**United States Geospatial Intelligence Foundation (USGIF)**
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# Reimagining Unclassified Work and Platforms: A Geographically Agnostic GEOINT Enterprise

## Transitioning More Data and Analytic Capabilities—and the Humans Who Use Them—to Unclassified, Accessible, and Interoperable Systems

*"Innovation in America is rooted in the creativity of an open society and the ingenuity of an open mind."*

– The Hon. Lloyd J. Austin, Secretary of Defense, in remarks to the Reagan Defense Forum, Dec. 4, 2021

**ABSTRACT:**

This USGIF white paper is intended for government and industry leaders involved in the defense, intelligence, and geospatial intelligence (GEOINT) communities interested in reimagining unclassified work and platforms. The paper identifies opportunities for the Intelligence Community (IC) and the Department of Defense (DoD) to learn from organizational practices built during the COVID-19 pandemic, which required unclassified work to happen outside of classified environments, and examines the potential benefits of workflows that maximize geographically agnostic unclassified contributions to the GEOINT Enterprise.

# Introduction

In the early response to the COVID-19 pandemic, the Intelligence Community (IC), Department of Defense (DoD), and other agencies were forced to work remotely in a way they never had before—mostly outside of secure walls. In many cases, this not only meant working on unclassified materials but also working offsite, away from traditional government facilities or contractor locations. This dramatic shift in operating environments was welcomed by many entities across the Geospatial Intelligence (GEOINT) Enterprise[1] who had sought for decades to migrate more of their work and workforce to unclassified, open work environments. The long-term ability to maximize unclassified data and platforms means the GEOINT enterprise may become "geographically agnostic," in that much of the mission may be performed from decentralized locations.

Since that time, the benefits of moving unclassified work outside of classified work environments have become more apparent:

- The GEOINT Enterprise can diversify its portfolio of collaborators through open, geographically agnostic approaches by leveraging a wider range of infrastructure, locations, and personnel to bid on and execute programs. These benefits may ultimately reduce costs associated with operating entirely in classified environments (avoiding, for example, high-cost leases and related infrastructures) and ensure continuity of operations.
- New industry partners can submit solutions and innovative ideas to the government in a more rapid, direct, and impactful way, increasing the volume of sharable, transparent, analytic output.
- The competitive marketplace for government contracts can expand, ultimately driving better solutions at a better value. Competition spurs innovation and can increase the speed of providing new capabilities to the mission.
- Small and mid-sized businesses may see reduced barriers to entry as they may be less tied to locating their own facilities near government sensitive compartmented information facilities (SCIFs). This, in turn, can broaden the marketplace of suppliers.
- Talent acquisition and retention can benefit from a broader and more diverse talent base and expedited hiring processes when onboarding.

We believe that by rethinking existing workflows and embracing unclassified work and platforms, the GEOINT Enterprise will see these benefits materialize and keep pace with the rapidly evolving capabilities of the commercial sector. However, to reap these benefits, the GEOINT Enterprise must transition more of its core data and analytic capabilities to unclassified environments.

## The Current State

It is our contention that the IC suffers from its tendency to overclassify materials. Numerous projects—among them the CIA World Factbook, ArcGIS Online, the National System for Geospatial-Intelligence (NSG) Open Mapping Enclave (NOME)—have nonetheless shown the benefit of unclassified environments for the ready exchange of GEOINT data, both within and outside of the IC. Recent events in Ukraine have provided a highly visible example of the power of open/commercially produced GEOINT imagery. Unclassified imagery and analysis have proven powerful tools against propaganda that makes clearly false statements about conditions on the ground.

## The Human Side of Increasing Unclassified Work

A major advantage of moving data and services to unclassified platforms is the ability to tap into a diverse human network. Although automation, augmentation, and AI are and will continue to be powerful tools, it is the human side of the human-machine interaction that brings mission success.

An unexpected benefit of dispersing work during COVID shutdowns was the demonstration of effective asynchronous collaboration across multiple time zones. There were even signs that organizations saw increases in productivity and improved workplace culture. This way of working offers great long-term promise for timely mission delivery and increased workforce diversity. In the future, in-person and hybrid meetings will still have relevance, but the government should embrace new asynchronous and geographically agnostic collaboration whenever possible.

# Recommendations on Transitioning More GEOINT Enterprise Work to Unclassified Platforms

The government should link any overarching approach to shifting more operations to the unclassified environment to existing strategic goals.[2] We suggest it will be important to identify the intersection of mission, budget, and capability to solidify the best candidate solutions for operations in the unclassified domain.

1. **The government should assess requirements, sources, processes, and technology across unclassified platforms** (including SBU and NIPRNET) to clarify what missions could be supported entirely or substantially by analysis developed in an unclassified environment.
2. **There should be an "unclassified first" mindset from application development to data sources**. This mindset means providing content and services on the lowest possible classification level, then making them available for utilization or processing and exploitation on classified networks when necessary to meet mission need.

**The following sections offer more specific reimagination of the GEOINT cycle to optimize unclassified work and platforms.**

## Reimagining: Tasking and Collection

Because tasking and collection from space-based assets are now increasingly automated processes in terms of tipping/queueing, two critical operational functions may deliver more unclassified data. First, collection can be accelerated to the sensors best suited for target- or problem-specific insights and understanding—which increasingly are unclassified, commercial platforms. And second, disconnected users can take advantage of new delivery capabilities through micro-receivers and processors.

*Recommendation:*

- The GEOINT Enterprise (specifically government, GEOINT providers, and standards organizations) should explore or generate options for a federated marketplace approach that, through adherence to standards, allows for tipping and queueing across constellations. A marketplace where the business model incentivizes use vs. availability of data could be a new approach that emphasizes discoverability and access.

## Reimagining: Processing and Exploitation

Increasingly diverse geospatial sources are catalyzing the creation of processing and exploitation services, including commercial industry operating in the open. A traditionally high barrier to entry—access to ground station systems—has been mitigated by "ground station as a service" providers and ground station capacity aggregators. In the long term, government use of these capabilities in an open environment would be faster and cheaper for the end user and allow collaboration with a broader set of mission partners.[3]

Of course, policies, rules, and laws around the collection, processing, and sharing of earth observation data must be considered. We believe the logic undergirding current rules—that U.S. commercial providers can build platforms for and disseminate imagery at a given resolution based on what is available internationally—is flawed and limits innovation. We believe a balance should be struck between commercial sensor innovation and protection of traditional sources and methods, and U.S. operational security concerns. Recent U.S. regulatory moves regarding both revisit and resolution will be fleeting in their effectiveness as foreign providers saturate and manipulate markets.

*Recommendations:*

- The GEOINT enterprise should look to analogous data protection needs and schemas (e.g., health and medical, financial, etc.) for potential approaches that address the need to protect data and insights from intentional or unintentional malicious misuse and abuse.
- Lines of demarcation between government entities within the GEOINT Enterprise, including NGA as the GEOINT functional manager and other IC/DOD user organizations, need to be clarified by oversight organizations. This will be increasingly important as new capabilities and modalities are developed.
- The Office of Space Commerce, DoD, and the IC should revisit commercial remote sensing policy in view of the increased availability, sophistication, and widespread use of commercial GEOINT, with a goal of increasing transparency and access versus ambiguity and restrictions.

## Reimagining: Analysis, Production, and Visualization

The simultaneous evolution of data manipulation, storage, and graphical display capability are creating new means of comprehensibility, altering the method and scope of interaction with GEOINT content. Innovation in crowdsourcing of exploitation and attribution (e.g., OpenStreetMap (OSM)) has inevitably improved the tools for more advanced analytic workflows. Planned improvement to the automated generation and curation of highly accurate 3D foundation data is already moving the entire earth base from 30-meter post spacing to less than five meters. Greater enhancements are inevitable, enabling universal geo-registration of data from all sensors and modalities—and these quite likely will be generated outside of the classified realm.

Cultural norms held by the intelligence community have meant that data and information produced for analysis and visualization by unclassified sources can ultimately result in a classified product once it is compiled or undergoes a specific analytic methodology[4]. Given the explosion of commercially available GEOINT, similar methodologies are being employed by a variety of non-IC entities in the fields of industry, media, finance, and more. Lines of demarcation should be revisited to define when there is legitimately a need to take unclassified analysis back to the classified network and what type of intelligence should be redacted.

*Recommendations:*[5]

- NGA, as the GEOINT Functional Manager, should spearhead engagement (particularly exposing the workforce to available commercial capabilities), adoption, and leadership to ensure proper balance of risk and reward to mission fitness-for-use as open capabilities grow increasingly more accessible globally.
- ODNI, in collaboration with DoD, should regularly conduct National Intelligence Priorities Framework-based reviews of intelligence and mission customer requirements to identify acceptable and desired classification levels for GEOINT.
- The GEOINT Enterprise should develop specific personnel and procurement incentives (e.g., through awards/recognition, resource allocations, or performance and program management targets) related to production of timely, accurate, and precise unclassified GEOINT to evolve cultural norms.

## Reimagining: Dissemination, Collaboration, and Storage

There are numerous solutions employed to disseminate products, data, and services at multiple classification levels across government and partner networks. It is generally accepted that the most efficient approach to multi-domain work is to create or exploit the content (data, imagery) on the lowest classification network before making it available on the higher-level networks.

*Recommendations:*

- The GEOINT Enterprise should work collaboratively and transparently to create policy and procedural frameworks to support more efficient cross-domain capabilities, such as creating a more robust version of the Enterprise Cross Domain Services (ECDS) and monitoring their adherence.
- Design a dynamic dissemination process for registered users to automate interoperability while simultaneously safeguarding content.
- Redefine storage and the hosting environments available, especially as the IC and DoD move more to the cloud. Put in place best practices for storage solutions and environments and defined lines of effort, especially with incoming contracts.

## Reimagining: Oversight and Policy

Increased viability of GEOINT on unclassified platforms requires emphasis through policy and oversight organizations. To do so, GEOINT oversight organizations need to be better informed about new models and capabilities regarding mission user needs for unclassified data. Better communication of user needs can translate into modifications in the budget process and, therefore, better resource investment.

Data policies already direct that data is to be stored at the lowest possible classification level. However, compliance is often at odds with employee practices and organizational culture.[6] Opportunities exist to define new approaches to determining authorized or approved sources for use that would make unclassified data more consistently available.

A balance must also be struck between the needs for security and assurance of trust of people and machines. Fortunately, commercial solutions for digitally tracking data are emerging that allow for encrypted history of machines, users, and networks within data streams.

As civilian digital twins emerge, so do innovative strategies for securing them. It is foreseeable that at some point, commercial data security strategies will supplant the concepts of secure networks, digitally tracking trust and abuse without the need for physical barriers. Combinations of biometrics, multi-factor authentication, hardware addressing, and location awareness make it difficult to hack and spoof while also deterring insider security threats. It is also conceivable that such approaches may be more cost-effective than maintaining fully separate secure networks in the long run.

*Recommendations:*

- Oversight organizations should ensure staff has the domain expertise necessary to understand the evolving complexities associated with the technical disciplines for which they are responsible. This could be accomplished in myriad ways, including by increasing personnel rotational assignments between oversight organizations and the GEOINT Enterprise, increased engagement with industry and academia, and leveraging organizations (like USGIF) to help provide context to domain-specific oversight considerations when appropriate.
- The government should monitor emerging approaches to network and data security and plan now to integrate such advancements to ensure they are effectively implemented in the future.

# Conclusion

Despite the challenges brought on by the COVID-19 pandemic, one positive outcome was increased awareness of how unclassified work leveraging unclassified data and open platforms can effectively meet mission needs. Moving toward more interoperable and accessible systems for communication allows for a wider and more diverse selection of industry partners and, thereby, greater competition for cost-effective contracts. GEOINT stakeholders are well-positioned to lead the way to reap the benefits of a geographically agnostic GEOINT Enterprise.

# References


1. For the purposes of this paper, GEOINT Enterprise is defined as being the government, industry, nonprofit/nongovernmental organizations, and academic entities contributing to and leveraging GEOINT to advance U.S. national security interests.
2. Emphases throughout NGA's current 2025 Strategy underscore concepts that a move to a geographically agnostic and increasingly unclassified enterprise posture would support. The National System for GEOINT (NSG) 2035 Concept of Operations ("CONOPS") envisions a horizontally integrated GEOINT operating environment that enables seamless interoperability and collaboration across multiple domains in the NSG.
3. As new unclassified sensors and system improvements on existing platforms become available, focused research, algorithm refinement, and training data for AI will be abundant. In the spectral world, where most of the effort in material identification has always been performed in the open, the availability of improved spatial/spectral data correlation and multi-look content will enable rapid refinement of fully automated feature extraction and enhanced anomaly detection. We do anticipate sensitivity in this realm related to timeliness, however. Rapid revisit rate combined with automated change detection can enable much more efficient decision-making with concomitant greater confidence in the outcomes. This particular content should be protected long enough for proper leveraging of the information by the U.S. and our allies. The applicable analogy is making sure that an alarm is silent, and the police will reach the scene of a crime before the criminals are warned and can escape.
4. Such outputs may be classified under Executive Order 13526, "Classified National Security Information," December 29, 2009, Sec. 1.7.(e).
5. Additional recommendations related to the use of open standards and increased interoperability between geospatial analysis and modeling and simulation solutions for generating 3D synthetic environments may be found in a jointly published USGIF and OGC technical paper entitled "Advancing the Interoperability of Geospatial Intelligence Tradecraft with 3D Modeling, Simulation, and Game Engines," March 2021.
6. For example, in the current environment, some contractor employees are unable to obtain necessary tools or accounts (e.g., common access cards and private key infrastructure credentials) due to policy restrictions, preventing them from accessing protected NGA systems even at the sensitive, but unclassified level.

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The United States Geospatial Intelligence Foundation (USGIF) is a 501(c)(3) nonprofit educational foundation dedicated to promoting the geospatial intelligence tradecraft and developing a stronger GEOINT community with government, industry, academia, professional organizations, and individuals who develop and apply geospatial intelligence to address national security challenges. USGIF achieves its mission through various programs and events and by building the community, advancing the tradecraft, and accelerating innovation.

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