Integrating Analytic Talent for Intelligence Analysis

David Attaway
John Fry
Global Challenges
A Dynamic World Creates Complex Intelligence Challenges

- Pandemics
- Famine and Drought
- Natural Disasters
- Civil Unrest
- Displaced Persons
- Organized Crime
- Political Crisis
- Terrorism
- Adversaries

...And Impacts National Security
First Age 1944-1962
- Rise of communism
- Human intelligence
- Single threat focus

Second Age 1962-2001
- Cold war; nation-states
- Technical collection
- Single threat focus

Third Age 2001-2014
- Terrorism and regional conflict
- Info tech, UAV’s and web tools
- Threats on the homeland

Fourth Age 2014+
- Terror, cyber and WMD
- Multi-int & big data analytics
- Diverse distributed groups

First professional intelligence
Stovepipe intelligence
Distributed intelligence
Integrated intelligence

Increasing Change and Rates of Change
Technology Advances
A Whole New Pattern Is Emerging

Content
- Crowdsourcing
- Field Reports
- GPS
- Social Media
- GMTI
- Sensors
- Real-Time
- Remote Sensing
- UAVs

Technology
- Distributed Processing
- IoT
- Cloud
- Consumerization
- Faster Computing

Applications
- Collaborative
- Real-Time
- 3D
- Visualization
- Visualization
- Analytics
- Apps

Virtualization

Faster Computing
Multi-Int Approach

Current Approach
Intelligence Organization by INT

Multi-Int Fusion Approach to Analysis

Intelligence discovery requires accessing numerous data sources across the IC

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

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

- Big Data GeoAnalytics
- Spatial Analysis & Geoprocessing
- Interactive Exploration
What does this mean?
GIS is a Multi-Int Platform

Terrain Workstation
Imagery Workstation
All Source Workstation
CI / SIGINT Mobile
Enterprise Integration

Portal

Analysis Services
Internal Data Sources
External Data Sources

Classified
Open-Source
GIS Integrates Intelligence and Operations

- Geospatial Analysts
- Imagery Analysts
- HUMINT Analysts
- SIGINT Analysts
- All Source Analysts
- Enterprise Integration
- Commanders and Executives
- Mobile Operators

Portal

Analysis Services
- Internal Data Sources
- External Data Sources

Classified
Open-Source
Intelligence Platform

ArcGIS Can Provide the Intelligence Platform

Multi-Int Products

- Combined Obstacle Overlays
- Battle Damage Assessment
- Helicopter Landing Zones
- Target Development
- Enemy Capabilities
- Network Analysis
- Mobility Analysis
- Enemy Intention
- Link Analysis
- Route Study
- Image Maps
- Threat Maps
- Collection Plans
- Enemy Strength
- Incident Analysis
- IED Density/Threat
- Line of Sight Analysis
- GMTI Analyses/Reports
- Point of Origin Detection
- Indications and Warnings
- Tribal/Human Terrain Maps

From Raw Data to Finished Intelligence
Multi-Intelligence Platform

David Attaway
Intelligence Support to Operations
The Intelligence Cycle

- Planning
- Collection
- Processing
- Exploitation & Analysis
- Production
- Dissemination
Focused, Powerful and Ready-to-Use

For Every Phase of the Cycle

Apps

Planning & Collection
- Geoform
- Collector
- GeoEvent
- Workforce
- Crowd Source
- Survey123

Exploitation & Analysis
- Insights
- Pro
- Geo Planner
- Operations Dashboard
- Maps for Office
- Geo-Analytics
- Swipe & Spyglass
- Time Aware

Production & Dissemination
- Open Data
- Story Maps
- Quick Report
- Summary Viewer

Focused, Powerful and Ready-to-Use
Geospatially Enabled Intelligence Reporting
Text to GIS
(ClearTerra Locate XT)
John Fry
Field Collection Collector for ArcGIS Operations Dashboard

John Fry
Critical Architecture
A Complex Problem

Source Data

Ingest

Normalize

Analytics

Multi-int
Analyst Example: GEOINT
GEOINT Analyst
Foundation Data
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GIS is a Multi-Int Platform

- Terrain Workstation
- Imagery Workstation
- All Source Workstation
- CI / SIGINT Mobile
- Enterprise Integration

Portal

Analysis Services
Internal Data Sources
External Data Sources

Classified
Open-Source
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
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...
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

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

Share
- Web Services
- Maps & Apps
- User Mashups
Analyst Example: All-Source Production
Intelligence Analysis Workflow

**Intel Analyst Workflow**

- **Collection**
  - Data
  - Sensors
  - Locations
  - Events
  - Information

- **Visualization**
  - Importing
  - Layering
  - Filtering
  - Symbolizing

- **Analysis**
  - Workflows
  - Map Templates
  - Models
  - Tools
  - Python Scripts

- **Product Creation**
  - IDP
  - PowerPoint
  - Legends
  - Screen Captures
  - Layout View

- **Sharing**
  - Verifying
  - Sharing
  - Understanding
  - Collaborating
The Power of a Multi-Int Platform
Putting it all together

ArcGIS

Operators

Web Apps
- Templates
- Widgets
- Dynamic Content

Content
- MarketPlace
- Esri Provided
- Build-your-own

Imagery Services

Tradecraft:
- Change Detection
- Land Cover Analysis
- Feature Extraction

Workflows & Models

Operators

Changes Detection

Land Cover Analysis

Feature Extraction

Web Apps

Templates

Widgets

Dynamic Content

MarketPlace

Esri Provided

Build-your-own

Content

Imagery Services

Tradecraft:
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Workflows & Models
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... Analyze... Share... Act...
- Gather, Fuse, Analyze & Share Intelligence
- Formulate & Disseminate Plans
- Manage deployed Forces
- Maintain & share the Common Operational Picture
- Monitor the situation through real-time tracking, routing & communications
- Incorporate real-time data from many sensors

Portal

Manage the data

Collect... Analyze... 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
Analytics on the Fly

apply continuous analytics by defining a GeoEvent Service

- 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
Sharing and Collaboration – Share
Building Apps to support operations with actionable intelligence

Highly Visual

Accessible

Simple

Amped Apps

- Web Services
- Maps & Apps
- User Mashups
Communicating the Analysis

David Attaway
“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

- Cultural Data
- Landscape Data
- Social Data
- Observations Data
Intelligence Support to Operations
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