Bring Data to the Battlefield:

Modern data integration for the U.S. Department
of Defense (DOD)

To maintain an advantageous edge over our adversaries, the Department of Defense must take action. By adopting Modern data integration practices and technologies following the DOD Data Strategy guidelines, we can ensure that time-critical decisions are made from accurate data sources instead of guesswork or intuition. With these powerful tools, high-quality information will always be within reach - enabling us to execute informed operations for maximum success on every battlefield confidently.

"The DOD is a Data-centric organization that uses Data at speed and scale for operational advantage and increased efficiency."

DOD Data Strategy Vision 10/2020

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Real-Time Data Management Supporting Mission Objectives

Modern data integration is focused on the collaborative, agile, and automated approach to managing data across its life-cycle. The Department of Defense (DoD) generates vast amounts of data in various forms, ranging from intelligence reports to logistics data. It is imperative that data is managed effectively and efficiently with as little human intervention as possible to support the DOD operations - in real-time. Modern data integration practices and enabling technologies are critical to ensuring the DOD can collect, process, analyze, and use data effectively to achieve its mission objectives.

Unlock the Power of Modern Data Integration

Transform Disparate Data Sources into Actionable Intelligence

Modern data integration enables the DOD to manage and integrate disparate data sources into purpose-built platforms for analysis and real-time decision-making.

Every piece of intelligence is vital in the high-stakes world of DOD missions. From cutting-edge sensor data to satellite imagery and boots-on-the-ground human intelligence, the challenge lies in fusing these fragments of knowledge to create a comprehensive operational view. Modern data integration gives the DOD the tools to manage this information overload, channeling it into tailored platforms for accurate analysis and real-time strategic decision-making. Modern data integration impacts several mission critical areas:

Real-Time Data - Across the Enterprise

Modern data integration enables the DOD to process and analyze data in real-time to support decision-making. Decisions must be made quickly across the DOD operations; data analysis is critical to informing those decisions. Modern data integration enables the DOD to process and analyze data instantly, providing decision-makers with real-time insights that they can act on.

Compliance and Governance Across Complexity

Modern data integration is critical to ensuring the security and integrity of the DOD's data. The DOD generates vast amounts of sensitive and classified data, which must be protected from unauthorized

access or tampering. Modern data integration provides the tools and processes to secure and monitor data for access or modification.

Simplify Integration into Mission Critical Applications and Sensors

Modern data integration enables the DOD to leverage emerging technologies such as artificial intelligence and machine learning to enhance operations. These technologies require large amounts of data to be trained effectively, and Modern data integration provides the tools and processes to manage this data effectively and ensure trusted, high quality data is being used.

Take Command of Complex Data Environments

Modern data integration is critical to the DOD's ability to adapt to rapidly changing operational environments. The DOD operations are dynamic and unpredictable, and rapidly collecting, processing, and analyzing data is critical to adapting to changing circumstances. Modern data integration provides the agility and flexibility required to adapt quickly.

Aligning the DOD's Data Strategy with Modern Data Integration

The DOD's Data Strategy provides a comprehensive approach for effectively managing and utilizing data as a strategic asset. Modern data integration is aligned with the DOD's Data Strategy, in several key areas.

Data Governance and Compliance.

The DOD Data Strategy emphasizes the importance of data governance and management, which are also key tenets of Modern data integration. Modern data integration provides a framework for standardizing data processes, automating data worfklows, and enforcing data quality control measures, which are all essential for effective data governance.

The Culture of Data.

The Data Strategy highlights the need for a culture of data-driven decision-making, which is also a key component of Modern data integration fosters a culture of transparency and accountability, enabling the DOD to make more informed decisions based on accurate and reliable data.

Integrate Data into other Technologies

The importance of utilizing emerging technologies to support data operations is highlighted in the DOD's Data Strategy. Modern data integration is in line with this objective as it offers a platform for integrating and automating emerging technologies like big data analytics, machine learning, and artificial intelligence into data workflows.

Enterprise Ready and Available Data

The DOD's Data Strategy emphasizes the importance of having an enterprise-ready and available data infrastructure that is flexible and scalable to adapt to changing requirements over time. Modern data integration provides a framework for building scalable and flexible data pipelines that can evolve and expand with c hanging business needs. This

DoD's 8 Data Guiding Principles

- Strategic Asset
- Collective Stewardship
- Access and Availability
- Artificial Intelligence
- Data Ethics
- Data Collection
- Fit for Purpose
- Compliance

DataOps Deliverables

- Combine data sources for a complete operational view.
- Secure and maintain integrity of military data.
- Real-time data analysis for informed decisions.
- Quickly adapt to changing environments

enables organizations to remain competitive in today's fast-paced and constantly evolving data landscape, where agility and adaptability are essential for success

Transform Disparate Data Sources into Actionable Intelligence

Pre-Modern data integration data integration was a complex and fragile process that required significant expertise and effort to manage and maintain. However, with the emergence of Modern data integration, organizations can now streamline and automate data integration processes, leading to more efficient and reliable data pipelines that can scale to meet the needs of modern data-driven missions.

Modern data integration for Robust Data at Scale

Modern data integration significantly Streamlines data integration processes by providing a framework for automating and standardizing data integration tasks, reducing the need for manual intervention and enabling more efficient data processing. This has led to faster and more reliable data pipelines, with greater transparency and accountability throughout the process.

Modern data integration has revolutionized the data integration process, improving efficiency, collaboration, and reliability. Through automation of many manual tasks involved in data processing, Modern data integration enables the DOD to accelerate data-driven decision-making processes, gaining a competitive edge in the rapidly evolving
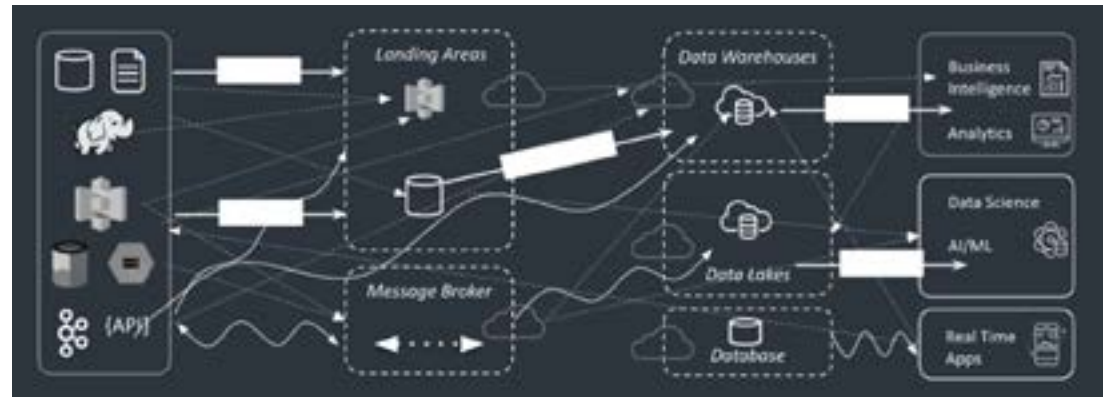
mission landscape. This streamlined approach allows for faster and more accurate analysis, reducing the risk of errors and delays and enhancing overall mission readiness.Real-Time Data - Across the DOD Enterprise

To enhance situational awareness, support decision-making processes, and gain real-time insights, the Department of Defense must implement Modern data integration practices across its modern enterprise system. Data sources , such as IoT sensors, web applications, binary files, and various database systems, such as relational, NoSQL, graph, and time series databases, must be managed effectively and efficiently.

Handling the Volume, Velocity, and Variety of Data

Operational and analytical systems generate real-time insights and decisions based on events, data from diverse systems, and historical and contextual data. To support this, the DOD must have a modern enterprise system incorporating Modern data integration principles and technologies to handle continuous data convergence, combining stream and batch processing paradigms.

Streaming data is essential for real-time predictive and preventive analytics vital to the DOD's missions. Batch processes are equally crucial to enrich or provide training data for forward looking analytical systems and drive business critical descriptive analytics. Implementing Modern data integration practices can help automate and streamline these

processes, making the enterprise system more efficient and effective.

Implementing Modern data integration practices and technologies helps the DOD ensure its enterprise systems can handle complex and diverse data sources.

Compliance and Governance - By Design

Modern data integration and data pipelines are essential to ensuring compliance and governance for the DOD. As mentioned, Modern data integration creates a culture of collaboration, continuous improvement, and automation in its data processes.

This enables the DOD to quickly adapt to changing compliance requirements and reduce the risk of non-compliance.

Data pipelines provide a way to automate data movement between different systems and applications. This automation ensures the DOD's data remains consistent and up to- date across its entire infrastructure. Additionally, data pipelines can be designed to enforce governance policies and controls to ensure that authorized personnel only access data following established security protocols. By combining Modern data integration and data pipelines, the DOD can ensure its data is reliable, accurate, and secure while meeting compliance and

governance requirements. This enables the DOD to confidently make data-driven decisions, knowing that the data they are using is trustworthy and in compliance with regulations.

Simplify Integration into Advanced Analytics and Machine Learning

Modern data integration is crucial in simplifying integration into advanced analytics and machine learning for the DoD. Emerging technologies such as artificial intelligence (AI) and machine learning (ML) require vast amounts of data to be trained effectively. However, managing and preparing such data can be challenging without the proper tools and processes.

With Modern data integration, the DOD can leverage these emerging technologies to enhance its operations. Modern data integration provides the tools and processes to manage and prepare data effectively, making integrating data into advanced analytics and machine learning models easier. This allows the DOD to extract insights and make informed decisions based on data-driven intelligence.

Moreover, Modern data integration also supports continuously monitoring and managing these advanced analytics and machine learning models, ensuring they remain accurate and relevant over time. By constantly evaluating and refining these models, the DOD can improve its operations and stay ahead of potential threats.

Create Agility in Complex Data Environments

The technology environment of the DOD is complex and constantly evolving, with numerous systems and applications that must work seamlessly together to support operations. In this environment, Modern

data integration is critical to the DOD's ability to adapt to rapidly changing mission and operational environments.

The DOD operations are dynamic and unpredictable, and rapidly collecting, processing, and analyzing data is critical to adapting to changing circumstances. However, the complexity of the DOD's technology environment(s) can make it challenging to manage data effectively.

Modern data integration provides the agility and flexibility necessary to respond effectively to changing operational environments. By creating a collaborative and iterative approach to data management, Modern data integration allows the DOD to rapidly collect, process, and analyze data from various sources and make informed decisions based on data-driven intelligence.

Modern data integration enables the DOD to manage

the complexity of its technology environment(s) by providing tools and processes to ensure that data is consistent, up-to-date, and accessible to authorized personnel. This eliminates silos and bottlenecks in the data pipelines, enabling the DOD to leverage the full potential of its data to support the DOD operations.

The complexity of the DOD's technology environment(s) can make it challenging to manage data effectively. However, Modern data integration provides the agility and flexibility necessary to respond effectively to changing operational environments. Furthermore, by enabling rapid data processing, integration, and analysis and promoting a collaborative and iterative approach to data management, Modern data integration empowers the DOD to leverage the full potential of its data to support the DOD operations.

In conclusion, adopting Modern data integration practices and supporting technologies can significantly benefit the DOD. By improving data quality, timeliness, and accessibility, Modern data integration can enhance decision-making capabilities and operational efficiencies across the Department.

Modern data integration can enable the DOD to leverage emerging technologies, such as artificial intelligence and machine learning, to gain a competitive advantage on the modern battlefield.

While the implementation of Modern data integration may require significant changes in culture, processes, and infrastructure, the potential rewards justify the effort.

Unlock Data Without Ceding Control

StreamSets, a Software AG company, eliminates data integration friction in complex hybrid and multi-cloud environments to keep pace with need-it-now data demands. Our platform lets data teams unlock data—without ceding control—to enable a data-driven enterprise.

- Resilient pipelines adapt to constant changes in data structure, semantics, and infrastructure.

- A single design experience to create repeatable integration pipelines for all patterns — streaming, batch, and CDC.

- Reusable pipeline fragments encapsulate expert knowledge in portable elements and keep them up to date no matter where they are used.

- Python SDK lets you templatize pipelines for scale by easily creating hundreds of pipelines with just a few lines of code.

- 50 pre-defined data transformation processors meet 99% of analytics requirements out of the box.

- Topologies provide transparency to see how systems are connected and data flows across the enterprise.

- Data SLAs and rules expose hidden problems in your data flows, creating guardrails throughout data pipelines for data quality, sizing, throughput performance, error rates, sensitive information leakage, and more.

About StreamSets

StreamSets, a Software AG company, eliminates data integration friction in complex hybrid and multi-cloud environments to keep pace with need-it-now business data demands. Our platform lets data teams unlock data—without ceding control—to enable a data-driven enterprise. Resilient and repeatable pipelines deliver analytics-ready data that improve real-time decision-making and reduce the costs and risks associated with data flow across an organization. That's why the largest companies in the world trust StreamSets to power millions of data pipelines for modern analytics, smart applications, and hybrid integration.

To learn more, visit **www.streamsets.com** and follow us on **LinkedIn**.

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