



The Intelligencer

Journal of U.S. Intelligence Studies

VOLUME 20 • NUMBER 2 • \$15.00 SINGLE COPY PRICE

FALL/WINTER 2013



INSIDE NGA

Activity Based Intelligence: Understanding the Unknown

Snowden, Manning, and the Next Leaks • Albert 'Bud' Wheelon and U.S. Intelligence • Miracle in the Desert: CIA in Ethiopia • SIGINT, Young Officers, and Culinary Diplomacy • Guide to the Study of Intelligence: Part 7 — Intelligence Collection • Counterintelligence • Cleared Intelligence Budgets • Medical Intelligence • Intelligence and Ethics • Professional Readings • Film and Book Reviews • Forthcoming Books



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DEDICATION: This issue is dedicated to Jim Frazer and Gus Hathaway. Obituaries begin on page 85.

The Intelligencer

Journal of U.S. Intelligence Studies

ISSN: 2158-7639

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AFIO is a non-profit, non-political, educational association of current and former intelligence professionals and supporters, founded in 1975 and incorporated in Virginia in 1977; it is recognized as a tax-exempt organization under IRS code para §501(c) (3). The Association is celebrating its 36th year of service to the nation.

AFIO's educational focus is on fostering understanding of the vital importance and role of US intelligence in historic, contemporary, and future contexts. Since foreign intelligence, counterintelligence, and covert activities are necessarily conducted in secrecy – an ever-present silent war – education on the vital need for effective institutions conducting US intelligence and counterintelligence operations is a challenging, necessary and important mission. As Richard Deacon noted in his *History of British Intelligence*, "A great Power without an efficient intelligence service is doomed; that has been the lesson from the heyday of Troy to the present."

AFIO is an association of people with active intellectual lives, many of whom are participating – or have participated – in events of historic significance, and who play roles of leadership and distinction, dedicated to worthy principles and objectives. AFIO members include primarily individuals from US government departments, but also state and local governments, corporate, academic, or private professionals and citizen-associates.

Aside from a small professional staff and central office, the organization and its chapters throughout the country are run by volunteers who donate their time and talents to the cause of furthering AFIO's objectives and enjoy the fellowship of professional colleagues and supporters.

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AFIO members subscribe to the values of patriotism, excellence, integrity, dedication, and loyalty represented by the active intelligence establishment of the United States engaged in the execution of national policies and the advancement and defense of the vital interests and security of the country, its citizens, and its allies.

AFIO's principal objective is to foster understanding by intellectual, political, and business community leaders, and the general public, of the continuing need for a strong and responsible national intelligence/counterintelligence establishment to deal with a variety of short and long-term threats and issues in the current world environment and the digital, online worlds. Within this context, AFIO stresses education on the need for effective long-term intelligence strategies and capabilities to support national decisionmakers and to guard against surprise.

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AFIO implements its objectives by conducting programs to:

- contribute balance and expert insight into the public and media discourses on intelligence-related issues;
- support educational courses, seminars, symposia, and research on intelligence and counterintelligence topics;
- promote public understanding of intelligence, secrecy, covert action, and counterintelligence roles, needs, and functions;
- encourage the exchange of information among intelligence professionals;
- promote the study of the history and current role of US intelligence.

Specific programs are conducted within the following framework:

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Intelligencer: Journal of US Intelligence Studies – periodical of AFIO with articles by/for intelligence scholars. Includes book reviews.

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II. CURRENT ISSUES

NGA's Campus East (NCE) located on Fort Belvoir North Area in Springfield, VA. Photo by Ross Cox.



ABI

Activity Based Intelligence Understanding the Unknown

by Letitia A. Long
Director

National Geospatial-Intelligence Agency

During the last half of the 20th Century, most intelligence gathering was akin to looking for ‘needles in a haystack.’ The ‘haystack’ (the Soviet Union or China) was known and with careful attention, we would find the needles. The needles, of course, were objects—tanks, planes, airfields, military bases, missile launch facilities, and the like. Once we found these needles, we tracked and monitored their activity and reported our observations to our customers—policy makers, warfighters, and fellow analysts. Significant change happened slowly. No more.

Today, intelligence gathering is like looking in a global ocean for an object that might or might not be a fish. It might be anything and it might be important, but at first, we are not sure it even exists. And whatever it might be is constantly moving and interacting with a huge number of other objects. They might make up an organized school of fish or they might not be related at all. But we do know that we need to find it, identify what it is, and figure out how it relates to all the other objects—whether fish or sea fowl—we either know or think might be important.

ABI DEFINITION, PURPOSE, AND BACKGROUND

That is a simple example of the purpose for, and process of, what I believe is the most important analytic methodology the Intelligence Community (IC) must master to succeed in the future: activity based intelligence or ABI. ABI is an inherently multi-INT approach to activity and transactional data analysis to resolve unknowns, develop object and network knowledge, and drive collection.¹ It is inherently multi-INT because the targets and objects we seek to discover have weak signatures that we cannot discover with any single intelligence domain.² If we remain in our own INTs, these objects may always remain hidden, and when adversaries learn that they can hide their activities from us, they will become more adept at doing so.

ABI is a high-quality methodology for maximizing the value we can derive from “Big Data” that is, making the new discoveries about adversary patterns and networks that give two crucial advantages—unique insights and more decision space—to policy makers, military planners and operators, intelligence analysts, law enforcement and first responders. ABI also teases out subtle behaviors and relationships between the “known” targets, objects, and networks.

“In environments where there is no visual difference between friend and enemy, it is by their actions that enemies are visible. Motion is the first indication of activity. Temporal and visual patterns of change provides (sic) the context for intent.”³ One can extend that concept to any adversary’s attempt to conceal any person, place, thing, or activity that it does not want to be found.

Tse notes that ABI answers the seemingly simple, but often complex ‘5 Whiskey-Halo’ questions:

- Who is the adversary and who is the friend or neutral party? “determines the level of interest.”
- What are they doing? Motion, imagery, foundation GEOINT, and all INT data are essential elements.

1. Office of the Director of National Intelligence, “Proposed ODNI Activity-Based Intelligence (ABI) Lexicon,” August 2013.
2. David Gauthier, ABI Portfolio Initiative Lead, Directorate of Analysis, “ABI for Intelligence Integration,” PowerPoint presentation to the GEOINT Commission, August 28, 2013.
3. Edwin C. Tse, Chief Technologist, Ground Systems Business Unit, Office of Technology, Northrop Grumman Information Systems, “Activity Based Intelligence Challenges,” PowerPoint presentation to the IMSC Spring Retreat, March 7, 2013.

- When and where are they taking action? “informs about patterns of nefarious activities.”
- Why are they taking that action? “Must understand behavior [motion] and intent” that signals and communications intelligence (SIGINT and COMINT) can help clarify.
- How are they taking that action? “linked to intent, behavior and means” which may involve measurement and signature intelligence (MASINT).⁴

ABI applies new methodologies and tradecraft to provide context to apparently ordinary or hidden activities to determine “intent by actors (people, sensors, communications) to predict consequences from observations.”⁵

Although the current drive is making ABI a major contributor to everyday intelligence gathering, “ABI is not a new concept. It’s been used in the past in the Intelligence Community in pockets,” said Scott White, former associate deputy director of the CIA.⁶

ABI has been called a new discipline of intelligence, but it is not separate from all the INTs. Rather, the combination of tools, techniques, and tradecraft that empowers advanced analysis acts as a compelling catalyst for all of the INTs to do their work far more effectively. The basic concepts were first developed during the Cold War in the Navy’s Sound Surveillance System (SOSUS), which tracked submarines during the 1970s and 80s. This technology and the analytic methods developed to turn the submarine data into intelligence laid the groundwork for the shift from traditional reconnaissance to the persistent surveillance that the demands of irregular warfare have driven since the September 11, 2001 attack, White explained.⁷

The flood of full-motion video (FMV) data streams from unmanned airborne vehicles (UAV), the explosion in open source data from social media on the Internet, and the huge increase in requirements from special operations forces in Afghanistan and Iraq drove the massive expansion in the amount of data that can provide actionable intelligence. In these wars and the global war against terrorism, special operations led the development of geospatial intelligence (GEOINT)-based multi-INT fusion techniques

on which ABI is found. For example, in the mid-2000s, David Gauthier, NGA’s ABI Portfolio Initiative Lead, Directorate of Analysis, said that GEOINT analysts in Iraq and Afghanistan first learned that they could gather data from multiple INTs into one database because they knew that every bit of data about a person, place, or thing shared one trait: a spatio-temporal georeference. Simply, it is somewhere at some time. They added new georeferenced information and searched the database to identify adversary locations so the military operators could act against them. That process has come to be called “geo-chaining.” Their efforts have been codified into tradecraft, and training continues to steadily enhance the foundation of ABI.⁸

At the same time, cloud computing technology, advanced tracking algorithms, high-speed computing, inexpensive data storage, and more have matured rapidly to fulfill the military’s and IC’s requirements.⁹ The combination of dramatic increases in requirements and technological capability makes ABI not only possible, but also the most important intelligence methodology of the first quarter of the 21st century. It is a methodology so advanced by technology that it was not as relevant until today when tools are available to assist the analyst. From its initial application to irregular warfare and counterterrorism operations, its power has expanded to counterproliferation, human geography, military “patterns of life,” underground facilities, law enforcement, humanitarian assistance and disaster response, and many more missions. ABI is becoming no more and no less than a new foundation for intelligence analysis, as basic and as important as photographic interpretation and imagery analysis became during World War II. ABI’s significance, of course, is its foundation in multi-INT fusion empowered by GEOINT that eliminates our stovepipes and can deliver to decision makers more accurate, more insightful intelligence faster and more efficiently than other methods.

MOST CHALLENGING ENVIRONMENT IN DECADES

As ABI is maturing, it has been driven by what the Director of National Intelligence James R. Clapper has called the most challenging threat environment since World War II. These long-term threats to global security are emerging from what Secretary of Defense

4. Ibid.

5. Ibid.

6. Kristen Quinn, “A Better Toolbox,” in *Trajectory*, Winter 2012, pp 11-15.

7. Ibid, p. 12.

8. Ibid.

9. Ibid.

Chuck Hagel has called a “volatile, dangerous, and rapidly changing world.”¹⁰

These challenges are more varied, more scattered, and more complicated than any this nation and our Allies have faced since the realignment of power after World War II. They encompass the range from “lone wolf” terrorists radicalized by social media and terrorist messaging on the Internet to what Secretary Hagel

calls “shifting centers of geopolitical centers of gravity” from “the astounding diffusion of economic power and sweeping demographic change.”¹¹ Turbulence from population growth and the increasing numbers of educated, Internet-savvy young adults with inadequate job opportunities, especially in the Middle East and Africa, increase the risk of global instability and feed the growth of terrorist organizations. The spread of weapons of mass destruction to adversarial nation-states and non-state actors requires constant vigilance. Non-state actors make the patterns harder to find; a single person rather than a unit or organization becomes the key player. Advanced offensive cyber attacks could severely damage the national and global economy and crucial infrastructure.¹² Land and space-borne weapons could threaten the world’s telecommunications networks as well as national and Allied networks and intelligence capabilities. Transnational criminal enterprises, such as the heroin trade based in Afghanistan and global human trafficking

networks, destabilize social stability and national governance structures. The toll of increasingly severe natural disasters and the subtle, yet cumulative effects of climate change could tax the ability of the world’s humanitarian assistance organizations to respond effectively. And the potential for the global impact from pandemics could wreak havoc on the fragile global medical infrastructure.¹³

ABI Uniqueness: Discovering Unknown-Unknowns



Yet, the Community’s ability to anticipate and react to these rapidly morphing external threats is challenged by a global decline in national security resources and an equally rapid change in the global information environment. Among the technological challenges—and opportunities—are:

- “Big and noisy data” from the huge increase in the number and type of sensors from social media to

earthquake and ocean level sensors.¹⁴ The huge volume of data means weaker, more dispersed signatures that are difficult to discover and the volume could be overwhelming. But with ABI, the deep and broad variety of new GEOINT sources, especially open source social media, and our ability to apply technology to capture and understand the signatures can give us deeper, broader insight into how to combat the threats.

10. Secretary of Defense Chuck Hagel, Speech to the CSIS Global Security Forum, November 5, 2013.

11. Ibid.

12. Ibid.

13. Ibid.

14. Gauthier, “ABI for Intelligence Integration.”

- High performance computing power available to our adversaries—non-state actors and nation-states—as well as our Allies. The same power with high-density data storage and advanced algorithms makes ABI possible.
- Pervasive persistent sensors, such as the explosion in video surveillance and airborne sensors with wide area motion imaging, create a distinct advantage because only nations have the resources to exploit them on a large scale.
- Global communications technology allows the IC's international partnerships, such as the Allied System for Geospatial-Intelligence (ASG), to share resources and data thereby helping to compensate for the decline in individual countries' resources which in turn improves the results of our intelligence analysis with the analytic depth that diverse perspectives offer. For example, an ASG's pilot integrated work group at the new Pathfinder facility at Royal Air Force Base Wyton in the United Kingdom is demonstrating the positive impact that an Allied team can have. It is also revealing the technological hurdles, such as video teleconferencing across diverse telecommunications bridges, that we must overcome to make their virtual and physical collaboration an easy, normal way of doing business.

The Wyton pilot and dozens of other Allied cells and experiments that attack specific intelligence problem sets make a significant difference to their specific issues. The threat environment demands unparalleled partnership that begins at home among all of the US IC agencies and extends, as appropriate, across all of our allies and partners. NSA has led the way in technology by establishing its signals intelligence (SIGINT) infrastructure on equal access and sharing with our Commonwealth partners. NGA has recently issued a new policy that requires the Agency to completely integrate all of our GEOINT operations with the Commonwealth as well.

On a national and international scale, the ODNI Chief Information Officer (CIO) is driving the DNI's top priority of intelligence integration with the IC Information Technology Environment (IC ITE), the Department of Defense is driving the complementary and integrated Joint Information Enterprise, and the Five-Eyes partners are driving the Five-Eyes Enterprise.

These initiatives are absolutely essential to the IC's success in general and ABI in particular. Without easy access to all of the data from all the INTs stored in the "cloud" and the tools that exploit them, analysts cannot quickly and effectively do the multi-INT fusion and analysis that timely, accurate, actionable ABI requires.

FROM WATCHING TO DISCOVERING

To confront the geopolitical threats, maximize the impact of the technological advances, and make best use of scarce resources, ABI, while not an analytic panacea, can contribute to decisive planning and successful operations in any mission where the customer faces critical questions that discovering that which is concealed or unknown can answer. However, applying ABI techniques effectively requires the analytic community to re-think the analytic environment for managing and exploiting "Big Data" and providing accurate responses to complex intelligence questions, asserts Gauthier. He notes that there are four analytic functions:

- Watching what we know;
- Searching/finding what we seek—what we know we need to find;
- Understanding what we find; and
- Discovering what we need to know.¹⁵

Today's online analytic process and content are inadequate to allow analysts to spend enough time understanding what they observe and discover what they do not know about their specific area of responsibility. Today's online content is difficult to use because it is "trapped" in products, reports, disparate primary sources stored on different systems, and each analyst's mind or personal databases stored on his or her computer. Today, the vast majority of analysts spend most of their time searching multiple sources on multiple systems for information and watching a known target set and alerting customers about changes in that set. We also face constantly expanding requirements for more watching and altering. Of course, the IC has long excelled at watching and providing indications and warning to help avoid strategic surprise.

But with the complex, rapidly morphing threats, an analyst watching—and the current analytic process—is too slow, too cumbersome, too inefficient, and too likely to miss the important changes that

¹⁵ Gauthier, "ABI for Intelligence Integration."

signal an adversary's true intent. Those changes often occur within an environment that has exploded with social media that allows adversaries to hide their activities behind encrypted messages, sophisticated cyber concealment techniques, and highly decentralized organizational structures—if a group is involved at all.

“In recent years, we have improved at the searching function because we have dedicated resources to create search programs to help find unknown locations when we know what to look for. We also have research programs to better understand the behavior and attributes of known targets and locations, whether high value targets (HVTs) or military facilities. But we are challenged at discovering the unknown-unknowns because our analysts have not had the time, tradecraft, or automated tools. We can now apply ABI techniques to multi-INT data, and emerging analytic efforts across NGA and the IC are driving improvements in all four functions,” Gauthier stressed.¹⁶

These emerging efforts at NGA create a new foundation for online GEOINT content with four elements that are making ABI essential for answering the most difficult intelligence questions. This foundation allows analysts to apply more brainpower to those tough questions with a dynamic analytic process based on automating the watching and searching functions so analysts can discover the unknowns and understand what they find.¹⁷ The four elements of the foundation are:

- Observables that create temporal-spatial content with the Structured Observation Management (SOM) construct that mass-produces online, on-demand content from all imagery and observable GEOINT sources.
- Object Knowledge that applies Object-Based Production (OBP) techniques that converge all IC knowledge of known targets/objects and stores it in the IC ITE cloud so analysts gain the needed easy access to all the data and apply their integrated tools and techniques.
- Relationships that analysts derive by creating relational content with forensic techniques on all the data to discover the

unknowns. The relational aspect extends GEOINT from its traditional space and time dimensions to the new dimension of activity and relationship.

- Assessments which capture our judgments, apply a “continuous learning loop” that turns new discoveries into new knowledge and transitions that new intelligence to watching, search, and OBP workflows.¹⁸

To apply the ocean metaphor, think of ABI analysts as marine biologists searching for new fish species. SOM gives the basic data about the nature of the ocean, and OBP brings together all of the data about all the fish. The analysts/researchers cast their wide nets into the ocean of data, sort through all of the fish caught in their nets, and identify their new discoveries. The analysts/researchers may also immerse themselves in the ocean, by scuba-diving or diving with submersibles. Then, they analyze the significance of their discoveries and share their assessments with all the other marine biologists.

Even the marine biologists need automated tools and advanced technology that permits them to discover new species quickly. Likewise, ABI systems must have the sensors and algorithms—preferably on the sensor suite itself—that processes the data, detects anomalies, and alerts the analysts. The automated tools must identify and integrate patterns of activity from multiple sources so we can establish “watch boxes” with persistent, broad area collectors—both airborne and satellite-based, such as WAMI, moving target indicator (MTI), and full motion video, that can stare at an area as often as needed or track objects continuously.

FOUR PILLARS OF ABI

While the four elements of the new analytic process depend on SOM and OBP technology, ABI has four pillars that underpin its logical framework: geo-reference to discover, sequence neutrality, data neutrality, and knowledge management.¹⁹



16. Ibid.
17. Ibid.

18. Ibid.
19. Quinn, “A Better Toolbox.”

- Geo-reference to discover. This pillar is pivotal to capturing the critical information hidden in the “Big Data” cloud and identifying unknown objects. Everyone, everything, every object has to be somewhere at a point in time. “Geo-reference” means that we collect data from all of our sources and “INTs” over time, meta-tag all of it automatically, and store it in the cloud. Then, analysts apply advanced tools and techniques to visualize and comprehend the data to identify patterns of activity and trends over time. A simple way to look at it is to compare the process to searching huge law enforcement fingerprint or DNA databases. The result is that the analysts allow the data to find them and surprise them by revealing unknown targets with unknown activities, transactions, and networks.²⁰
- Sequence neutrality. While traditional intelligence analysis studies events sequentially or chronologically, ABI is non-linear; like detectives, analysts use forensic techniques to evaluate the data across space and time.²¹ It turns the traditional TCPED (tasking, collection, processing, exploitation, and dissemination) process focused on a suite of fixed targets inside out. It allows the analyst to form a hypothesis first and then search the data and even drive new collection to test the hypothesis. It also allows the analyst to integrate data before exploitation to focus an analyst’s investigation on anomalies in the data that have been correlated. Our ability to know the unknown depends on this new approach to collection and processing data.
- Data neutrality. Analysts welcome every kind of data from every INT, confident that every source could have a critical nugget of information that links disparate activities and actors.
- Knowledge Management. The essential nature of this pillar is often underestimated because it is easy to focus on the “wow” discovery of the moment that uncovers a major unknown, such as an underground facility that an adversary obviously did its

best to hide.²² Knowledge management is the continuous capture of new knowledge by the analyst and the analyst storing and sharing that knowledge with the rest of the community. It reinforces the idea that the long-term value of ABI is the continuous learning and growing body of knowledge it empowers.

VISUALIZATION—THE CONCEPT THAT MAKES GEOINT THE NECESSARY CATALYST

While the four pillars and the elements highlight the value of GEOINT, one concept sets GEOINT apart and shows how ABI and multi-INT fusion methods depend on GEOINT to maximize the value of intelligence integration for decision makers, planners, operators, analysts, and first responders. That concept is visualization—the body of tools and techniques that prove the adage “a picture is worth a thousand words.” For the IC’s purposes, visualization is the process of turning the associations and relationships discovered in integrated intelligence data into pictorial, graphical, even multi-media representations that allow the human brain to process and understand large amounts of data more easily and quickly than reading words.²³

Visualization helps mitigate the impact of the four “Vs” of “Big Data” that can prevent ABI from being effective: volume, velocity, variety, and veracity.²⁴ Visualization turns the huge volume and variety of the data into media that helps the brain “find meaningful patterns and structures,” a basic aspect of the human’s cognitive capability.²⁵ Humans analyze information based on how our eyes receive it and how our brain perceives it through traits: “color, size, texture, density and movement that activate visual sensitivities.”²⁶ People also process visual information by using short – and long-term memory to associate, compare, and evaluate new information with prior knowledge.²⁷

Today and even more so in the future, customers expect quality visual information that answers their questions simply and clearly — because people can

20. Ibid, p. 13.

21. Ibid, pp. 13-14.

22. Ibid, p. 13-14.

23. Peter Buxbaum, “Showing to Tell,” *GIFForum Magazine*, October 2013.

24. Quinn, p. 12.

25. Buxbaum, “Showing to Tell.”

26. Ibid.

27. Ibid.

comprehend more information more quickly with visuals than text. According to a recent TDWI Research report, high-quality visuals empower our customers to make better decisions more quickly and more effectively while poor quality visuals can mislead them and bog them down in the data deluge.²⁸

Visualization products can be as simple as a map or as complex as a multi-media presentation. We need tools that offer the whole spectrum of graphical representation so analysts can evaluate the data, identify hidden patterns, and show their insights to customers easily and clearly. Different types of customers prefer very different visuals, and NGA must understand their preferences and work with industry to offer all of the visual tools that satisfy all of their needs.

In fact, NGA is encouraging industry with a new set of standards for the display of GEOINT information on screen called the “Softcopy Exploitation Display Hardware Performance Standard.” Among other requirements, the standard requires graphical visualization displays to be adjustable and give accurate readings because we understand the impact of displays on the human mind. The industry is developing many new products and tools that apply these standards to help analysts work with GEOINT data in a multimedia environment. The standard will allow analysts to more easily see the key aspects of an image.²⁹

Furthermore, the next step in visualization will be to display the graphics on mobile devices. We must make it easy for warfighters, first responders, and the President and senior leaders to see and understand the meaning of our analyses.

NEW COLLABORATIVE APPROACHES

Ultimately, creating sophisticated visualization tools and techniques will encourage the adoption of ABI and other multi-INT fusion-based approaches across the IC. In turn, as ABI and its enablers, such as integrated analytic environments (IAE) which is discussed further below, radiate across the IC analysts will begin a new, collaborative approach to their workflow. Just as our customers need to process, comprehend, and act on the deluge of Big Data, analysts must successfully manage it first.

ABI tools and techniques transform the analysts’ normal workflow. Using ABI workflows, analysts detect the threads of a threat or a key question in

real time, being tipped by an intelligence source, such as HUMINT or SIGINT. They “trace the threads backward in time to extract supporting or contrary evidence. (They) project the thread forward in time and re-task collection to gather evidence to verify (or) deny (the) hypothesis. (They) report the threads as actionable intelligence.”³⁰ And decision makers can plan their strategic responses, planners can determine their course of action, and operators can take action, whether against a formerly hidden adversary or as important, altering our strategies and tactics against future threats, like those that would be changed if an analyst discovered a hidden underground facility or new concealment techniques for major weapons systems.

Analysts will “live” within the ocean of data and use naturalistic methods, such as touch, gestures, and speech, to engage with the data and improve their interaction with the data. As important, when ICITE, JIE, and the 5EE are at full operating capability, they will be able to share data and discoveries, collaborate with IC and global partners, and communicate with customers far more easily than before.

NGA’s and similar integrated work groups at other agencies and collaboration cells are proving that the concepts driving intelligence integration in general and ABI in particular are delivering better results than the traditional stovepipes, whether within one’s own agency or across the Community. Great benefits come in the subtle “ah-ha!” moments that one-on-one relationships can engender. For example, as a tool developer sitting two cubes away hears an analyst complain about a gap in processing capability, the developer says, “Oh, I can do that today.” And a tough intelligence question can be answered in minutes rather than days, weeks, or not at all because the two would never have collaborated.

Similarly, the evolving IAE concept is a precursor to the future naturalistic environment. NGA’s IAE has had two major impacts:

- Saving the analyst hours of time each week by combining on one web-based portal access to the analyst’s tools, databases, applications, communication, and more; and
- Transforming the acquisition process by delivering new enhancements to existing applications in 60 days rather than many months or years. The developers work directly with the analysts to understand

28. Ibid.

29. Ibid.

30. Tse, “Activity-Based Intelligence Challenges.”

their needs so the developers can address the issues within the 60-day window. At present, NGA has completed 12 “drops” with dozens of new and enhanced tools for analysts.

While not strictly necessary to ABI, these approaches that transform an analyst’s work life will empower ABI because they contribute to the same goal: deeper, broader analysis derived faster and more accurately, to deliver deeper, more meaningful insight to our customers.

CHALLENGES TO FULFILLING THE PROMISE OF ABI

Before we can achieve the desired benefits from ABI, we must resolve three categories of hard problems: cultural, tradecraft, and technological. The most important is culture. The traditional culture that rewards information capture and control and individual achievement over information sharing and collaboration must change. Fortunately, we have found that culture changes more rapidly when people receive the positive results of daily collaboration and efficient performance that ABI supports. As NGA has done with our NGA Campus East facility, the workplace also must be redesigned to make personal interaction and collaboration the normal way of business. It seems a small thing, but our new VTC management system works very smoothly and has encouraged more personal interaction between our workforce in the East and those at our NGA Campus West in St. Louis and Arnold, Missouri, than would have been possible with our formerly scattered facilities. The other good news about culture is that the new generation of analysts—raised on smart phones, tablets, and mobile computing at their fingertips—are waiting, rightly impatient, for the IC to catch up so they can race ahead with these new methods and environments.

Next, ABI tradecraft and training must mature more rapidly. Tse has identified four tradecraft areas where academic partners can help:

- “Automated policy-based ABI enterprise collaboration methods and tools” with performance metrics that “quantify the value of ABI tradecrafts (sic) and confidence in nefarious activity intent.”
- “Multi-modality information representation, organization, access and mining” that provide “visualization and presentation

techniques that enhances (sic) cognitive sensing,” smart databases, “user-defined security and privacy,” and “natural language processing.”

- “Information integration and multi-modality intelligence association,” that is, autonomous and automated discovery and identification of HVTs and hidden objects.
- Enterprise Mission Management.³¹ The IC ITE initiative is already implementing this across the five major US intelligence agencies and will implement it across most of the entire US IC by 2018. For the military, JIE and for our Commonwealth partners, the 5EE are slated to do the same.

In addition, the IC must scale successful integrated work group and collaboration cell efforts across the IC and the Alliance. The pockets and pioneers must be transformed into the norm. That means flattening each organization’s hierarchy, integrating workforce roles into collaborative units, restructuring performance management concepts, and very importantly, adopting new agile acquisition enterprise policies and procedures.

Finally, the analytic corps must be trained with the critical thinking skills and the advanced analytic techniques, including how to use new collection sources, that allow them to evaluate the data they have, gather the data they need, interpret correctly what they observe, and inform their customers with clear, concise visual and textual media. Without a well-trained analytic corps, the full potential of ABI will not be realized, regardless of the automated tools and technologies.

Technology must support cultural and tradecraft transformation. The US Geospatial Intelligence Foundation has identified a list of 16 technological hard problems that industry can help the IC to solve.³² This list can be prioritized as:

- “Integrated multi-INT ABI framework” that transforms the TPED enterprise.
- Automated capabilities for anticipatory analysis, advanced search and data mining, and machine learning.
- Integration of all multi-INT sources, including non-traditional sources such as acoustics and unformatted data.

31. Ibid.

32. Ibid.

- Automated processing of activities and transactions across multiple sensors, especially the wide variety of persistent sensors.³³

**COMMUNITY COMMITMENT DRIVES
ABI'S POTENTIAL**

Ultimately, I am confident that the entire Community will turn these challenges into opportunities and solve them. The Community has risen to every similar major challenge, whether cracking the crypto-codes during World War II or launching the Corona imaging satellites during the Cold War. The rapid solution to these challenges and the widespread adoption of ABI will help the US and our Allies gain the decisive advantage over the most severe challenges that we face during the first half of the 21st century. But realizing ABI's potential requires the Community's strong sense of urgency about, and a long-term commitment to, total intelligence integration, a transformed collection enterprise, an agile acquisition enterprise, and advanced tradecraft and training. All of the hard problems constraining ABI are merely that—difficulties filled with opportunity for industry and academia to adapt and succeed in the challenging fiscal environment and the IC to adapt, adjust, and act on the geopolitical environment. NGA has made this complete commitment and welcomes the opportunity to work closely across the IC and with industry and academia to show the way to fulfill the enormous promise of ABI.

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Prior to her appointment, Ms. Long served as Deputy Director of the Defense Intelligence Agency (DIA) from May 2006 until July 2010. Previously, she was the Deputy Under Secretary of Defense for Intelligence Policy, Requirements, and Resources, from June 2003 until May 2006. She also served as the Deputy Director of Naval Intelligence from July 2000 to June 2003 and as the Director of Central Intelligence's Executive Director for Intelligence Community Affairs from January 1998 to June 2000, where she was responsible for community-wide policy formulation, resource planning, and program



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Ms. Long entered civilian federal service with the U.S. Navy in 1978 as a Project Engineer in training with the David Taylor Research Center. Upon completion of her degree in 1982, she continued with the David Taylor Research Center for six years, working on various submarine acoustic sensor programs. In 1988, Ms. Long joined the Office of the Director of Naval Intelligence where she managed Intelligence Research and Development programs.

Ms. Long was selected into the Senior Intelligence Executive Service in July 1994 and was dual-hatted as the Director, Requirements, Plans, Policy, and Programs Office for the Navy intelligence staff, as well as the Director of Resource Management for the Office of Naval Intelligence (ONI). From 1994 to 1996, Ms. Long was on rotational assignment from ONI to the DIA as the Director of Military Intelligence Staff. In 1996, Ms. Long joined DIA as the Deputy Director for Information Systems and Services where she directed DIA's worldwide information technology and communications programs. Ms. Long was also DIA's first Chief Information Officer.

Ms. Long earned a Bachelor of Science in Electrical Engineering from Virginia Tech and a Master of Science in Mechanical Engineering from the Catholic University of America. She is the recipient of the Department of Defense Medal for Distinguished Civilian Service, the Presidential Rank Award of Distinguished Executive, the Navy Distinguished Civilian Service Award, the Presidential Rank Award of Meritorious Executive (two awards), the National Intelligence Distinguished Service Medal (two awards) and the Defense Intelligence Agency Director's Award (two awards). In 2011 Ms. Long received the Charlie Allen Award for Distinguished Intelligence Service from the Armed Forces Communications and Electronics Association, was decorated with the Medal of Merit by the King of Norway, and was appointed to the rank of Chevalier in the National Order of the Legion of Honor of France.



The Pathfinder, NGA's handsome magazine, published by National Geospatial-Intelligence Agency's (NGA) Office of Corporate Communications (OCC), promotes an understanding of geospatial intelligence. Digital PDF versions of the magazine may be viewed at <https://www.nga.mil/MediaRoom/Pathfinder/Pages/default.aspx>

33. Ibid.