QUARTER 1

BYTES & INSIGHTS

DECODING THE QUARTER

LETTER FROM THE EDITOR

Embracing Agility & Inclusion in a Changing Tech Landscape

Welcome to the inaugural edition of "Bytes & Insights," your one-stop source for insights on the ever-evolving tech landscape. In this issue, we delve into four key themes, showcasing the expertise and real-world experiences of our employee owners.

The thread running through all these themes is transformation. We live in a time of constant change, where technology is both a driver and a consequence of disruption. This issue equips you with the tools to navigate this dynamic environment.

- **Building Resilience:** Our exploration of modular open systems and digital engineering highlights strategies for building adaptable and future-proof technology solutions. This resonates with the need for agility in a rapidly changing world.
- **Securing the Future:** We explore RBAC and access keys, shedding light on secure access control for cloud environments. As our reliance on cloud services grows, robust access management becomes paramount.
- **Inclusive Innovation:** We examine Section 508 compliance, emphasizing the importance of digital accessibility. This aligns with the broader theme of innovation, ensuring everyone has the opportunity to participate in our increasingly tech-driven society.
- **Strategic Decision-Making:** Finally, we explore the cost-capability matrix, a powerful framework for making informed decisions about innovation and resource allocation. This empowers leaders to navigate the trade-offs inherent in pursuing cutting-edge advancements.

These insights, all drawn from the real-world experiences of our team, offer valuable perspectives on navigating the complexities of the tech world. As you delve into these articles, remember: innovation is not just about the latest technology; it's about embracing change, fostering resilience, and ensuring inclusivity. We hope "Bytes & Insights" equips you with the insights to thrive in this era of exciting transformations.

James Eselgroth
Director of Technology & Innovation

CONTENTS

Building Resilient Tech: Modular Open Systems and Digital Engineering 1

Beyond Passwords: Demystifying RBAC and Access Keys for Secure Cloud Access 2

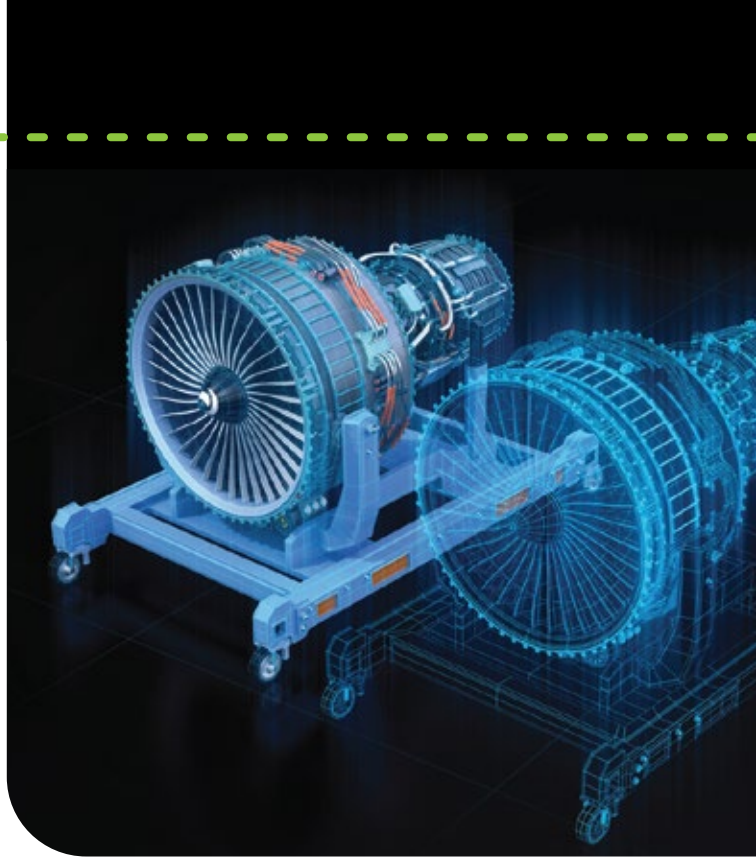
Ensuring Digital Equity: A Look at Enhanced Federal Compliance with Section 508 3

Leading through Innovation: A Cost-Capability Matrix for Strategic Decisions 4

AI Spending Across the Federal Government 5

Building Resilient Tech

Modular Open Systems and Digital Engineering



In today's ever-evolving technological landscape, building resilient systems is crucial for organizations across sectors. This article explores two key strategies: a modular open systems approach (MOSA) and digital engineering.

Traditional monolithic systems, where everything is tightly coupled, are prone to failure and difficult to adapt. MOSA promotes interoperability through standardized interfaces. Think of building blocks – independent, interchangeable components that can be easily integrated and swapped. This flexibility allows for:

- **Faster innovation:** New modules can be readily incorporated, accelerating the development and deployment of advanced solutions.
- **Reduced costs:** By leveraging existing modules and fostering competition among suppliers, MOSA promotes cost-effectiveness.
- **Enhanced maintainability:** When a single module fails, it can be replaced without impacting the entire system.

Digital engineering, on the other hand, goes beyond traditional design practices. It emphasizes the use of digital tools and models throughout the entire lifecycle – from concept to deployment and maintenance. This virtual environment offers several advantages:

- **Reduced development time:** Virtual prototyping and testing allow for faster iteration and identification of potential issues early on.
- **Improved collaboration:** Teams across disciplines can work on a single digital model, fostering better communication and coordination.
- **Enhanced system understanding:** Digital models provide a deeper insight into the system's behavior, enabling predictive maintenance and proactive problem-solving.

MOSA and digital engineering work hand-in-hand. A modular system designed with digital tools allows for greater agility, adaptability, and resilience. When combined, they empower organizations to:

- Respond effectively to changing threats and requirements.
- Reduce downtime and operational costs.
- Deliver future-proof solutions that can evolve and adapt over time.

This article provided a high-level overview of MOSA and digital engineering. By adopting these strategies, organizations can build robust, adaptable systems that can withstand the test of time and thrive in an era of continuous disruption.

To learn more about MOSA and DE, Read More ***here***.

James 'Jim' Eselgroth
Director of Technology & Innovation

Demystifying RBAC and Access Keys for Secure Cloud Access

Diljeet Singh *Solution Architect*

Securing access to cloud resources is paramount for organizations of all sizes. This article explores two common methods for access control: Role-Based Access Control (RBAC) and access keys.

Many rely on access keys – static credentials used by applications to access resources. However, managing and securing these keys can be cumbersome and error-prone. Leaked keys can lead to unauthorized access, data breaches, and financial losses.

RBAC offers a more granular approach. It assigns roles to users and applications, and each role has specific permissions to access defined resources. Think of a library – librarians (roles) have access to restricted areas (resources) based on their roles (circulation, reference, etc.). Here's how RBAC strengthens security:

- **Reduced reliance on static keys:** Eliminates the need to distribute and manage individual access keys for each application.
- **Improved accountability:** Clearer audit trails track who accessed what and when, facilitating incident response and security investigations.
- **Enhanced flexibility:** Roles can be easily modified to grant or revoke access based on changing needs.

While RBAC offers advantages, it's not a silver bullet. Careful role design and ongoing monitoring are essential for effective implementation.

So, when to choose which method?

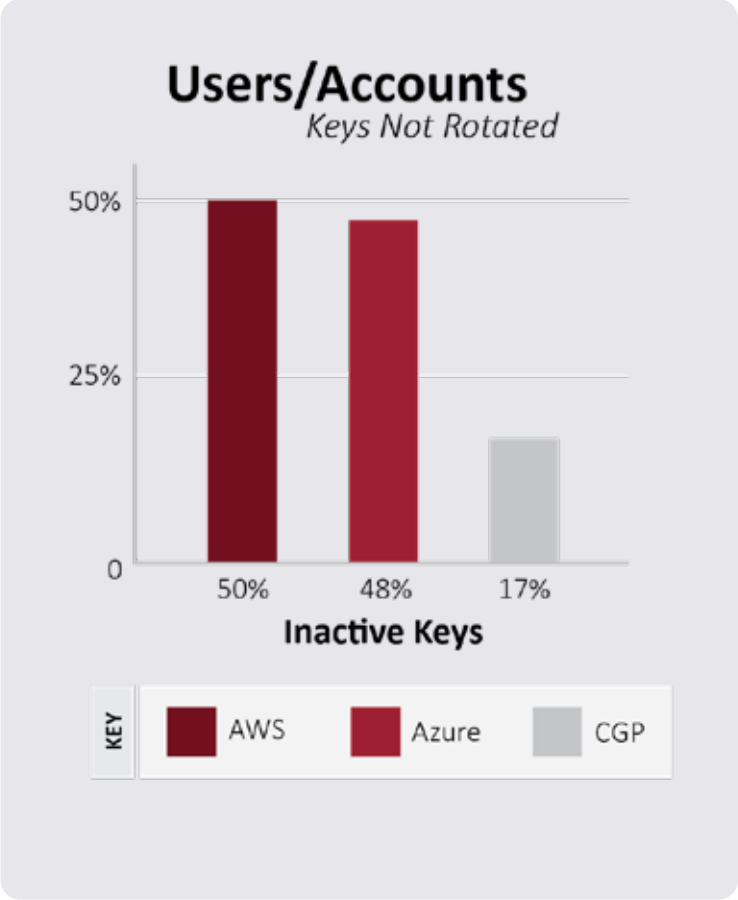
RBAC is ideal for: Multi-user environments with complex permission structures and a need for fine-grained control.

Access keys might be suitable for: Simpler deployments with limited users and well-defined access requirements. However, this approach should be accompanied by robust key management practices.

Remember: Security is an ongoing process. Regularly review access controls, implement strong password policies, and consider multi-factor authentication for added protection.

By understanding the strengths and weaknesses of RBAC and access keys, organizations can make informed decisions about securing their cloud infrastructure and safeguarding valuable data.

To learn more about RBAC, read more ***here.***



Ensuring Digital Equity

A Look at Enhanced Federal Compliance with Section 508

In today's digital age, everyone deserves equal access to information and technology. Section 508 of the Rehabilitation Act mandates that federal agencies ensure their electronic and information technology (EIT) is accessible to individuals with disabilities. This article explores the recent enhancements to Section 508, emphasizing the importance of digital accessibility for all.

Here's why it matters:

- **Equal opportunities:** Accessible technology empowers individuals with disabilities to participate fully in civic life, access government services, and pursue employment opportunities.
- **Improved brand image:** Demonstrating commitment to accessibility fosters a positive public image and reinforces an inclusive government culture.
- **Legal compliance:** Enhanced Section 508 regulations raise the bar for accessibility standards, ensuring adherence to legal requirements.

So, what's new with the enhanced Section 508? The updated guidelines emphasize broader accessibility considerations, including:

- **Mobile accessibility:** Websites and applications must be accessible on various devices, including smartphones and tablets, reflecting our increasingly mobile world.
- **Closed captioning and audio descriptions:** These features are crucial for individuals with hearing or visual impairments, ensuring access to multimedia content.
- **User interface elements:** Focus on clear labeling, intuitive navigation, and keyboard accessibility are essential for users with diverse needs.

Meeting these enhanced standards requires a proactive approach. Here are some key steps agencies can take:

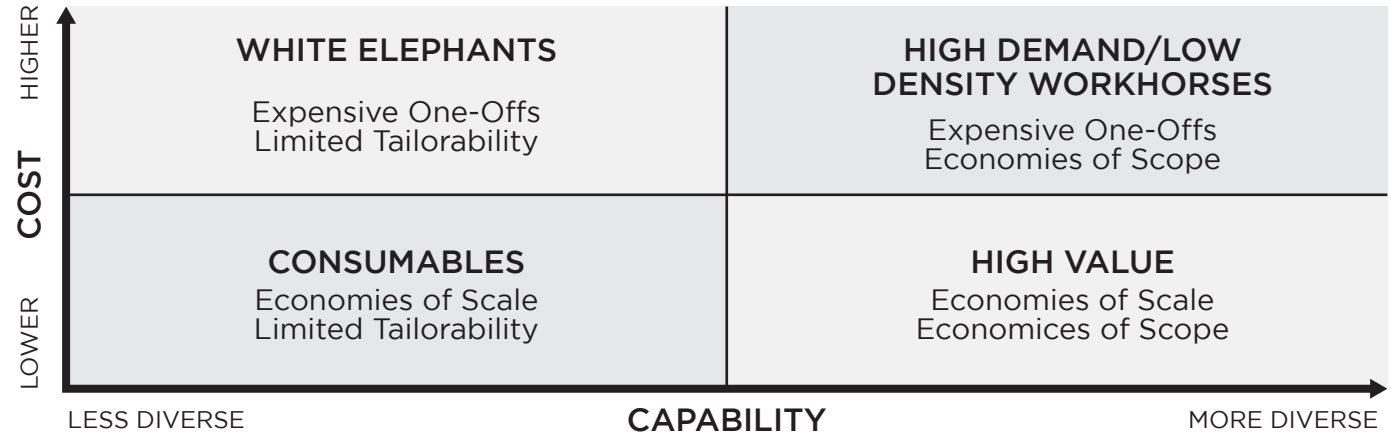
- **Conduct accessibility audits:** Regularly evaluate EIT to identify and address accessibility barriers.
- **Invest in accessible technologies:** Utilize tools and resources designed to create inclusive digital experiences.
- **Empower employees with accessibility training:** Foster a culture of accessibility awareness throughout the organization.

Investing in digital accessibility isn't just about compliance; it's about creating a more inclusive and equitable digital landscape for all. By embracing these enhancements to Section 508, federal agencies can ensure everyone has the opportunity to participate and thrive in our increasingly digital world.

To learn more about 508, read more ***here***.

Barry Lawrence
Sr. Communications Program Manager

A Cost-Capability Matrix for Strategic Decisions



Feeling the pressure to constantly innovate while keeping costs in check? Leaders across government, military, and industry grapple with this dilemma. The cost-capability matrix offers a powerful framework to navigate these trade-offs and make informed decisions about resource allocation.

Imagine a grid with cost on the vertical axis and capability on the horizontal. This creates four quadrants, each representing a different cost-capability balance:

- **Consumables (Low Cost/Low Capability):** Think of these as the workhorses – affordable, reliable solutions that meet basic needs. Think reliable public transportation or basic communication tools. They don't break the bank but may lack advanced features.
- **White Elephants (High Cost/Low Ca pability):** These are specialized solutions for critical but narrow applications. Imagine a state-of-the-art weapon system designed for a specific threat. They offer high capability but come at a premium cost and may not have broad usability.
- **High Value (Low Cost/High Capability):** This quadrant is the sweet spot. Standardized, customizable solutions provide significant capability at an affordable price. Mass-produced smartphones and efficient logistics networks fall into this category. Economies of scale make them accessible to a wide range of users.
- **High Demand/Low Density Workhorses (High Cost/High Capability):** Here lie the cutting-edge innovations. Think of groundbreaking research projects or custom-built prototypes. They offer unmatched capability but come with a hefty price tag due to limited production and experimentation costs.

The cost-capability matrix doesn't prescribe a "one size fits all" solution. The best approach depends on your specific goals and context. However, by understanding these quadrants, you can:

- **Identify potential pitfalls:** Avoid the trap of prioritizing affordability over essential advancements. Just because something is cheap doesn't mean it delivers the necessary value.
- **Embrace calculated risks:** Don't be afraid to invest in high-value advancements in the "High Cost/High Capability" quadrant. They can unlock future possibilities and propel your organization forward.
- **Anticipate disruption:** The cost-capability landscape is constantly evolving. Emerging technologies can disrupt established solutions, so stay vigilant and adapt your strategies.

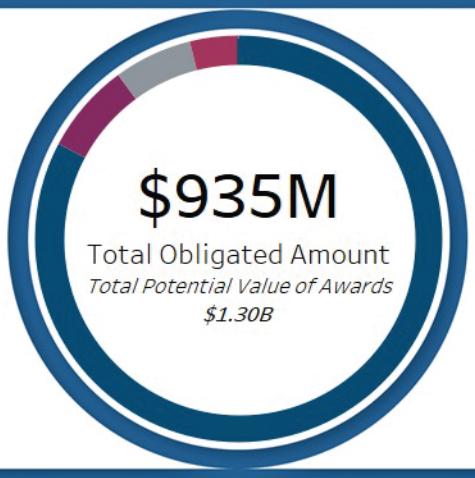
Beyond the basic framework, the cost-capability matrix can be used in conjunction with other tools like Moore's Adoption Curve and Wardley Mapping to gain deeper insights.

This short series provided a foundational understanding of the cost-capability matrix. By leveraging its power, leaders can make strategic decisions about innovation, resource allocation, and future-proofing their organizations in a rapidly changing world.

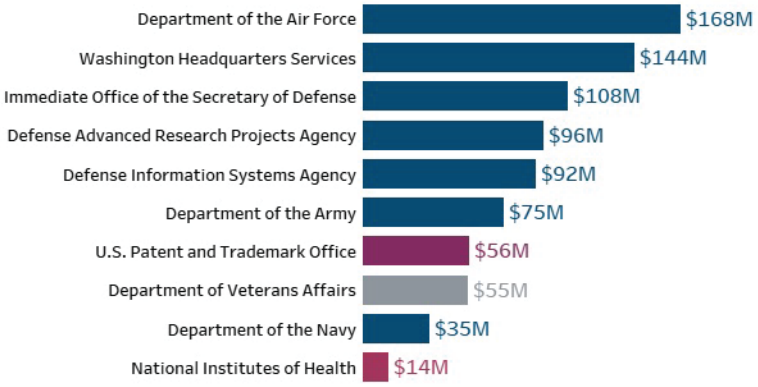
To learn more about the matrix, read more about Part 1 ***here.***

James 'Jim' Eselgroth
Director of Technology & Innovation

Over the last 5 FYs, where & how much has the US Government spent on AI?



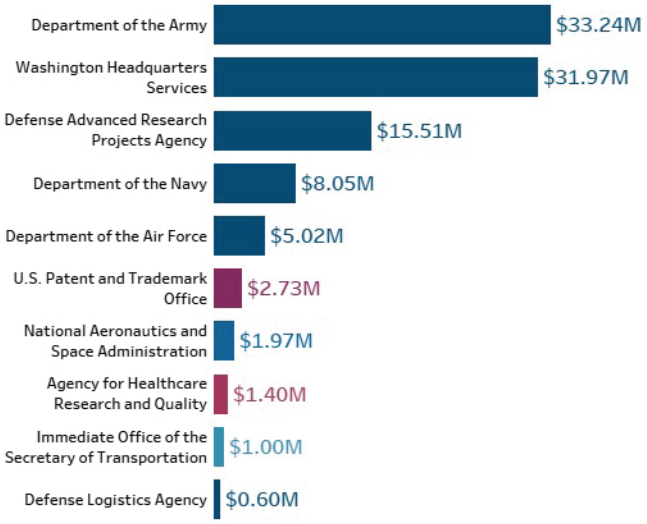
Over 5 FY's, what are the Top 10 agencies by obligatation?



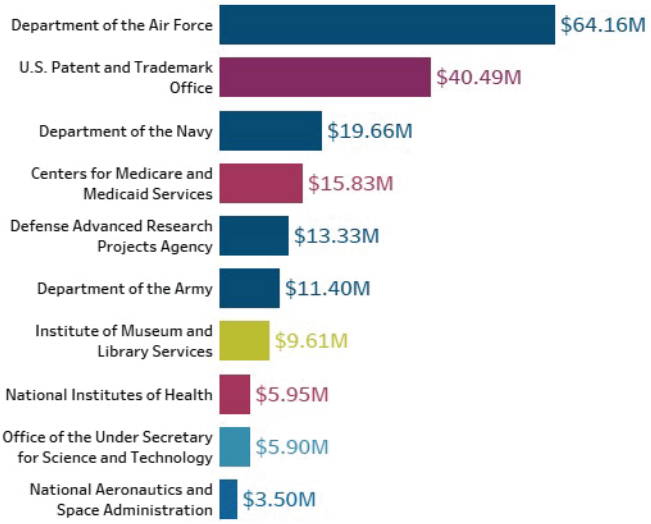
How much has the US Spent each FY? Obligated? Potential value?

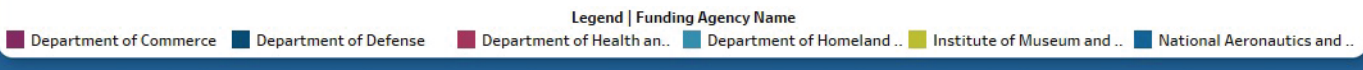
What was the total potential value of the Top 10 Agencies on AI?

In FY2019?



In FY2023?





Data from USASPENDING.gov Pulled on 9 Apr 2024

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