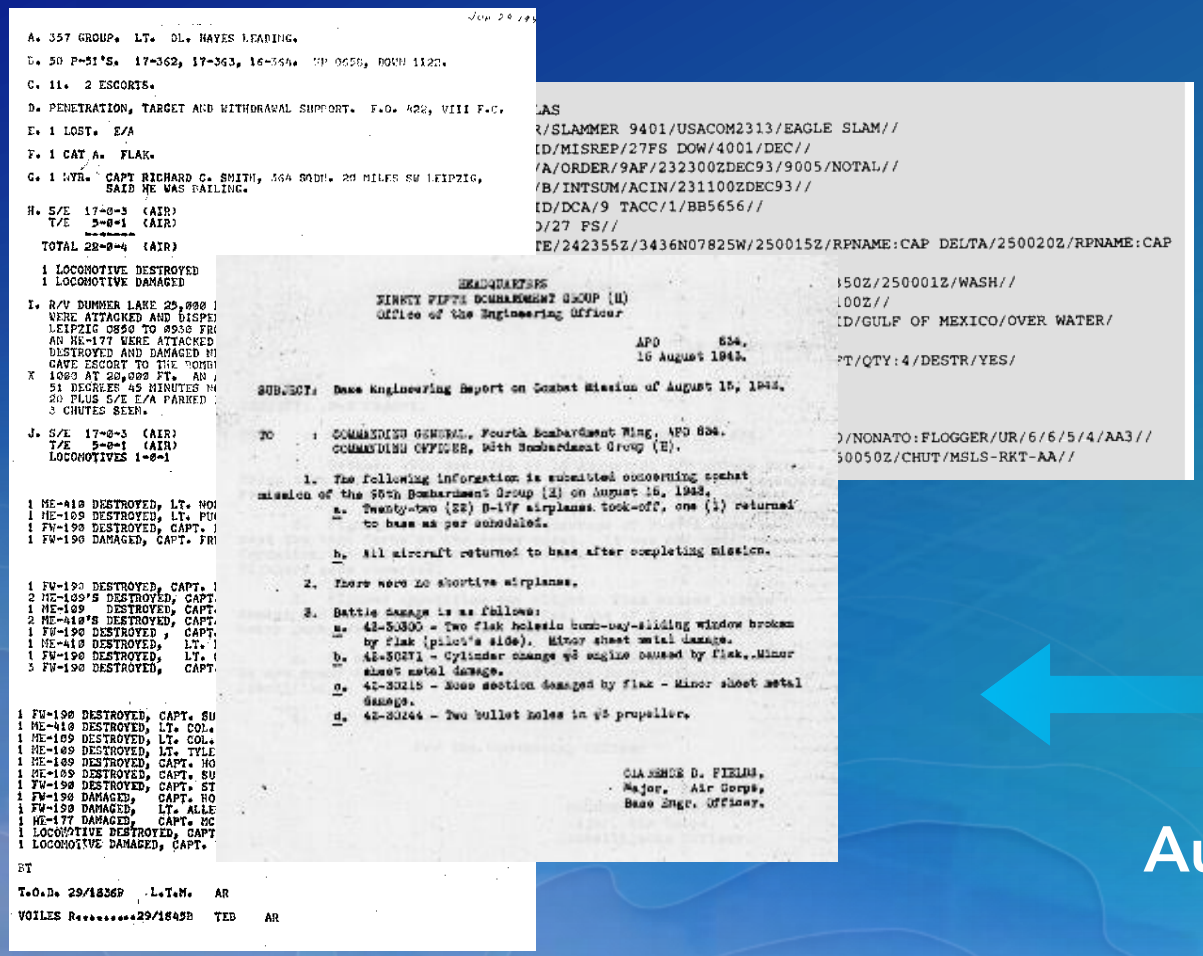
- Open Data
- Story Maps
- Quick Report
- Summary Viewer
- Swipe & Spyglass
- Time Aware



Focused, Powerful and Ready-to-Use

Geospatially Enabled Intelligence Reporting

Textual Report to a GIS



A. 357 GROUP. LT. OL. HAYES LEADING.

B. 50 P-51'S. 17-362, 17-363, 16-364. UP 0650, DOWN 1120.

C. 11. 2 ESCORTS.

D. PENETRATION, TARGET AND WITHDRAWAL SUPPORT. F.O. 428, VIII F.C.

E. 1 LOST. E/A

F. 1 CAT A. FLAK.

G. 1 WYN. CAPT RICHARD C. SMITH, 364 SQDN. 20 MILES SW LEIPZIG, SAID HE WAS BAILING.

H. S/E 17-0-3 (AIR)
T/E 5-0-1 (AIR)
TOTAL 22-0-4 (AIR)

1 LOCOMOTIVE DESTROYED
1 LOCOMOTIVE DAMAGED

I. R/V DUMMER LAKE 25,000 ... WERE ATTACKED AND DISPE... LEIPZIG 0850 TO 0930 FR... AN ME-177 WERE ATTACKED ... DESTROYED AND DAMAGED ... GAVE ESCORT TO THE BOMB...
X 1000 AT 20,000 FT. AN ...
51 DEGREES 45 MINUTES N...
20 PLUS S/E E/A PARKED ...
3 CHUTES SEEN.

J. S/E 17-0-3 (AIR)
T/E 5-0-1 (AIR)
LOCOMOTIVES 1-0-1

1 ME-410 DESTROYED, LT. NO...
1 ME-109 DESTROYED, LT. PU...
1 FW-190 DESTROYED, CAPT. ...
1 FW-190 DAMAGED, CAPT. FR...

1 FW-190 DESTROYED, CAPT. ...
2 ME-109'S DESTROYED, CAPT...
1 ME-109 DESTROYED, CAPT...
2 ME-410'S DESTROYED, CAPT...
1 FW-190 DESTROYED, CAPT...
1 ME-410 DESTROYED, LT. ...
1 FW-190 DESTROYED, LT. ...
3 FW-190 DESTROYED, CAPT...

1 FW-190 DESTROYED, CAPT. SU...
1 ME-410 DESTROYED, LT. COL...
1 ME-109 DESTROYED, LT. COL...
1 ME-109 DESTROYED, LT. TYLE...
1 ME-109 DESTROYED, CAPT. HO...
1 ME-109 DESTROYED, CAPT. SU...
1 FW-190 DESTROYED, CAPT. ST...
1 FW-190 DAMAGED, CAPT. HO...
1 FW-190 DAMAGED, LT. ALLE...
1 ME-177 DAMAGED, CAPT. MC...
1 LOCOMOTIVE DESTROYED, CAPT...
1 LOCOMOTIVE DAMAGED, CAPT.

BT

T.O.D. 29/1826Z L.T.M. AR

VOILES Receives 29/1845Z TED AR

...LAS
...R/SLAMMER 9401/USACOM2313/EAGLE SLAM//
...ID/MISREP/27FS DOW/4001/DEC//
.../A/ORDER/9AF/232300ZDEC93/9005/NOTAL//
.../B/INTSUM/ACIN/231100ZDEC93//
...ID/DCA/9 TACC/1/BB5656//
...D/27 FS//
...TE/242355Z/3436N07825W/250015Z/RPNAME:CAP DELTA/250020Z/RPNAME:CAP
...50Z/250001Z/WASH//
...00Z//
...ID/GULF OF MEXICO/OVER WATER/
...PT/QTY:4/DESTR/YES/
...D/NONATO:FLOGGER/UR/6/6/5/4/AA3//
...50050Z/CHUT/MSLS-RKT-AA//

HEADQUARTERS
NINETY FIFTH BOMBARDMENT GROUP (H)
Office of the Engineering Officer

APO 634,
16 August 1943.

SUBJECT: Base Engineering Report on Combat Mission of August 15, 1943.

TO : COMMANDING GENERAL, Fourth Bombardment Wing, APO 634.
COMMANDING OFFICER, 95th Bombardment Group (H).

1. The following information is submitted concerning combat mission of the 95th Bombardment Group (H) on August 15, 1943.
a. Twenty-two (22) B-17F airplanes took-off, one (1) returned to base as per scheduled.

b. All aircraft returned to base after completing mission.

2. There were no abortive airplanes.

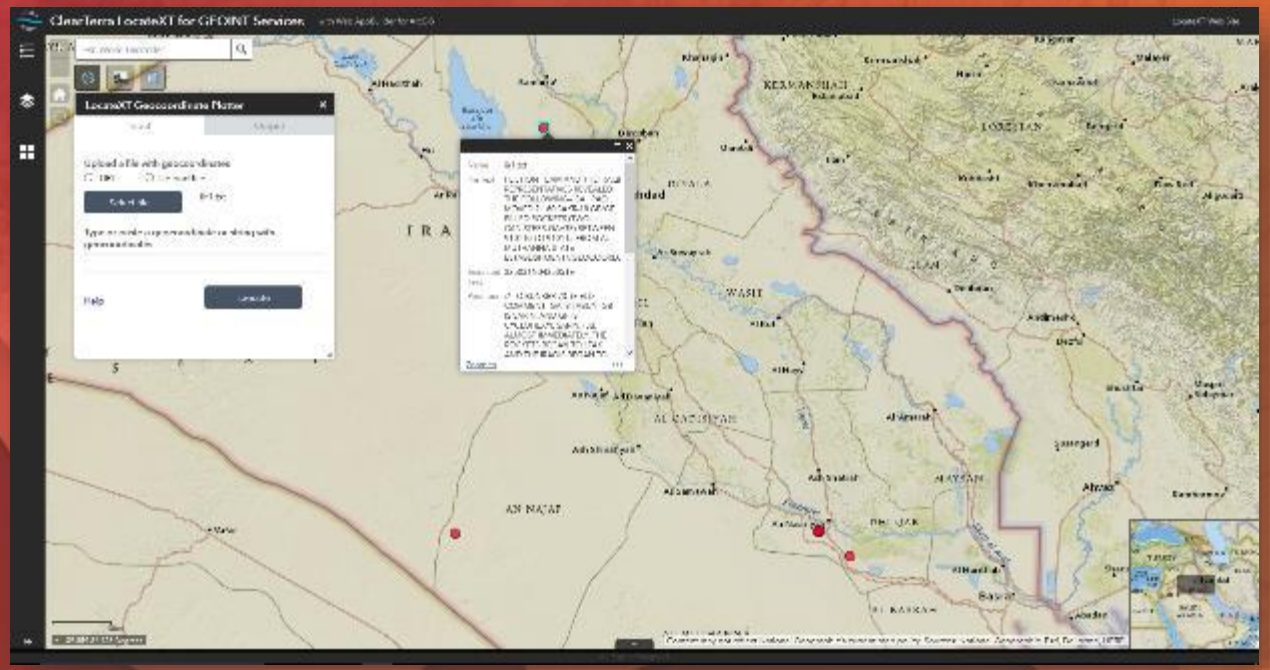
3. Battle damage is as follows:
a. 42-5300 - Two flak holesin bomb-bay-sliding window broken by flak (pilot's side). Minor sheet metal damage.
b. 42-30271 - Cylinder orange #3 engine caused by flak. Minor sheet metal damage.
c. 42-30215 - Nose section damaged by flak - Minor sheet metal damage.
d. 42-30244 - Two bullet holes in #3 propeller.

CLARENCE D. FIELDS,
Major, Air Corps,
Base Engr. Officer.

Manual Text Extraction

Hand-jamming

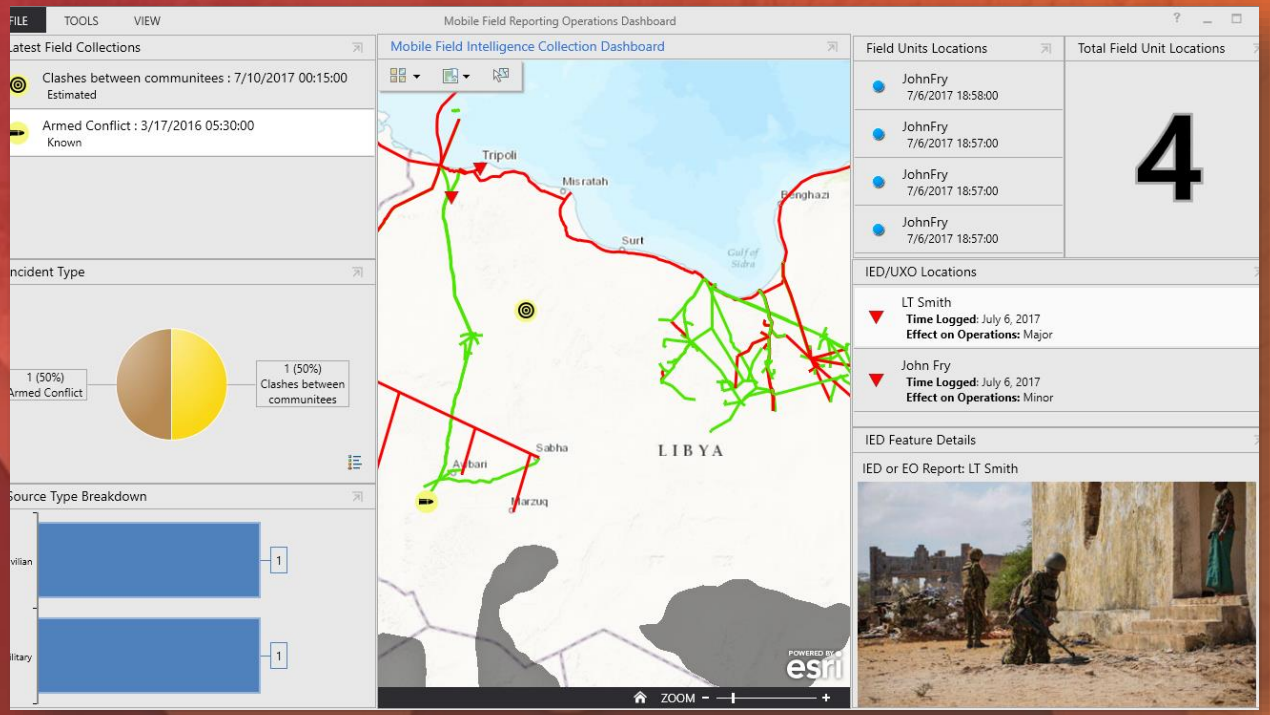
Automatic Text Extraction



Text to GIS

(ClearTerra Locate XT)

John Fry

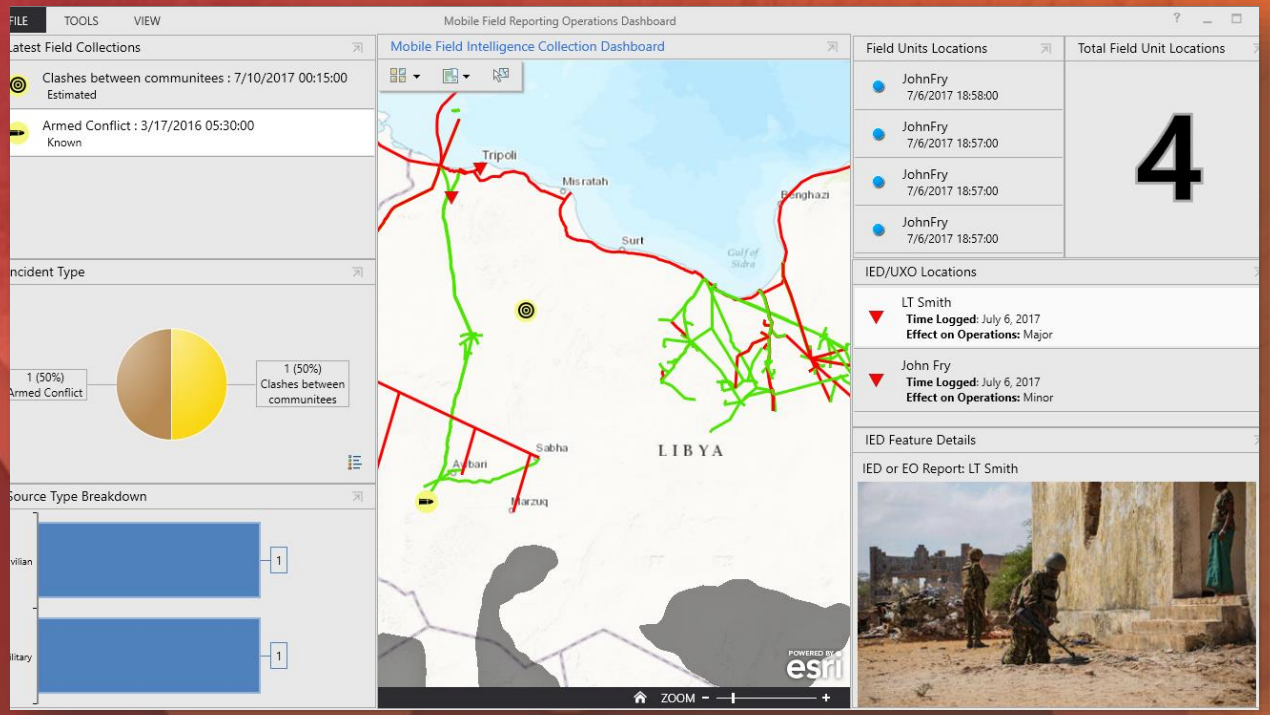


Field Collection

Collector for ArcGIS

Operations Dashboard

John Fry



Field Collection

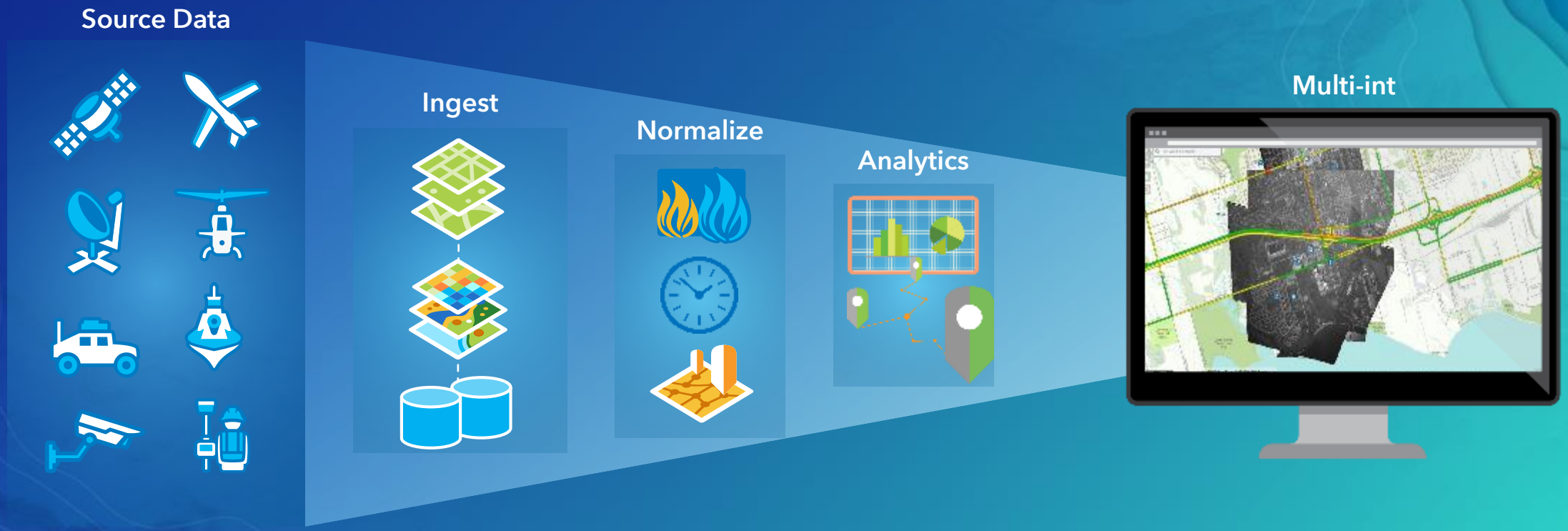
Collector for ArcGIS

Operations Dashboard

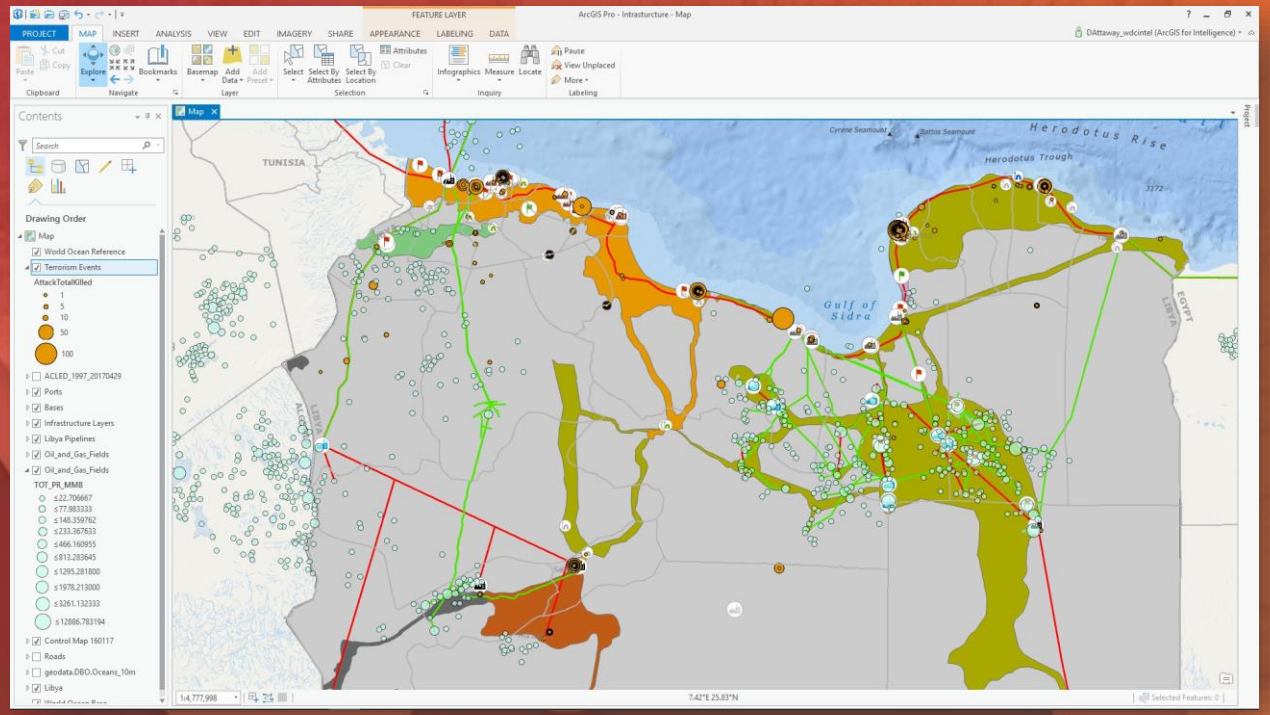
John Fry

Critical Architecture

A Complex Problem



Analyst Example: GEOINT



GEOINT Analyst

Foundation Data

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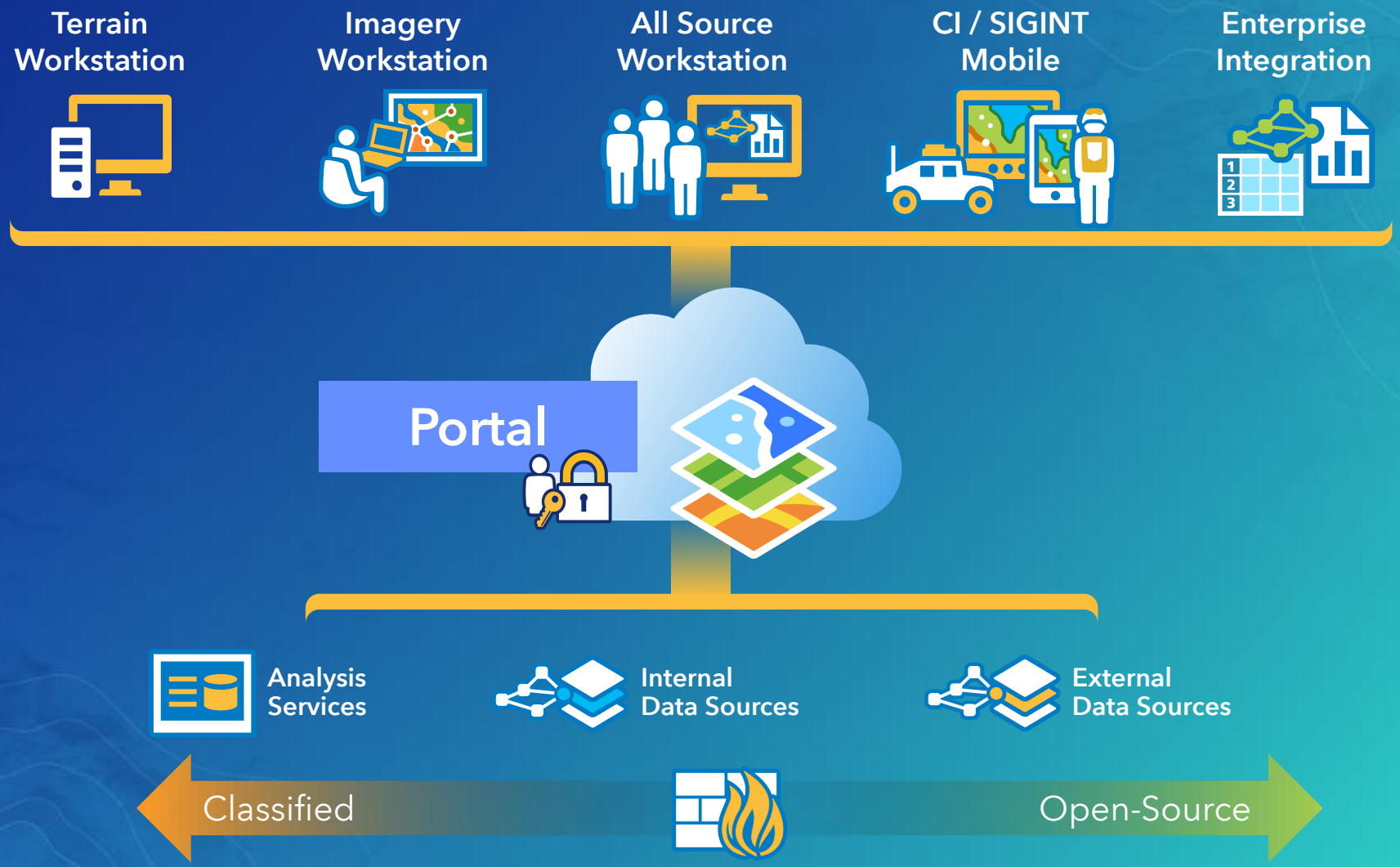
GIS is a Multi-Int Platform

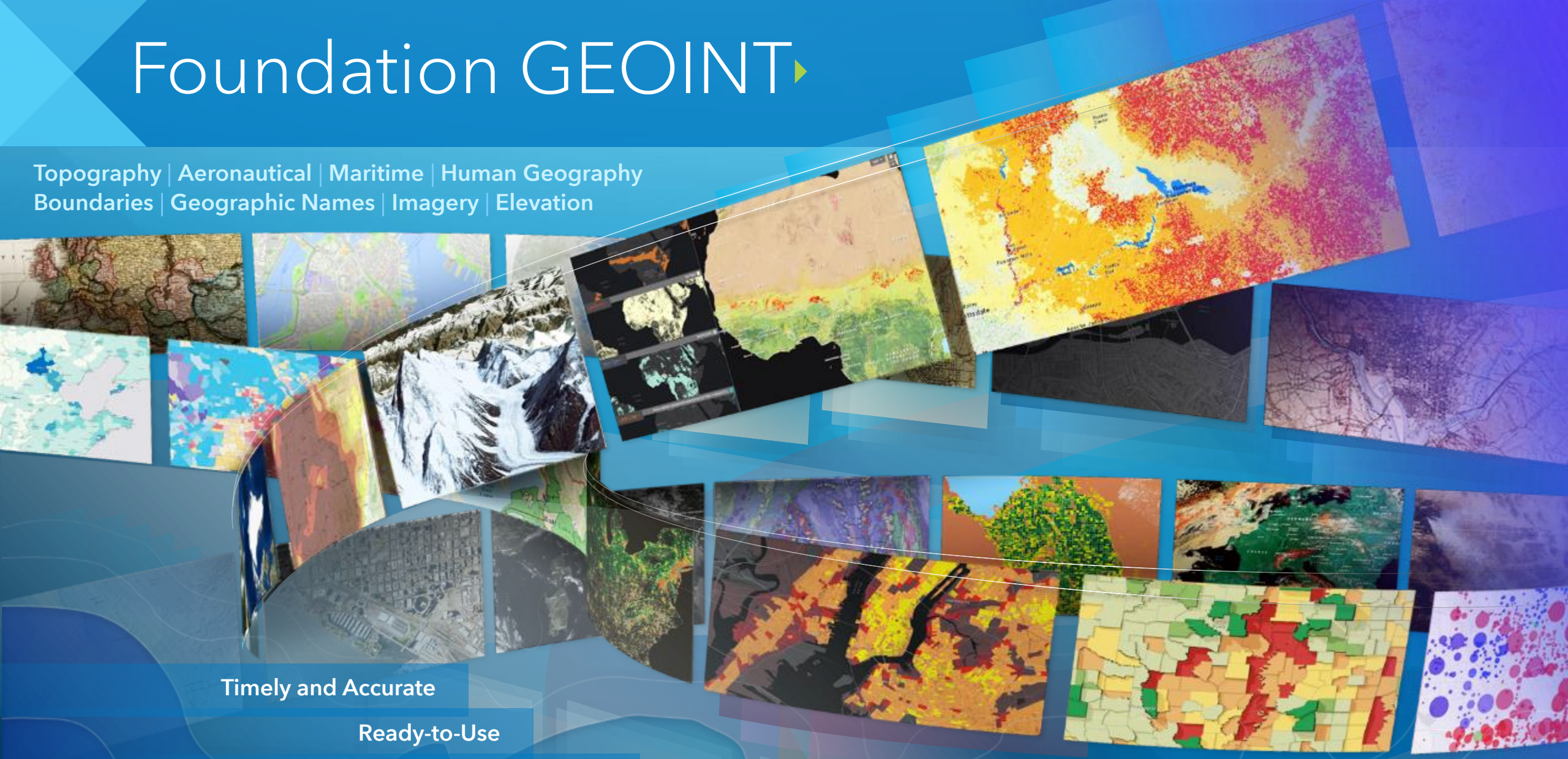


Intelligence Preparation of the Battlespace

1. **Define** the Battlefield / BattleSpace
2. **Describe** the Operational Environment
3. **Evaluate** the Threat / Adversary
4. **Determine** Course of Action

Foundation GEOINT

Topography | Aeronautical | Maritime | Human Geography
Boundaries | Geographic Names | Imagery | Elevation



Timely and Accurate

Ready-to-Use

Authoritative

Delivered at the point of warfighter and analyst needs to ensure timely decision making and operational success

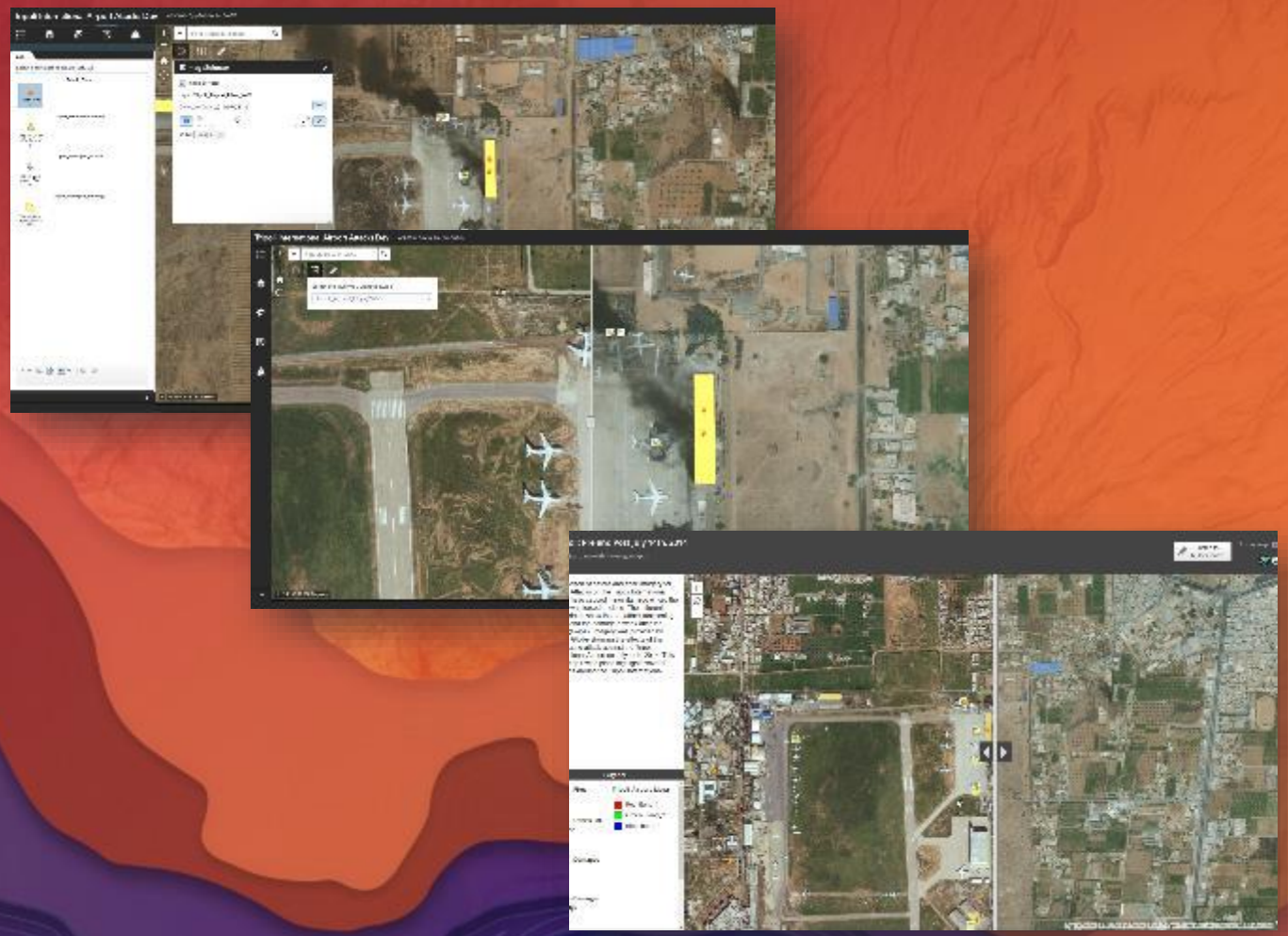
Imagery Enables the Geospatial Intelligence Domain

See the Earth

Find What's There

Share with Others

See, Find, Share…



IMINT App

David Attaway

ArcGIS Is a GEOINT Platform

Capable of supporting TPED

Find

Image Processing & Analytics

- Feature Extraction
- Land Cover Classification
- Elevation Creation
- Partner Technology

Professional Imagery & Geospatial Analysts

Server

Share

Sharing & Collaboration

- Web Services
- Maps & Apps
- User Mashups

See

Content Management

- Shared Data Model
- Data Discovery
- Metadata Handling
- Time Enabled

Analyst Example: All-Source Production

Intelligence Analysis Workflow

Intel Analyst Workflow

Collection	Visualization	Analysis	Product Creation	Sharing
Data Sensors Locations Events Information	Importing Layering Filtering Symbolizing	Workflows Map Templates Models Tools Python Scripts	IDP PowerPoint Legends Screen Captures Layout View	Verifying Sharing Understanding Collaborating

The Power of a Multi-Int Platform

Putting it all together

Operators

Workflows & Models

ArcGIS

Web Apps

- Templates
- Widgets
- Dynamic Content

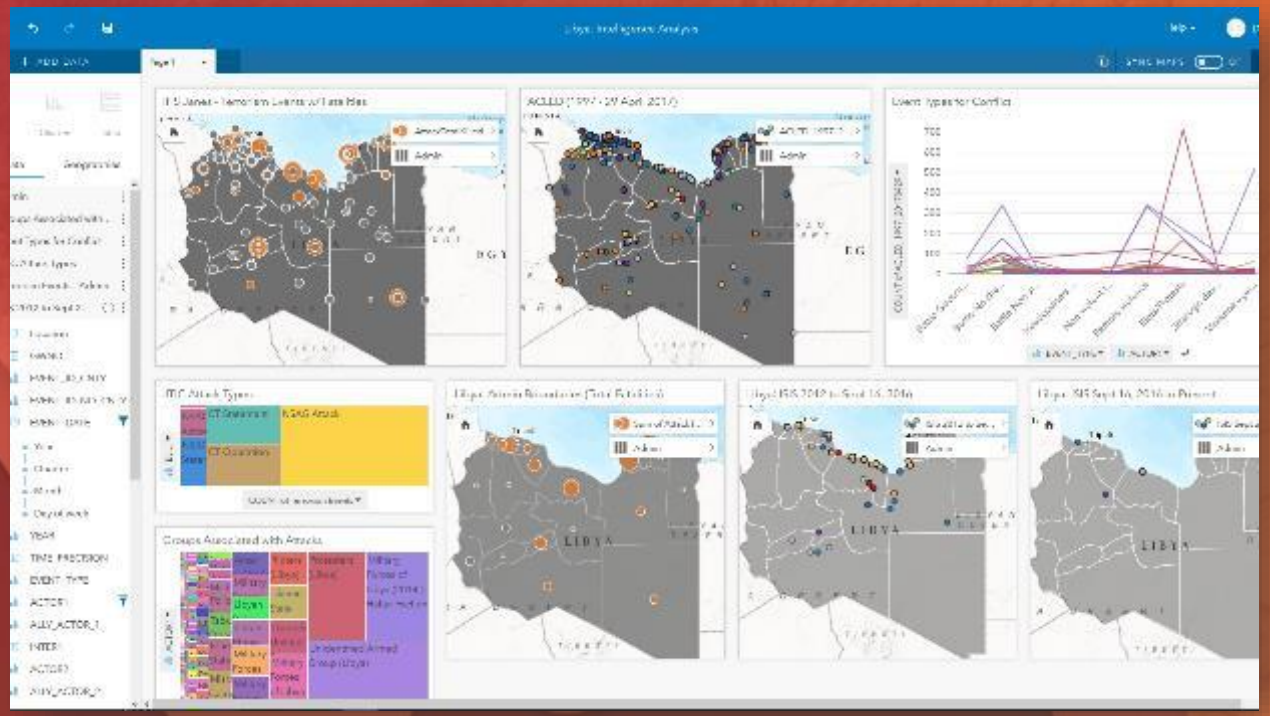
Tradecraft:

- Change Detection
- Land Cover Analysis
- Feature Extraction

Content

- MarketPlace
- Esri Provided
- Build-your-own

Imagery Services



OSINT Analysis

David Attaway

Intelligence Fusion

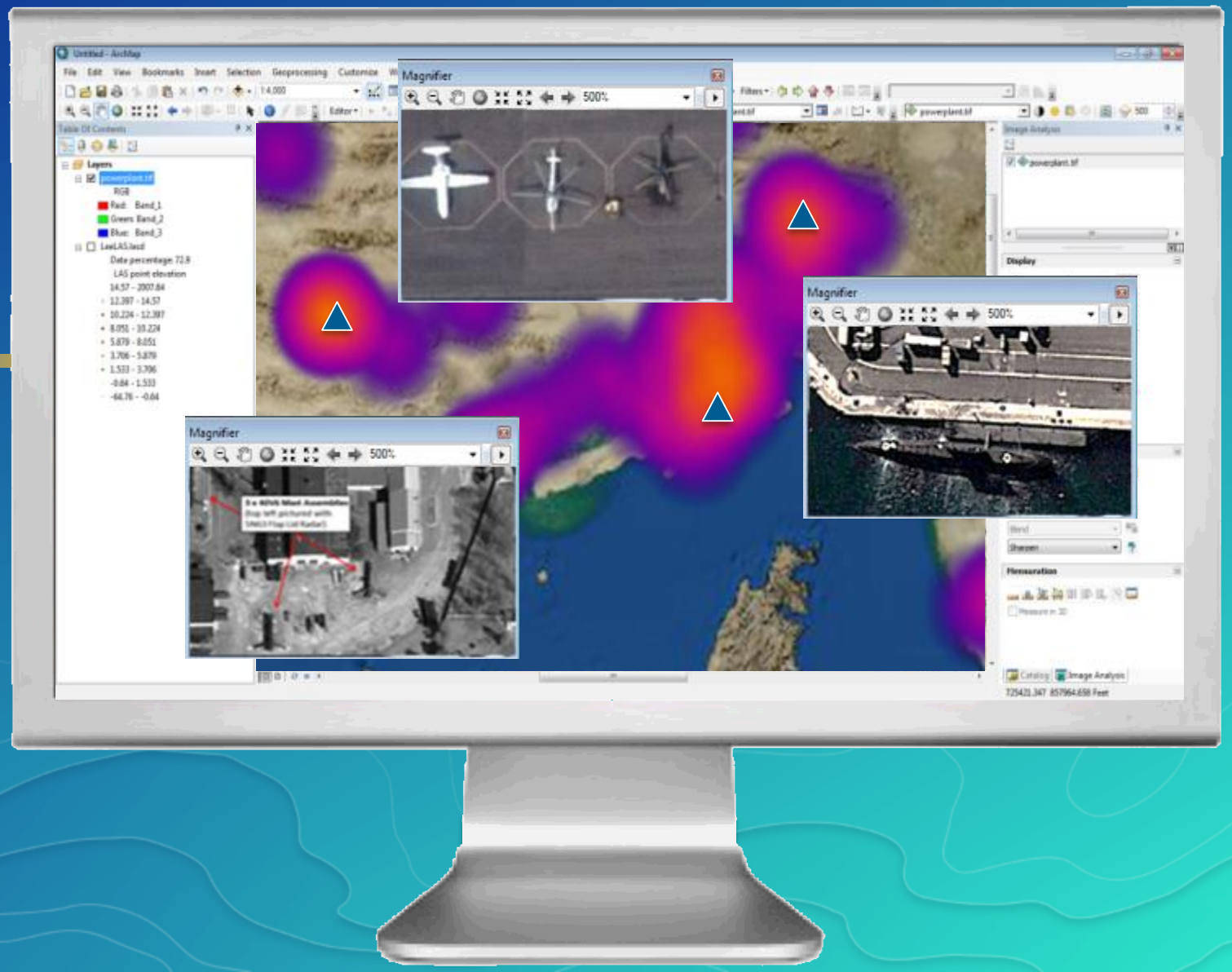
Integrating all-source intelligence on a common platform using geography

GeoSpatial Intelligence
GEOINT

Signals Intelligence
SIGINT

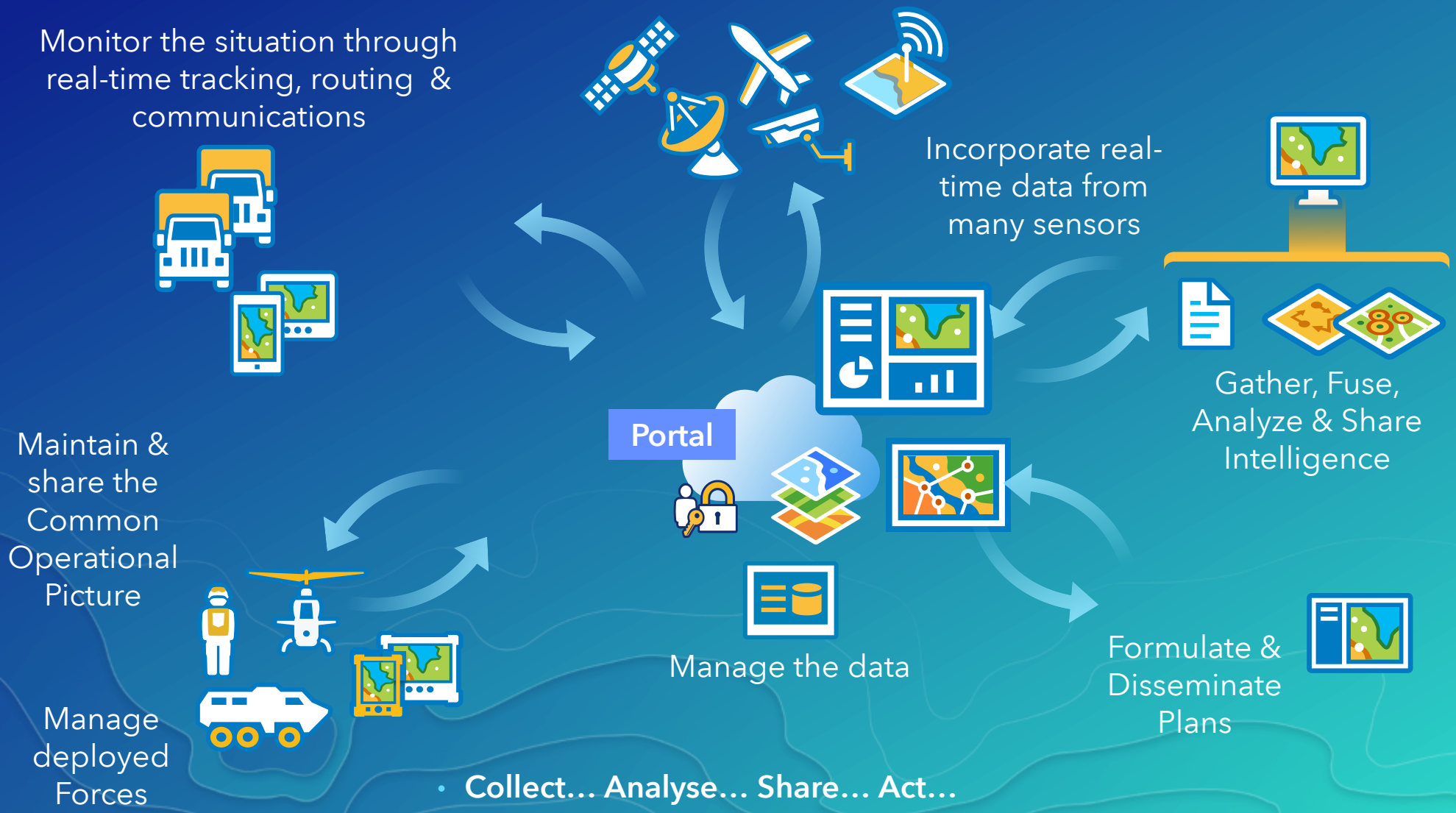
Measurement and Signatures
MASINT

Imagery Intelligence
IMINT



Smarter Decisions

Integrating Real-time Information Feeds & Analysis



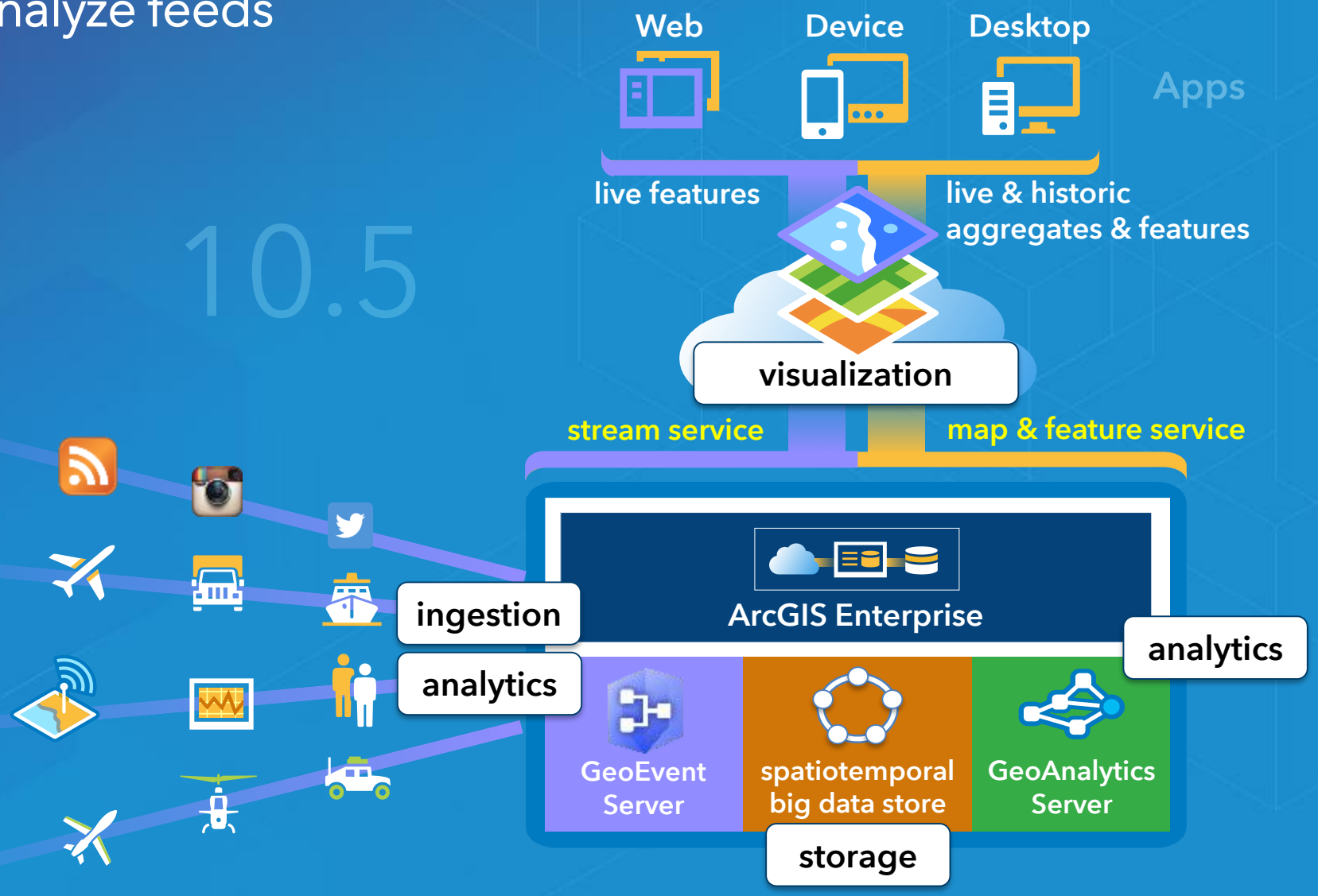
- **Collect… Analyse… Share… Act…**

Connect to, Store and Analyze feeds

real-time & big data capabilities

- Ingest high velocity real-time data into ArcGIS
- Perform continuous analytics on events as they are received
- Store observations in a spatiotemporal big data store
- Run analytics on stored observations
- Visualize high velocity & volume data:
  - as an aggregation
  - as discrete features
- Notify those who need to know about patterns of interest

10.5

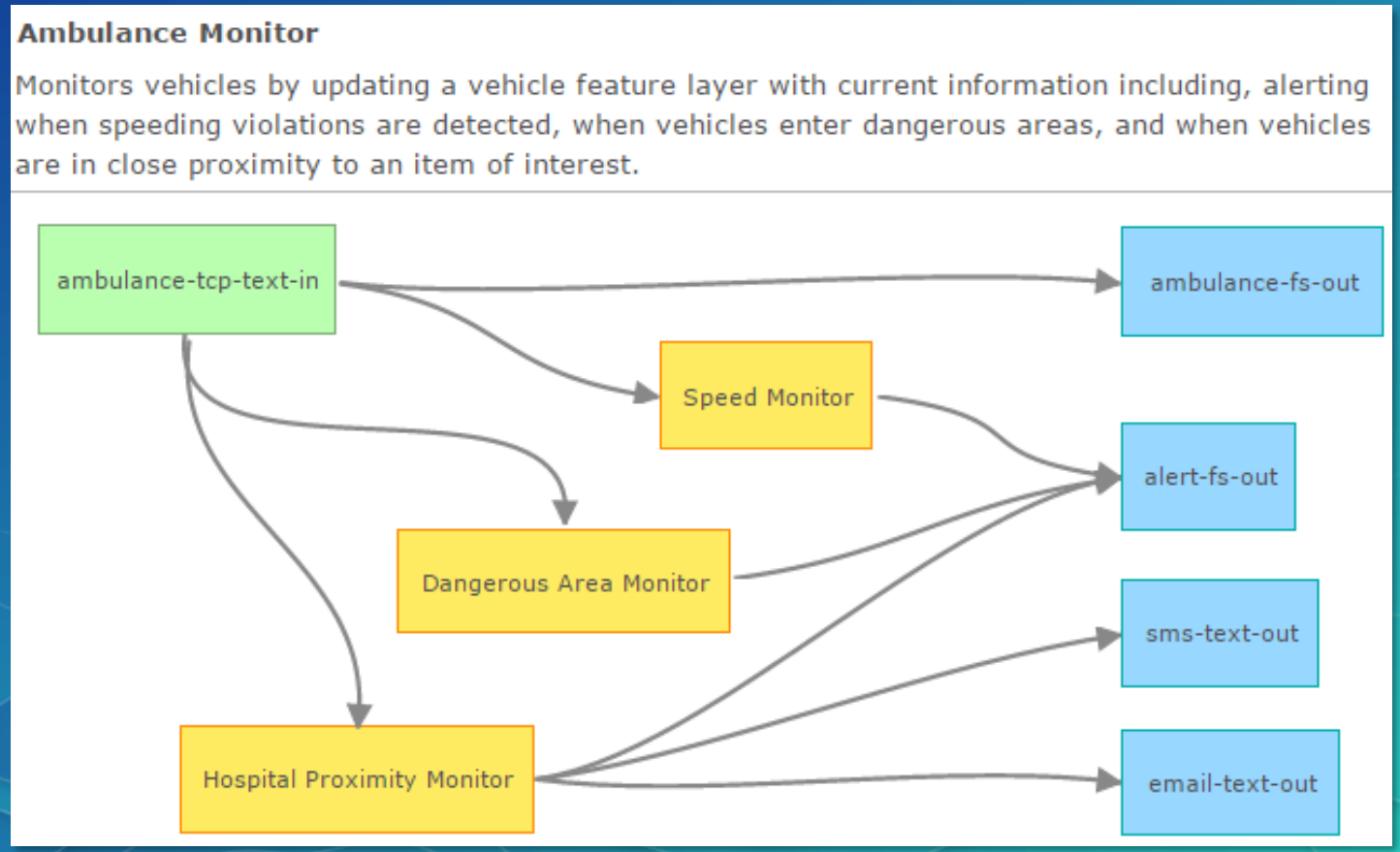


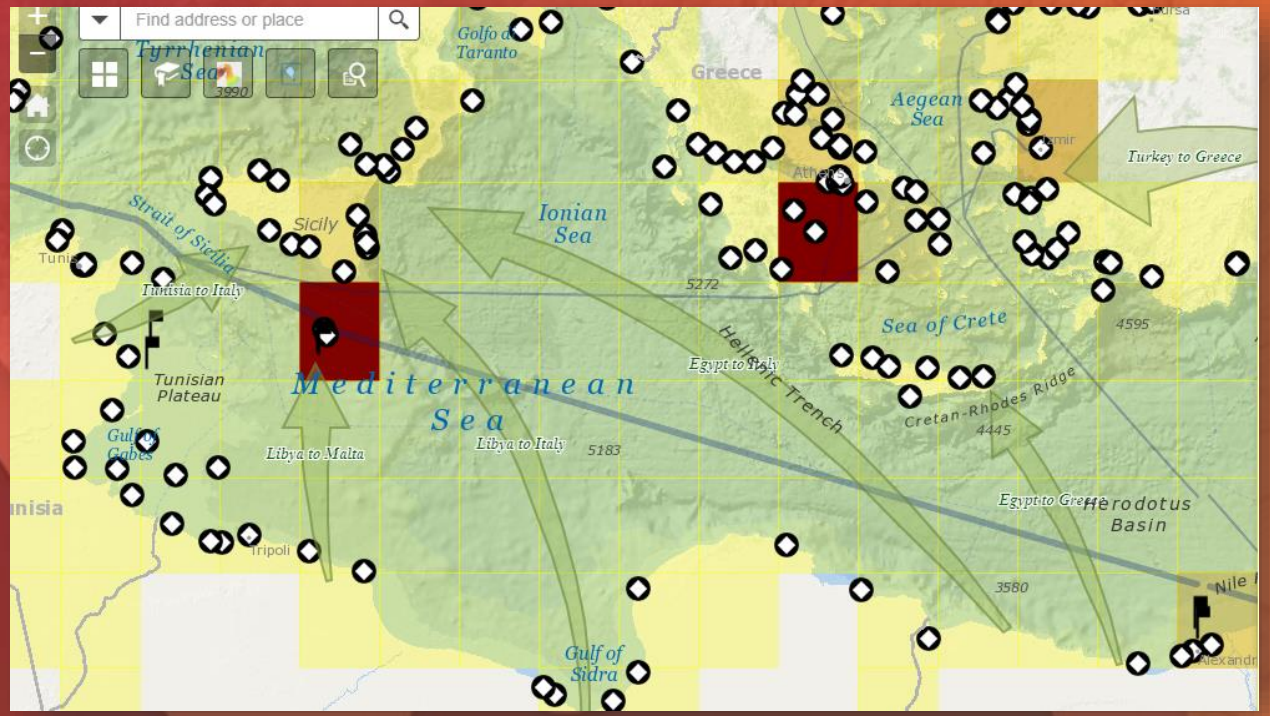
Analytics on the Fly

apply continuous analytics by defining a GeoEvent Service

10.5

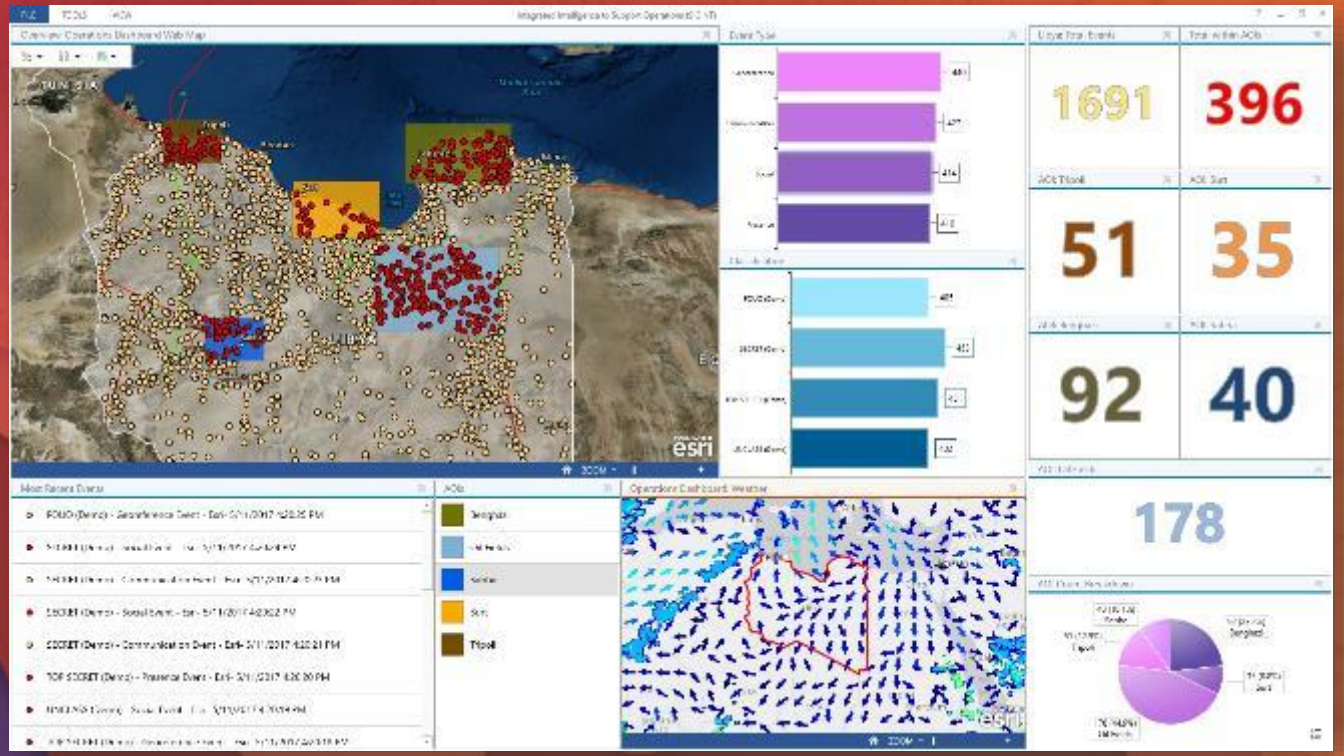
- A **GeoEvent Service** defines the flow of GeoEvents
  - The **Filtering** and **Processing** steps to perform
  - what input(s) to apply them to
  - and what output(s) to send the results to





Ship Position Historic Big Data Analysis

John Fry



SIGINT Analysis

John Fry

ArcGIS Pro - MaritimeIntelligenceArctic - Arctic 3D

PROJECT | MAP | INSERT | ANALYSIS | VIEW | EDIT | IMAGERY | SHARE

johnfry16 (Portal for ArcGIS - Test Environment)

Cut | Copy | Paste | Clipboard

Explore | Bookmarks | Navigate

Basemap | Add Data | Add Preset | Layer

Select | Select By Attributes | Select By Location | Attributes | Clear | Selection

Infographics | Measure | Locate | Inquiry

Pause | View Unplaced | More | Labeling

Bookmarks

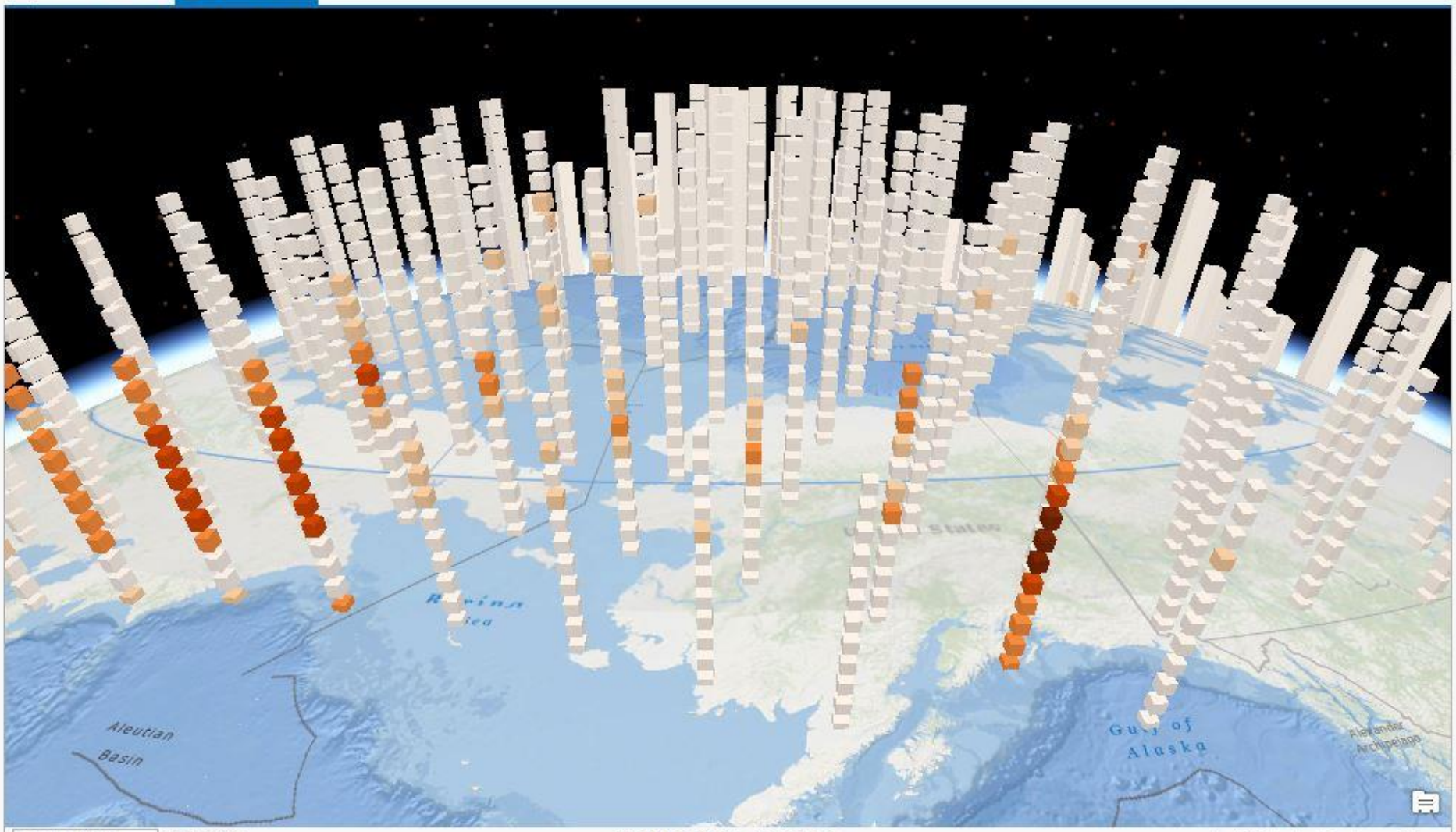
Contents

Search

Drawing Order

- Arctic 3D
  - 3D Layers
    - HSTCubeCount200m
      - VALUE
        - ≤250.000000
        - ≤1000.000000
        - ≤5000.000000
        - ≤10000.000000
        - ≤28269.000000
  - 2D Layers
    - Boundaries
    - World Ocean Reference
    - World Ocean Base

Arctic Circle | Arctic 3D



10,073,417 ft | 171.64°E 62.04°N 2,665.317 ft | Selected Features: 0

Project | Geoprocessing

Sharing and Collaboration – *Share*

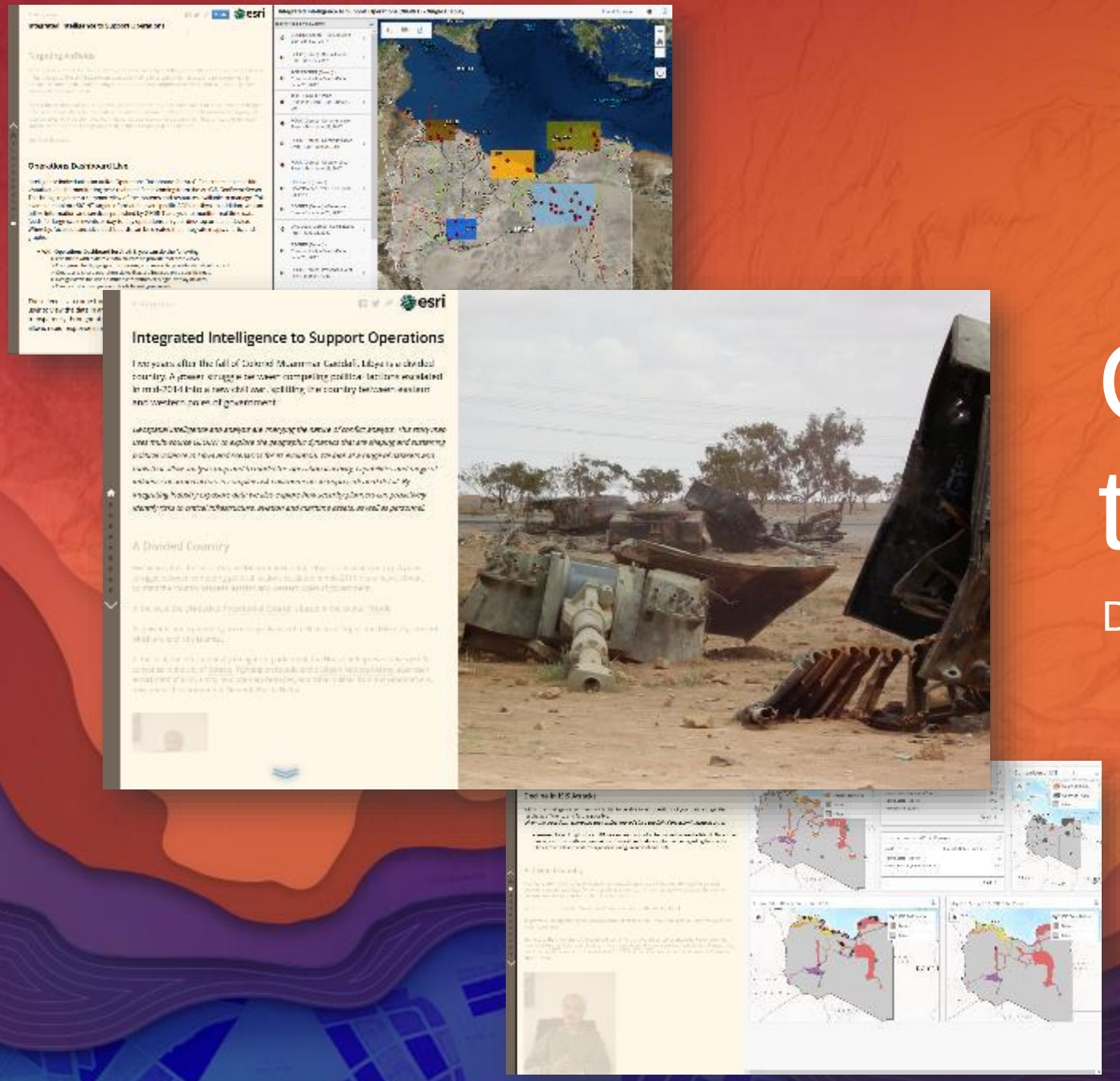
Building Apps to support operations with actionable intelligence

Highly Visual

Simple

Accessible

Amped Apps

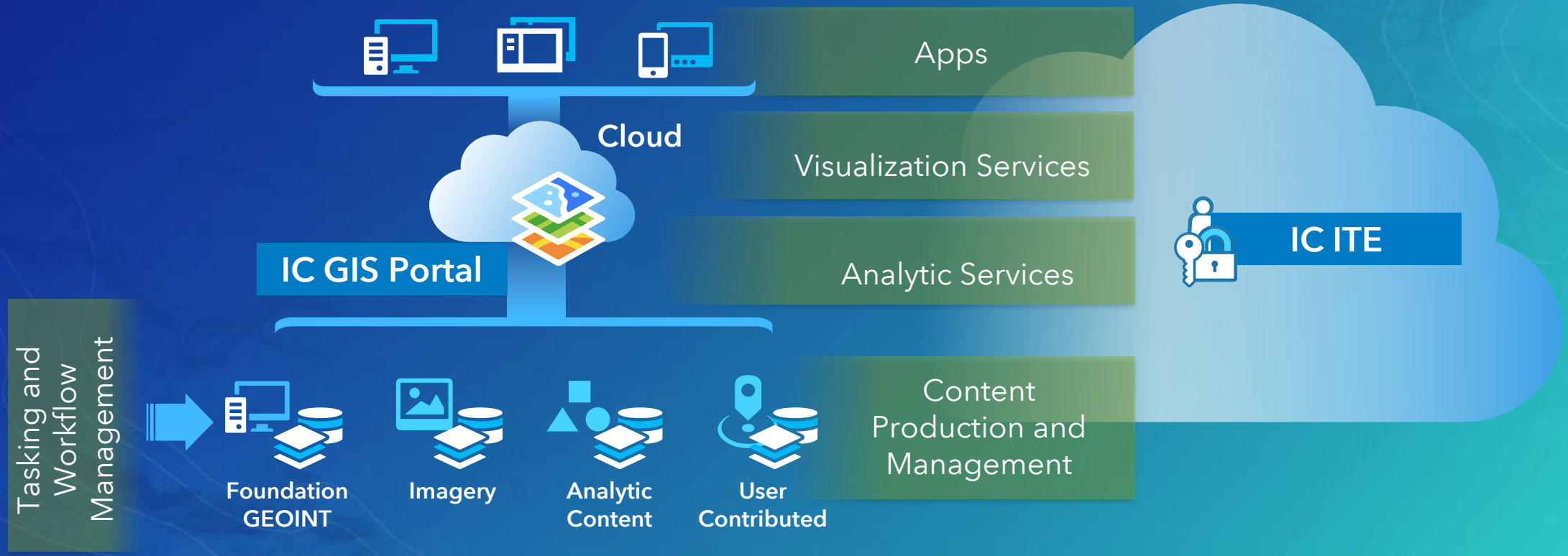


Communicating the Analysis

David Attaway

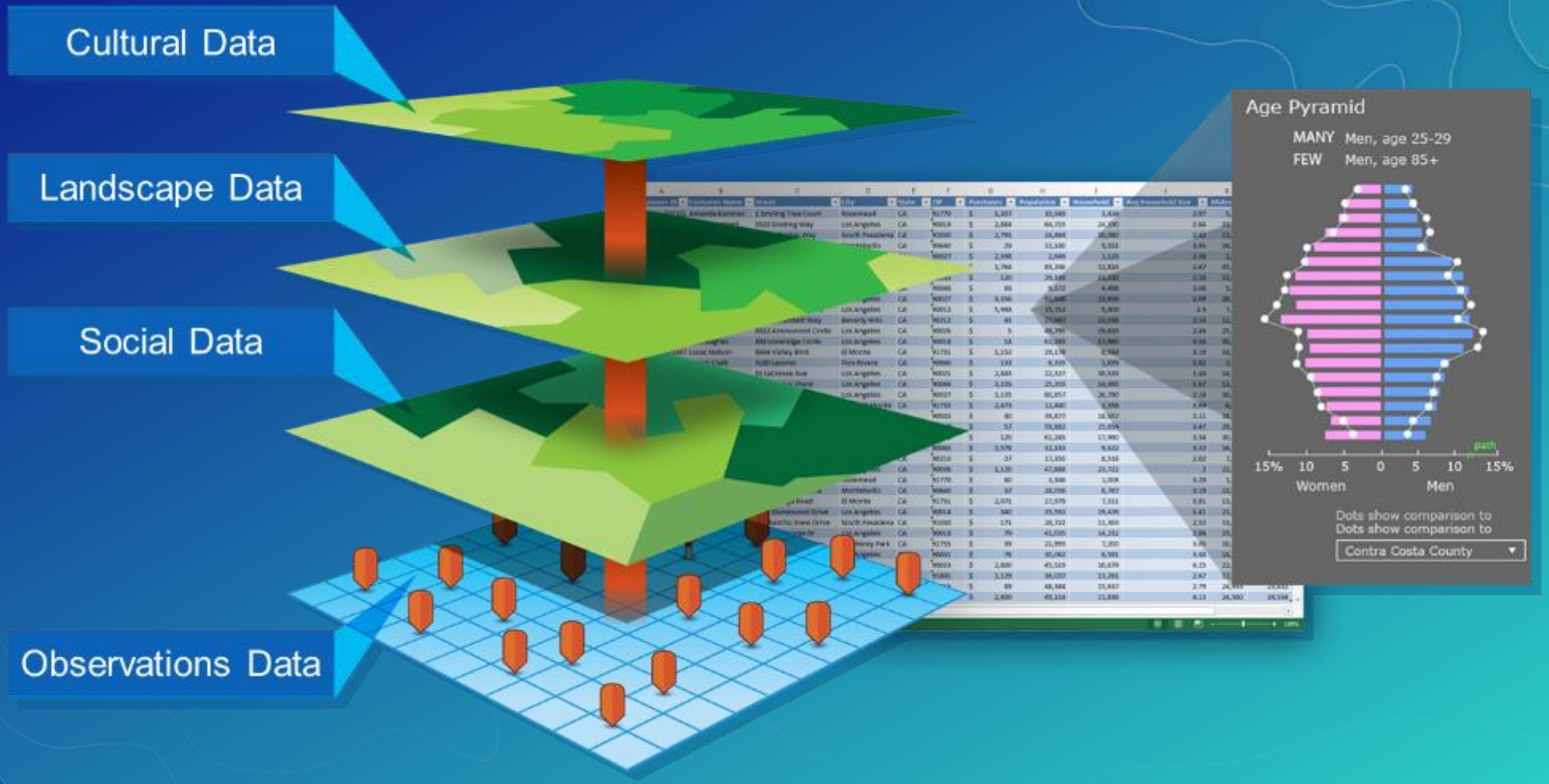
A Platform for the GEOINT Community

60,000 Users across the U.S. Intelligence Community



"One of our really great approaches is the use of ArcGIS as a geospatial framework…the IC GIS Portal is a platform for analytics, collaboration, and data sharing that is used throughout the Intelligence Community." -Sue Gordon, Deputy Director, NGA

Integrating and Enriching Intelligence using Location

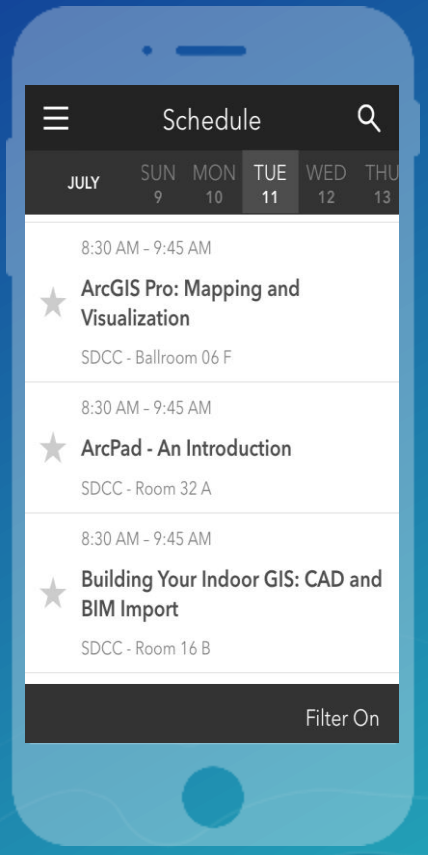


Intelligence Support to Operations

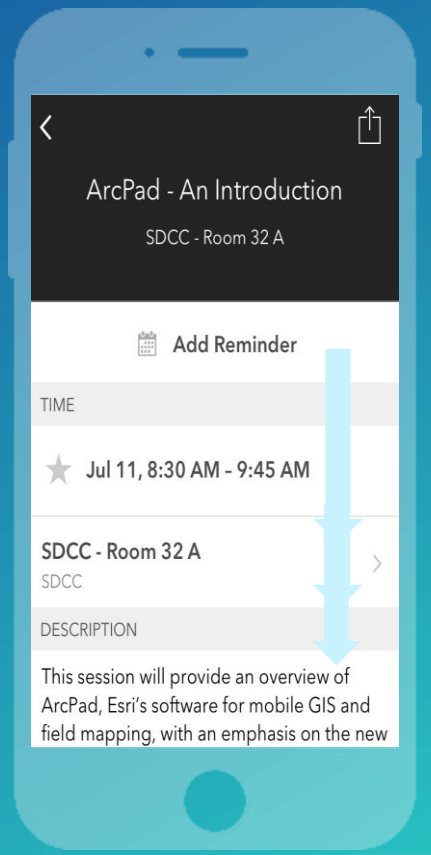
Please Take Our Survey on the **Esri Events App!**

Download the Esri Events app and find your event

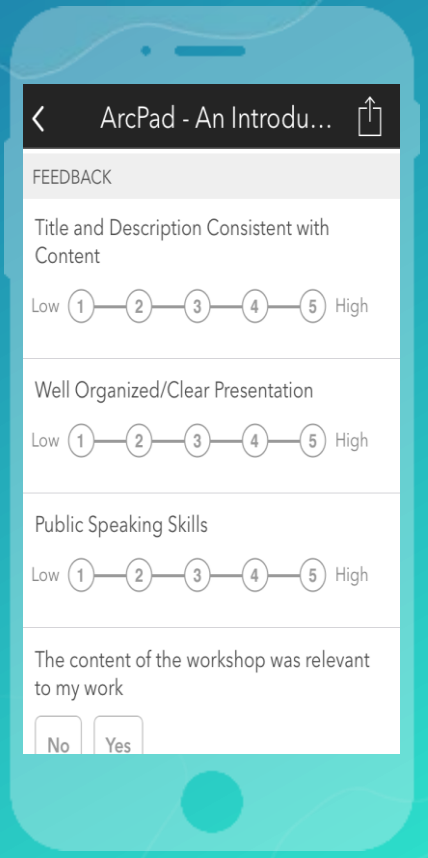
Select the session you attended



Scroll down to find the survey



Complete Answers and Select "Submit"



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