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SCALING THE USE OF PUBLICLY AVAILABLE INFORMATION ACROSS THE U.S. GOVERNMENT

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CONTENTS

- EXECUTIVE SUMMARY** 1
- PROBLEM STATEMENT** 2
 - Value of Publicly and Commercially Available Information 3
 - Commercial Adaptation Fuels Federal Efficiency 3
 - Current State of Publicly and Commercially Available Information Acquisition Across the Federal Government 4
- BACKGROUND AND CHALLENGES FOR ENTERPRISE ACQUISITION, AUTOMATION, ANALYSIS AND COMPLIANCE** 5
 - Acquisition Considerations 5
 - Data Access & Products 6
 - Data Conditioning, Integration and Analysis Considerations 7
 - Compliance/Authorities Considerations 8
- RECOMMENDATIONS FOR ENTERPRISE ACQUISITION, AUTOMATION, ANALYSIS AND COMPLIANCE** 10
 - An Adaptable Contracting Approach for Agile Data Requirements 10
 - Shared Services and Commercial Partnership for Technology Applications of P/CAI 11
 - Centralizing an Authorities Library for Compliance 13
- CONCLUSION AND CONSIDERATIONS** 14
 - Managing Agency for Centralized P/CAI Use 14
 - Workforce Expertise 15
 - Interagency Collaboration 15
- REFERENCES** 17
- ACKNOWLEDGEMENTS** 21



EXECUTIVE SUMMARY

The U.S. Government (USG) requires ever-increasing access to publicly and commercially available information (P/CAI) to enable the full breadth of national security, public policy, and economic objectives.

Scalable and fiscally efficient access to the complex and dynamic P/CAI ecosystem is very difficult across USG but remains essential to strengthen situational awareness and enable strategic decision making across a wide range of missions. This paper first assesses the challenges with acquiring and using P/CAI across the USG at scale. It then recommends centralized, shared solutions that could be employed to minimize duplicate data purchases, promote data integration and development of advanced analytics, and manage risks associated with sharing information across authorities (e.g., Titles 10, 15, 28, 31, 34, and 50 entities). Research questions focus on opportunities for enterprise coordination to centralize the collective buying power of the USG through adaptable acquisition and technical approaches that support scalability and automation, while considering how to limit legal risk among different USG agencies in a relatively novel problem space.

Disconnected initiatives and independent purchasing authorities lead to duplicative purchases and development efforts. Adopting an enterprise contracting approach would centralize buying power, streamline opportunities for collaboration, and reduce duplication. Various contracting strategies that optimize or offer opportunities in addition to the Federal Acquisition Regulation (FAR) are key tools that can facilitate efficient procurement through an enterprise model. A modular contracting approach would leverage the strengths of different contracting tools, allowing scalability based on evolving national security requirements.

The integration of P/CAI requires overcoming technical challenges, including data processing and the use of advanced analytics through artificial intelligence (AI) and machine learning (ML). A centralized approach to acquisition and scalable data adaptation enables incorporation of the data preparation required for rapid and reliable deployment of AI and ML models. USG organizations can benefit from private industry's commercial frameworks and software solutions for data conditioning and management, adapting them to government systems and requirements through close partnerships.

Given the potential for P/CAI to contain sensitive information about U.S. persons, robust privacy and civil liberties frameworks are essential. A central library of authorities that can be used to track and standardize adherence to privacy laws across the USG would facilitate simplified data sharing across agencies while ensuring compliance with legal standards. This approach would enable agencies to tag their analysis with applicable authorities, empowering them to determine what derivative analysis they can share and receive from others.

It requires significant knowledge of commercial industry to implement these recommendations, e.g., utilizing and adapting existing commercial products, developing workforce expertise in P/CAI, identifying a USG agency to manage enterprise contracting, and fostering interagency collaboration. A centralized acquisition authority will need experts in data acquisition, analytic applications, data management, and authorities alignment to enact these solutions. Interagency collaboration can be formalized through congressional actions or interagency agreements, creating opportunities for efficiency and best practice sharing.

P/CAI is incredibly valuable to national security missions and scalable data acquisition, data harnessing, and compliance considerations are necessary to unleash it for the USG. By leveraging centralized shared services, USG can enhance its ability to use P/CAI effectively.

PROBLEM STATEMENT

The USG faces continued challenges to coordinate the acquisition and analysis of **P/CAI, consisting of data that is freely available to the public (PAI) and data that is purchasable from commercial vendors (CAI)**.¹ Today, it often pursues disconnected efforts within or across agencies, while missing opportunities to leverage economies of scale, according to a MITRE survey of existing literature.^{2,3,4} This results in multiple contracts for the same P/CAI source, sometimes within the same agency, and increases costs due to duplicative development efforts to integrate and analyze the information. A recent study completed by the RAND Corporation for U.S. Army Cyber Command revealed that the lack of enterprise-level acquisition efficiencies presents a challenge in acquiring P/CAI and creates barriers to collaboration with industry, as well as uneven development across organizations.⁵ In addition, the study found that multiple organizations across echelons do not know whether each of their data needs is already being met in other parts of the U.S. Army.⁶ **This highlights the need to standardize a coherent acquisition and access approach that leverages economies of scale and brings transparency to P/CAI portfolios for interoperable use.**

The Department of Defense (DoD) acknowledges these concerns, which are discussed in *DoD Directive 3115.18 DoD Access to and Use of PAI*. This directive states that the DoD will share capabilities and data across DoD components to reduce duplication and increase integration for lower costs and increased efficiencies.⁷ The Intelligence Community (IC) also addresses these issues in the 2024-2026 Open Source Intelligence Strategy, which states the need to coordinate the acquisition of open-source data to avoid redundancy and expand data sharing, as appropriate, to enable missions and ensure the most efficient use of IC resources.⁸ It also states the need to align and manage open-source collection efforts across the IC to enhance the speed and awareness of collection while

avoiding duplication of effort.⁹ While agencies like Treasury and the Department of Homeland Security (DHS) do have policy and resources to govern P/CAI, there is currently no overarching policy or directive that promotes sharing of P/CAI acquisitions across the DoD, the IC, and other civilian agencies.¹⁰

Recent Requests for Information on P/CAI capabilities issued through the USG's procurement portal, the System for Award Management, indicate ongoing investigation into P/CAI solutions and information sharing, but are overshadowed by the extensive challenges USG agencies face in assessing the growing number of data vendors.¹¹ Many vendors offer similar data as third-party resellers or aggregators, making it impractical to evaluate all options.¹² Once acquired, the sheer volume of data can overwhelm USG end users, especially those reliant on manual analysis, leading to the underutilization of data that is procured. Lastly, the varying authorities and policies among USG agencies further complicate P/CAI sharing. Potential legal risks could occur if raw data and analysis derived from P/CAI sources are integrated with data sets managed by USG agencies with mismatched authorities. **This presents a challenge for developing an enterprise solution to streamline, scale, and share P/CAI.**

As an operator of Federally Funded Research and Development Centers (FFRDCs), MITRE has worked closely with commercial and USG partners to conduct hands-on experimentation in P/CAI management practices to better understand how industry and USG can work together to overcome the challenges discussed above. The resulting research presented in this paper identifies recommendations for challenges associated with data acquisition, integration, and automation from P/CAI sources.

Value of Publicly and Commercially Available Information

Awareness has grown in recent years of the value of P/CAI, also known as OSINT when used for intelligence purposes, in protecting U.S. national security, to the extent that the IC termed it the “the INT (intelligence source) of first resort” in its most recent strategy.¹³ Similarly, the DoD is applying P/CAI in support of its Information and Communications Technology Supply Chain Risk Management capacity to “defend forward” through analysis of potential subversion opportunities.¹⁴ The Assistant Secretary of the Bureau of Intelligence and Research at the Department of State noted that “the explosion of OSINT in recent years has transformed how governments and people around the world consume and process information about society and global issues.”¹⁵ P/CAI is expected to grow in the coming years as commercial technologies generate more open-source data

A simple pathway to getting started with P/CAI is leveraging what already exists commercially and adapting it for government use. Commercial offerings are booming in the era of big data and constant technical innovation, resulting in a vast range of data capabilities and automation opportunities—all of which may be adaptable to the USG depending on mission applicability and engagement options with commercial partners. **If awareness of commercial products and USG-commercial partnerships are centralized and made scalable, data and other tech-forward tools can be harnessed and integrated by adapting commercial-off-the-shelf technologies.**

P/CAI, also known as “alternative data” in the private sector, is expanding based on recent enhancements in commercial technologies across product development, marketing, investment, and other fields. Data is captured from sources such as credit card transactions, geolocation, social media, shipping trackers, mobile app usage, and product reviews.¹⁶

Unlike data that is structured from traditional sources, such as surveys, census data, and government records, alternative, or nontraditional, data consists of new attributes and forms of data that are produced by capturing usage of commercial and consumer technologies. Over the next few years, advancements in storage, capture, and analysis technology are expected to match continued growth in data volume and availability, reflecting the growing number of P/CAI data vendors, which have increased by about 29 percent in the past few years alone.¹⁷ Alternative data has become much more accessible since many companies have started to clean, package, and sell information that is generated at various points in the value chain and make it commercially available to guide investment decisions.

Commercial Adaptation Fuels Federal Efficiency

P/CAI that is commercially sold as alternative data products is broadly available in a constantly changing information environment, typically for a price.

Commercial providers take on the work-intensive, high-resource steps of data identification and collection, then create their own products with technical innovations in response to user needs. It is vital to understand what data content, delivery mechanisms, and underlying technical formats are available from each provider. This knowledge will identify opportunities to connect organizations and products to each other for useful applications.

In circumstances where available P/CAI capabilities do not match the government’s needs, the USG,

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FFRDCs, and commercial providers can work together to iterate and refine capabilities for mutual benefit. Existing commercial products offer a useful foundation to tailor to novel government requirements or to create new capabilities—bringing together industry technologists and the timeliest government needs for agile, targeted solutions. Commercial products can be adapted quickly in an environment of creative, forward-leaning innovation, especially in partnership with organizations that are integrated with USG mission sets and can translate actionable requirements.

Collaborative experimentation has been established as a successful method to fulfill persistent capability gaps with incubators that exist within and external to government hosted across academia, government, and industry. For example, In-Q-Tel is a not-for-profit organization that breaks down barriers among startups, venture capital organizations, and the USG for commercial success and national security impact. It does so by identifying opportunities for investment in national security areas of interest, including digital intelligence and autonomous systems, resulting in long-term, high-success partnerships.¹⁸ USG supports innovation organizations such as the Defense Innovation Unit (DIU), Naval X, and AFWERX, which accelerate technology transfer from industry to government, focused on advanced technologies.¹⁹ MITRE, operating FFRDCs on behalf of the USG, incorporates useful practices from industry and government to create its own “Bridging Innovation” capability which builds trusted community relationships across both academia and industry, then matches and transitions them to government requirements.²⁰

Current State of Publicly and Commercially Available Information Acquisition Across the Federal Government

To assist USG in understanding the growing P/CAI ecosystem, MITRE profiled 84 P/CAI vendors ranging from raw data providers to data brokers. From Fiscal Year 2021 to 2024, 40 out of those 84 vendors

received a total of 879 federal contracts from more than 30 USG agencies. Each contract was under \$7.5 million (the threshold for streamlined government acquisition of commercial products and services), for an aggregate amount of about \$320 million.²¹ Of those contracts, only 18 percent used an indefinite delivery vehicle (IDV) (i.e., an enterprise ordering vehicle to include indefinite delivery indefinite quantity contracts, blanket purchase agreements, and basic ordering agreements). The remaining awards were definitive contracts (e.g., purchase orders or standalone contracts) or subcontracts to a prime.²² In comparison, the USG typically obligates 30 to 40 percent of its aggregate funds through an IDV.²³

The high percentage of definitive contracts or subcontracts awarded to these vendors (82 percent) represents an opportunity for USG agencies to collaborate on P/CAI requirements with common use cases through IDVs. IDVs enable faster awards and access since the pricing, terms, and conditions are pre-negotiated within the IDV itself and flow down to each award issued under the IDV. Cost savings can be achieved through volume-based pricing by aggregating requirements from USG agencies that utilize the IDV, leveraging economies of scale. Lastly, IDVs provide a predictable demand signal to industry by indicating recurring requirements over the span of multiple years, whereas definitive contracts do not, as they are isolated to a single specific requirement.

**Total USG Contracts to P/CAI Vendors (FY21-24)
(x < \$7.5 Million) (n = 40 vendors)**

Contract Approach	Number of Awards	Awarded Value
Definitive Contract	599	\$217,954,118
Subcontract	136	\$40,344,721
Indefinite Delivery Vehicle	144	\$59,950,411
Total	879	\$318,249,249

Figure 1: Total U.S. Government Contracts to P/CAI Vendors (U.S. Department of the Treasury, 2025)

BACKGROUND AND CHALLENGES FOR ENTERPRISE ACQUISITION, AUTOMATION, ANALYSIS AND COMPLIANCE

Acquisition Considerations

The hundreds of P/CAI capabilities in the commercial marketplace add further complexity to contracting efforts and potentially escalate acquisition costs due to duplicative purchases of the same products and capabilities.²⁴ Establishing an enterprise acquisition strategy that utilizes IDVs for P/CAI would help achieve economies of scale for enterprise data access and sharing. This approach would **improve USG purchasing power with industry and advance industry participation with more predictable work and potential long-term engagements that allow for-profit entities the opportunity to make deliberate investments** in their capabilities and increase their value to a broad range of potential USG customers.

IDVs can be managed using interagency contracts, where an IDV is established for the purpose of procuring and managing P/CAI with pre-negotiated prices, terms, and conditions. Any USG agencies with P/CAI requirements can then leverage these IDVs to place individual orders for the data type, data access, and engineering support that is needed at the time. Pricing typically depends on the data product/access type (e.g., Application Programming Interface [API], bulk, user interfaces), pre-negotiated terms and conditions of the underlying contract(s), and the scope of how the data is accessed, used, and shared. The approved uses for access and shareability in license terms can also impact pricing and the level of active management required for each contract.

A volume-based pricing model that offers a per unit cost for data licenses/access or a token model can be pre-negotiated with a contract minimum, however, overall pricing is dependent on usage. Volume-based models can include price breaks if a certain volume is achieved, or multiple years of support is approved upfront. While enterprise vehicles may be overly expensive for a single agency to attempt, they are made

tenable through the combined purchasing power of all of USG as each agency places individual orders for their current needs against it. No matter the pathway that provides USG with a streamlined ability to procure data, the contracting approach must also consider what type of data product(s) would be most generally valuable and usable. For example, some P/CAI vendors may offer access to platforms that include data dashboards and analytics with limited export capabilities, whereas others may provide pay-by-query models aligned to API or bulk access, which would offer a preset volume and simple method to track costs per user.

Governmentwide Acquisition Contracts (Multi-Award)

GWACs are suitable for USG agencies with information technology (IT) requirements looking to leverage expertise and resources from prime contractors and lead integrators (i.e., companies that scout the data ecosystem and match vendors to requirements) to research, identify, acquire, and manage P/CAI solutions, including raw data, data management solutions, and commercially driven analysis from multiple vendors. **This type of contract is valuable for USG agencies that have limited experience with P/CAI or limited resources to directly engage with and procure from data vendors** and can include room for adaptation in the established work scope to “learn as you go.” It enables a more hands-off approach by leveraging prime contractors that have specialization in the P/CAI marketplace and can evaluate commercial products on behalf of government and report back with their findings. When a USG agency has a particular P/CAI requirement, an order can be awarded off this IDV to a prime contractor or lead integrator that has expertise in implementing and managing such a requirement. The prime contractor or lead integrator would be responsible for the general oversight of the P/CAI vendors as subcontractors to them by awarding subcontracts (or sub-awards).²⁵ This is not limited to just P/CAI but can also be used to procure supporting capabilities such as entity resolution and automation solutions, which are described later in this paper.

Blanket Purchase Agreements

This is suitable for USG agencies that have readily available resources and existing expertise with P/CAI. Blanket Purchase Agreements (BPAs) are used to fill anticipated repetitive needs for supplies or services from a published, pre-negotiated pricing catalog provided by the vendors on this IDV.²⁶ This IDV is most appropriate for vendors selling data that is needed by the USG on a continuous and persistent basis. Each order issued under a BPA must be under the simplified acquisition threshold (SAT),²⁷ which makes this IDV very effective for making rapid awards and mass purchases down to the license, access, or query level. Vendors can join a BPA vehicle at any time by offering an overview of their capabilities to its Contracting Officer, who would then evaluate and approve them for inclusion. Because P/CAI is commercial in nature, the SAT would be \$7.5 million per order, which increases to \$15 million under specific circumstances.²⁸ **As this type of IDV allows P/CAI vendors to sell directly to the USG, this enables USG agencies to contract with vendors directly and manage their own usage.** With this IDV requiring a more hands-on approach, the USG agency would be responsible for the oversight of vendors as prime contractors and suppliers.

Basic Ordering Agreements

Like BPAs, a substantial number of requirements can be procured under Basic Ordering Agreements (BOAs). BOAs can expedite contracting actions even when services requirements, quantities, and price are unknown at the time, making it a flexible option in uncertain environments. Despite that uncertainty, BOAs provide pricing methodologies that create structure for products and services and reduce procurement lead time. Unlike BPAs, which are more suited to repeatable and tangible items, **BOAs are suitable for procuring data management capabilities** in which pricing would be dependent on the scope of the data to be processed and managed. Though a similar function can be done with a GWAC as previously noted, BOAs would be optimal for USG agencies who are their own lead systems integrator (as opposed to outsourcing it to a contractor through a GWAC or an independent contract).²⁹ Vendors can join a BOA vehicle at any time.

Other Transactions (Consortium)

This is suitable for USG agencies that need to experiment with new data and test new use cases with industry partners. **Other Transactions (OT) do not have barriers associated with federal contracting because they are not subject to Federal Acquisition Regulations and can attract additional companies with innovative capabilities that typically do not do business with the USG.** This is applicable to the P/CAI space since many of these vendors work in financial and consumer goods industries with limited exposure to the USG.

In this context, OTs can be used to set up a consortium, which is a community of expertise centered on a certain technology or problem that the government can collaborate with industry to solve through ongoing adaptation.³⁰ Each consortium is managed by a consortium manager (CM) and can include dozens to hundreds of members (i.e., companies that have offerings deemed of potential value to the USG). The CM researches, identifies, evaluates, and negotiates suitable P/CAI or supporting data management tools from consortium members that can support emerging USG requirements with innovative use cases from readily available or adaptable commercial capabilities. The CM would be responsible for general oversight and ensuring that the vendors meet the requirements, but the USG would be responsible for execution and implementation. However, not every USG agency has OT authorities.³¹ **Agencies that do not have OT authorities can alternatively leverage an approach that the General Services Administration (GSA) piloted with Commercial Solutions Openings (CSOs) to produce a streamlined acquisition process like that of an OT.**³²

Data Access & Products

Many vendors offer access through either APIs or bulk transfer. (For the purposes of this paper, data access via user interface is considered manual analysis and not discussed in this section.) APIs are products offered by commercial vendors for data delivery that provide users with the capability to submit queries in

line with their authorities, undergo review regardless of origin, and receive only the results that apply to their specific mission needs. APIs create opportunities for rapid scalability at an enterprise level, continuous integration and delivery, and increased economies of scale.³³ Conversely, bulk data is typically the same raw data that is provided through APIs but delivered as a file on a periodic basis (usually ranging from weekly to quarterly), often offering a larger scope of information in exchange for the storage and processing costs inherent in maintaining such large files. APIs require intentional data collection, which may result in lag times and require additional processing for integration. Receiving a file via bulk data delivery allows for pre-processing (or batch processing) of raw data as opposed to having to process the data on demand.

There are tradeoffs in benefits between these two common delivery mechanisms, with the optimal usage depending on the needs and capabilities of the user. APIs can offer instant access to the full catalog of data available from a provider, with the potential for real-time updates, though users need to know what to look for and collect—requiring more time upfront to curate queries. Bulk data offers access to all data immediately, but as a static file that is updated on a periodic basis when a new file is shared. The ability to pre-process bulk data and host it within system infrastructure, as opposed to the data residing in the vendor’s infrastructure, may be a key consideration. However, uploading bulk data sets, which can be as large as several terabytes, may require significant time, processing, and storage resources. Also, if the vendor changes its bulk data format, users must adjust integration methods and storage structure to accommodate the update. Both methods offer access to the same underlying data streams and may not always be offered by every vendor, especially in cases where the data is niche.

The optimal collection option for each organization depends on the data management approach, balancing data processing time and requirements for data currency and ease of integration.

Data Conditioning, Integration and Analysis Considerations

When leveraging a multitude of data sources from P/CAI vendors for analytic insights, it is vital to apply advanced technology to integrate and combine data sources. **The value of using P/CAI is limited to a system’s ability to ingest vast amounts of data.**³⁴

Ideally, the data portfolio at an organization’s disposal will be vast, containing several types of data across domains that provide a robust view of a given area of interest. This amount of data can easily become overwhelming without automation solutions, many of which exist across industry and offer immediate efficiencies. A wide range of alternatives offer government spaces and missions the choice of the most bespoke and innovative offerings.

Working across big data becomes manageable by applying automation tools to repeatable tasks that permit subject matter experts to review data across a large portfolio as outputs of automated analytics.³⁵ With automation, the analysis of a few dozen entities can be optimized to take only days (if not hours), whereas conducting the same analysis manually on the same amount of entities would typically take months, a potentially disastrous amount of time when working in national security, aviation, or healthcare. However, regardless of the availability of enabling commercial offerings, a deep understanding of USG-centric use cases, their system requirements, and underlying workflows in constrained environments must be accounted for in the automation equation for collaboration to be a success.

Once data is made available through the appropriate contracting approach, it must be integrated or connected across the universe of disparate data schemas prior to automation. Both private sector companies and public sector agencies struggle with combining data from differentiated sources and processing raw data from P/CAI vendors into usable formats. For example, one common challenge is entity resolution due to the same piece of information being labeled or stored differently across vendors and data sets. This limits the ability to search across all offerings to find matches without some kind of relationship mapping or integration. Though this may seem simple to address through manual keyword lookups, it becomes impractical when analyzing hundreds, if not thousands, of data attributes at scale. This is further magnified due to the ever-evolving ecosystem of P/CAI that can result, for example, in an entity of interest having changing attributes due to mergers, the creation of subsidiaries, or changes in ownership.³⁶

Even after data is integrated, organizations still face technical challenges in the automation of analysis. It is just as, if not more, difficult to codify repeatable steps in analytic workflows that can be automated through a detailed and structured plan.³⁷ Analysts must be able to quantify the “art” of analysis—identifying the patterns, opportunities, and vulnerabilities that have real impact and making them understandable to others to ensure maximum P/CAI value. Commercial partners with technical and automation expertise that can help connect information and identify potentially useful nodes need to be able to communicate with end users and understand requirements—which is especially difficult in classified environments. The IC recognizes the challenge of transforming raw data at scale from a growing volume of available data to produce meaningful analytics and intelligence.³⁸

It is vital to leverage technology to move beyond data integration into data understanding, visualization, and delivery, at the speed of other nations that are already harnessing the use of AI and ML to limit manual analysis using advanced technologies.

Compliance/Authorities Considerations

Another factor that limits the scalability of P/CAI is that its availability and breadth necessitate strong consideration of privacy and civil liberties frameworks. P/CAI can reveal sensitive and damaging details about individuals, and, without proper controls, it can be misused to cause harm, embarrass, or otherwise inconvenience a U.S. person. Mirroring the growing utilization of P/CAI across government, there is a growing need to refine the policies to governing P/CAI use to ensure American values are maintained. P/CAI concerning U.S. persons (USP) are subject to a set of overlapping federal regulations that provide concurrent, but inconsistent, standards to govern the handling and use of such data.³⁹

Existing legal frameworks and policies are in place to guide this issue, such as Executive Order (EO) 12333 and the Privacy Act of 1974. Furthermore, individual agencies and communities have their own regulatory frameworks that govern P/CAI, such as the Intelligence Community Policy Framework for Commercially Available Information (ICPM 504-01).⁴⁰ It is these differentiating frameworks that make it difficult to share P/CAI analysis across USG agencies, let alone among the IC elements. For example, IC guidelines discuss using the least intrusive means for collection techniques, which is typically inclusive of P/CAI. However, the DoD’s manual that governs intelligence activities (DoD Manual 5240.01) goes

further to include collecting no more information than is reasonably necessary, which would apply to P/CAI if it includes U.S. persons' information (USPI) and would then limit the IC's preference of using P/CAI over other sources of information. The rules of volume, proportionality, and sensitivity (VPS) of USPI vary across IC elements. Though some IC elements have established, or are in the process of developing, more detailed VPS guidance, the IC may want to clarify its preference for collection using the least intrusive means to explain data usage rules of openly accessible P/CAI data across different environments.⁴¹

These differing frameworks increase the complexity of how USG agencies can share P/CAI among themselves, making it difficult to achieve an interagency response where interagency coordination and information sharing is critical. Such policies revolving around the use of P/CAI sources are inefficient, costly, and inadequate for the scope of today's national security challenges. Having more uniform standards for cross-jurisdictional data access,

analysis, and dissemination in support of USG objectives would help facilitate mission success.

This can be achieved with a data management plan that is supported through an agency-specific approach to data access that collects only the information that aligns to each agency's authorities and needs. None of these frameworks entirely preclude aggregating P/CAI and analyzing it with sophisticated techniques in support of mission objectives. They also do not prevent more subtle and less intrusive methods whereby data is not acquired or stored in bulk by U.S. officials at all but rather is obtained via preset API queries that only gather the information that is relevant to USG mission requirements, while avoiding access to or storage of unnecessary sensitive information. An agency-specific approach would enable adherence to robust protections for USP and other sensitive classes, while maintaining the ability to access the dynamic, openly available data that is freely used by non-USG agencies, including threat actors.

RECOMMENDATIONS FOR ENTERPRISE ACQUISITION, AUTOMATION, ANALYSIS AND COMPLIANCE

An enterprise acquisition strategy enables a coordinated approach for contracting, data integration and analysis, and authorities alignment to acquire P/CAI. This strategy would assist agencies in identifying the optimal contracting approach for their situation and offer a combined approach across organizations for those identified as having aligned authorities and data needs that can benefit from shared license terms.

An Adaptable Contracting Approach for Agile Data Requirements

As previously mentioned, there are clear advantages to an IDV, or shared contracting vehicle, that can be used by multiple USG agencies with pre-negotiated terms and conditions for P/CAI access and supporting capabilities. Implementing such vehicles reduces the burden of each USG agency needing to set up and negotiate its own contracts to acquire P/CAI, allowing agencies to focus on scoping the data type, access, and level of support needed to meet their current P/CAI requirements.

Each of the previously mentioned contracting approaches has advantages and should be leveraged in different circumstances based on the requirements of the user(s) and to provide maximum flexibility for rapid acquisition and cost savings. **This approach is called modular contracting, which is a technique that leverages multiple contracts (typically IDVs) to develop a capability.**⁴² Rather than establishing a single monolithic contract, there could be a centralized acquisition organization with authorities to execute different IDVs that would maintain a portfolio of contracts and enable the ability to scale and evolve a robust data portfolio over time.⁴³ This would provide flexibility to different USG agencies that may have varied P/CAI requirements at any given time, ranging from simply needing to procure API access from a specific P/CAI vendor to needing a turnkey solution that can access many data sources from an integrated solution and quickly search across an entire network of information.

There are examples of USG organizations using a modular contracting approach, with opportunities for increased adoption across the USG. The U.S. Army Digital Capabilities Contracting Center of Excellence is one recent example of an agency that has adopted modular contracting to achieve speed and flexibility with software development.⁴⁴ DIU also employs a modular approach to provide flexibility with bringing in different vendors to work together to on prototyping efforts.⁴⁵ In 2024, the Government Accountability Office surveyed programs that used modern software development approaches for their Weapon Systems Annual Assessment and found that 20 percent of them used modular contracting.⁴⁶ As an example of specific applications, commercial data management solutions can be acquired through a GWAC or BOA depending on the USG agency's acquisition strategy, enabling the integration of dozens of government-acquired P/CAI data sources. Conversely, a USG agency may already have an established process to acquire and manage P/CAI but encounter novel data types or have a new requirement the agency must respond to quickly. In this case, an OT consortium could be utilized to experiment with new P/CAI and/or test new data management capabilities by leveraging the collective expertise of the consortium members. On successful completion, the USG agency can apply the lessons learned to its traditional contracting vehicles for implementation and execution. DIU has taken this approach by partnering with GSA to on-ramp solutions to established contracting vehicles.⁴⁷

With an enterprise strategy applied to P/CAI contracting efforts, the examples above could enable the scaling of P/CAI across the USG based on need, with agencies employing the best possible contracting vehicle appropriate for a given scenario.

Most agencies can leverage either a central office or their own internal office to deploy this contracting approach, provided there are resources and expertise in agile acquisitions available to them. Organizations like the U.S. Army and DIU would still employ their acquisition strategies but would have the option of using volume-based pricing through a centralized IDV when needed.

Shared Services and Commercial Partnership for Technology Applications of P/CAI

A coordinated approach across the enterprise would also help address the difficult technical challenges of disparate P/CAI data schemas and entity resolution. A model of enterprise data handling and applications presents the potential to save resources by staffing a centralized authority with data engineers that can coordinate and manage data processing and integration solutions as a shared resource for users accessing enterprise data. The team of centralized engineers would benefit from partnership with commercial industry and adaptation of existing solutions that are tested and readily available. These could include capabilities to deploy on sensitive government systems in real-time, handle complex data integration of multiple sources across open architecture frameworks, and harness capabilities for anonymization of sensitive information prior to local storage using homomorphic encryption technologies.⁴⁸

While there are benefits that should be considered for centralized data conditioning and integration, there are also advantages of a locally supported data

engineering and automation approach, whereby agency-specific end users of data process, integrate, and develop automation within their offices or organizations reflecting their missions. A local approach mitigates the potential of overtaxing existing resources with requirements to store and process all information for all agencies. These tasks can be done at the agency level, with the agency pulling only data that is timely and relevant to mission sets that can be further prioritized at the user level. Additionally, IT system requirements vary across different agencies, making it challenging to have a centralized capability that can support multiple agencies.⁴⁹ A local approach allows each agency to develop the necessary underlying infrastructure in accordance with the agency's IT requirements while maintaining an open standards architecture to facilitate use, access, sharing, and interoperability across the USG. It also empowers data product owners at the agency level, allowing them to manage their users' data requirements specific to their unique missions. This includes data collection, application development, and custom query creation that is relevant to mission-specific uses. However, as previously described, there are challenges when it comes to processing and integrating P/CAI that all agencies will encounter, regardless of varying IT requirements and unique mission needs. Even if an agency is pursuing local solutions, there are still opportunities for it to take advantage of centralized lessons learned and shared resources, including code repositories, proven ontologies and data dictionaries, and insights on key commercial partners that can assist at all levels.

Shared services and resources, such as centralized knowledge management repositories, **would encourage the sharing of algorithms and ontologies among USG agencies** using the same data for similar purposes. Shared services would be particularly useful

when tackling recurring technical challenges such as data standardization across USG agencies and integrating multiple data sources. Standardization not only enables effective knowledge management and interoperability across USG agencies but also increases their ability to combine multiple data sources for more streamlined integration and deeper analysis and maximizes the value of P/CAI.⁵⁰ Standardization is required for data conditioning since it enables broader discovery, utility, security, and efficacy of data across systems, with existing efforts lacking scalability across USG. The 2019 Federal Data Strategy attempts to achieve data standards within relevant communities of interest across USG through a number of action plans but requires additional support to continue development.⁵¹ Digital.gov offers a variety of communities of practice that allow for collaboration and sharing of resources across USG entities who are focused on developing digital experiences, but is voluntary in adoption of its practices.⁵²

Entity resolution is another technical challenge that can be addressed through shared, commercial services to enable leveraging of multiple data sets by identifying relationships and creating combined solutions. There are commercial companies that have developed entity resolution capabilities which can continuously ingest, normalize, and integrate new data sources with existing data catalogs or provide entity matching analysis across data sources.⁵³ **Centrally sharing knowledge of readily available capabilities, whether they be USG or commercially developed, can pave the way to address common technical challenges and provide immediate value to improving P/CAI analysis.** Optimally, centralized shared services for P/CAI would offer a catalog or repository of USG and commercial capabilities to maximize the use of P/CAI, including points of contact and real examples that can be adapted across the USG.

In addition to shared services, USG agencies could opt to share findings about their usage of centralized platforms in a common knowledge base.

Rather than simply sharing code, organizations could opt to develop system-to-system query capabilities, potentially via APIs. This is a model currently employed by some organizations to avoid duplication in the information being gathered, as many suppliers are of common interest across the USG. Such an approach would avoid recurring costs to a shared contract vehicle collecting the same data for differing missions. Ideally, data collection systems will be created to communicate with one another, which requires deliberate development to facilitate information transfer.

Resourcing is another consideration that will impact data engineering and automation at any level. In environments where resourcing at the agency level is constrained and specialized technical talent is highly competitive, **it may be beneficial to leverage existing commercial capabilities for data processing, storage, entity resolution, and other complex technical facets.** Though leveraging readily available applications and capabilities would require upfront costs, (e.g., for software licensing and potential integration development with government systems), such immediate investment to jumpstart capabilities would establish long-term value through the increased efficiency of automation. Using readily available capabilities would avoid the cost of custom, potentially duplicative solutions across the USG while freeing up resources that can be prioritized elsewhere. The technical skillsets needed for immediate application or adaptation would also be readily available through an external partner, though only technical teams that are willing to adapt to stricter government non-disclosure requirements should be considered, and transition time to build understanding of USG requirements would still be necessary.

Close partnership between industry and government is a necessity when automating analysis solutions using commercial tools. Government users understand the mission sets, workflows, and applications required and would need to learn how to translate that to commercial technologists. There are architecture framework vendors who have already partnered and are familiar with government system requirements and offer readily available functionality to onboard different data sources. USG agencies may also require transition time to understand commercial company structures and mindsets, what they do and do not need to know to be useful, as well as agile methodology milestones that help end users both meet requirements and provide feedback throughout development sprints.

Overall, a centralized, shared service created in partnership with commercial industry can standardize P/CAI sources and applications and provide a knowledge management system to potentially reduce development efforts across various agencies. This would accelerate data accessibility, interoperability, and sharing of insights across the USG. Local approaches may still be necessary in minimal, scoped cases depending on IT and mission concerns, but the impacted organizations can still benefit from sharing knowledge and technical resources while they operate with the freedom of application and query development at the end user level. Lastly, similar to how USG agencies have varying IT requirements, they also have varying requirements associated with data compliance and usage authorities, including privacy and civil liberties, which is further discussed in the next section.

Centralizing an Authorities Library for Compliance

A central library of taggable authorities that data users can implement into their local systems in accordance with their agency's governing framework would be pivotal in a model of sharing P/CAI across the USG in support of multiple stakeholders. At the local level, the library would operate by tagging every search across P/CAI sources based on the organization and its underlying authorities for easy compliance checks. Additionally, each agency's system would be assigned authorities based on the agency's governing framework and could be enabled through logical access control systems.⁵⁴ **With this approach, before results from searches are shared, the receiving agency could see the authorities associated with the content and could cross reference them with its own assigned authorities to ensure it can receive and view the data, analysis, or shared technical resources.**

Compliance tracking across P/CAI is important because the permissibility of using certain query terms (e.g., U.S. company names) is restricted to those agencies with authorities to search and retrieve those data attributes. Thus, technical controls are necessary for an agency to query and access the intersection of data attributes with U.S. individuals. The centralized library approach would facilitate the following: how, by whom, to what extent, and in what form information from query results can be handled and stored; how and to whom information can be disseminated; and requirements for record-keeping, institutional oversight, and accountability.

CONCLUSION AND CONSIDERATIONS

The value of P/CAI to national security missions and the intention to increase the use of this data has been made clear by directives, policies, and public statements from officials across the IC, the DoD, and civilian agencies. **Creating a system of acquisition that scales to meet this demand signal is critical for success and adherence to a new executive order focused on modernization and streamlining of defense acquisitions through adaptive frameworks⁵⁵ and centralizing procurement of goods and services across USG to achieve economic efficiencies.⁵⁶**

MITRE's recommendation to institute agile acquisition across the USG through centralized, shared services and a modular contracting approach meets reform requirements and expands on them by establishing systems of systems that can manage cross-cutting data and bring advanced technologies to bear to transform data into actionable information. The recommended operation of a centralized authority that can leverage various contracting approaches (GWAC, BPA, BOA and OTs) and employ them in parallel on a situation-dependent basis can provide maximum value at the speed of relevance. Localized data processing with centralized shared services is a highly efficient option to enable innovation and tailored solutions at the agency level, while promoting knowledge sharing and reducing duplication across government. System-to-system communication should also be considered by USG to enable the sharing of critical findings between and across classification levels for government organizations with similar mission objectives.

Key to creating a sustainable system from these recommendations is the need for USG agencies to institute mechanisms that protect them from legal risks related to privacy law and differing authorities. Maintaining a library of current authorities would allow agencies to understand their boundaries when engaging with P/CAI and ensure a robust, speedy process for determining what analysis can be shared and received within its given authority frameworks.

Effectively implementing these recommendations may include consideration of a centralized authority buoyed by interagency working groups and agreements that enable collaboration. In addition, the workforce available to execute the centralized model would benefit from analysis on impact and opportunities for targeted skillset growth

Managing Agency for Centralized P/CAI Use

Several organizations already provide centralized contracting, including the GSA Office of Information Technology Category, National Institutes of Health Information Technology Acquisition and Assessment Center, National Aeronautics and Space Administration Solutions for Enterprise-Wide Procurement, and DoD Chief Digital and Artificial Intelligence Office's Tradewinds. The Department of the Air Force recently established the Advanced Data Consortium, an OT consortium specifically for the procurement and implementation of P/CAI. **One or more of these organizations could be tapped to provide broader support to P/CAI acquisition and coordination at scale and/or contribute to the centralization of acquisition,** with workforce augmentation based on the recommendations below. Any organization taking ownership over enterprise P/CAI approaches needs to commit to being responsive and accountable to a diverse set of requirements and stakeholders across different title authorities.

Alternatively, a new organization can be assembled with the combined authorities required for modular contracting. It's also necessary to consider that outside of traditional FAR-based IDVs such as GWACs and BPAs, not every agency has the authority to use OTs, however, they can have them bestowed through statute or take advantage of the GSA's approach and use CSOs to procure innovative commercial items in coordination with the centralized authority.

Workforce Expertise

A centralized acquisition authority will need **acquisition experts adept in data acquisition through modular contracting**, including OT consortiums and collaboration with the private sector. It will also need experienced national security analysts and technical data management experts. Acquisition experts are instrumental in defining scope and identifying the appropriate contracting vehicle for P/CAI requirements based on aligned authorities. Many agencies already have acquisition experts in-house who take on integral tasks, ranging from refining requirements to contracting services.⁵⁷ GSA utilizes their acquisition experts for scope reviews to ensure requirements are developed correctly and align to the appropriate GSA contract vehicle.⁵⁸ This acquisition expertise and agility offers USG agencies an example to build on and establish a system to accelerate the adoption of digital and data analytics solutions.

Processing of the varied formats of P/CAI requires technical expertise best suited to data scientists and systems engineers, many of whom are embedded in the commercial sector and accessible through private sector partnerships. While processing and conditioning would optimally take place locally and be supported by commercial expertise, employing some level of technical expertise at the centralized authority would be useful for guiding and maintaining centralized services. Organizations known for excellence in data management and innovative solutions for connecting across networks could provide the necessary technology and expertise to build local solutions and would partner well with government analysts that have hands-on familiarity with agency automation needs and can help to identify opportunities for adaptation. Technical experts are increasingly necessary across industries in a big-data, technology-driven landscape and

must have incentives to remain embedded in national security contexts, which could be assisted by USG's willingness to share and adapt to changing environments by leveraging new technologies and centralized approaches.

The centralized acquisition authority may also seize the opportunity to engage Chief Data Officers or other data leaders to help maximize value derived from P/CAI acquisitions by utilizing their awareness of overarching strategies and standards across agencies.

Interagency Collaboration

The recommendations outlined in this paper create an opportunity for USG agencies to partner with one another to increase efficiency, share best practices, and collaborate on many fronts, from technology to policy. There are several mechanisms for interagency collaboration that can be applied, including congressional actions (e.g., specific congressional authority with associated funding), agency directives, and interagency agreements that convene cross-USG agencies with common goals and challenges through a written agreement such as a Memorandum of Understanding (MOU).⁵⁹ DoD Directive 3115.18 established the foundation for a DoD PAI Advisory Council to improve the effectiveness of P/CAI usage and its integration into wider DoD programs across defense agencies.⁶⁰ The Intelligence Community Data

RECOMMENDATIONS OUTLINED IN THIS PAPER CREATE AN OPPORTUNITY FOR USG AGENCIES TO PARTNER WITH ONE ANOTHER TO INCREASE EFFICIENCY, SHARE BEST PRACTICES, AND COLLABORATE ON MANY FRONTS, FROM TECHNOLOGY TO POLICY.

Co-op is a nascent interagency effort spearheaded by the Office of the Director of National Intelligence with plans to include stakeholders from agencies across IC elements that are seeking civil liberties and privacy best practices to integrate P/CAI data while avoiding duplicative purchases and reducing costs.⁶¹ Aside from community-specific examples, there are interagency collaborative mechanisms that can be utilized based on common goals and objectives, agnostic of community.

EOs or legislative actions could require enactment of the centralized approach and shared services recommended in this paper. In lieu of required action, creating an Interagency Group at the component or program level is an option to kickstart voluntary collaboration. This effort does not necessarily require congressional action or initial funding but rather the time and labor of willing

participants, and it can be executed through MOUs.⁶² This approach would create a forum where participants could identify enabling technologies used by their offices and share code, queries, data standards, automation tools, and analysis with one another. Such a group could also advise the agency managing the P/CAI enterprise contract vehicles to better quantify volume-based acquisition by aggregating demand signals. Lastly, **the group would be well-positioned to recommend national-level policy changes aimed at easing restrictions to sharing data and collaborating across authorities and resource types to maximize the use of P/CAI**, striking a balance between harnessing the ever-changing data industry and rigorous adherence to existing government privacy and compliance regulations.

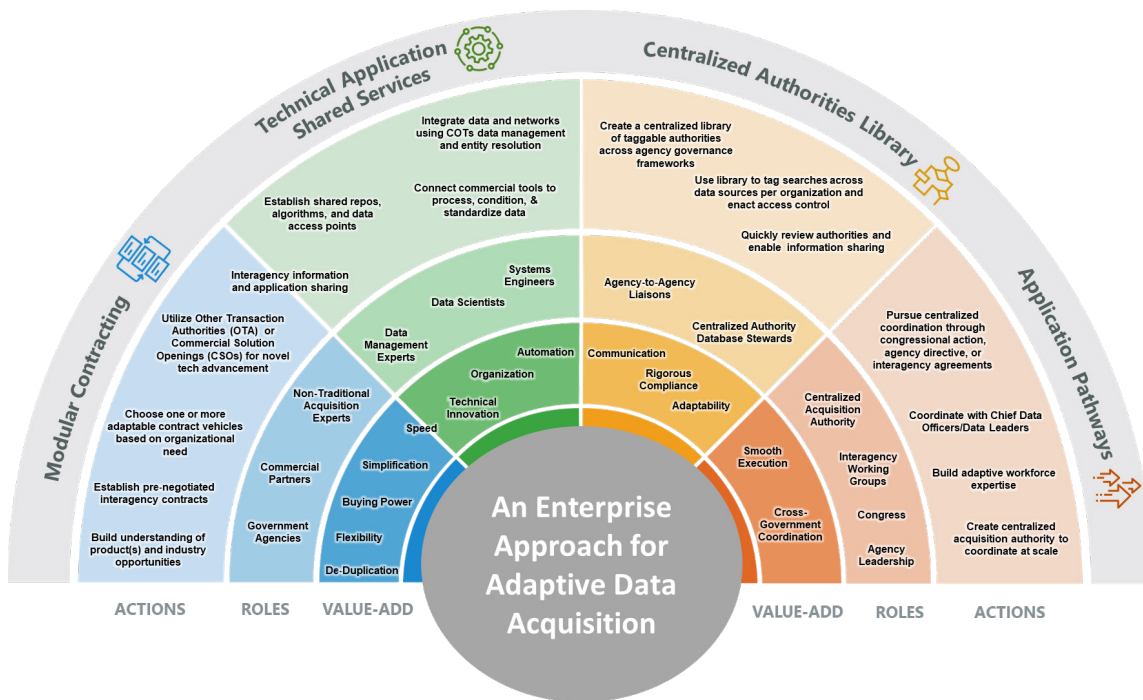


Figure 2: Summarizing the Enterprise Approach for Scaling PAI

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