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TRUSTED AI STARTS WITH TRUSTED DATA:

Why AI-Data Mesh and Automated Data Classification Are Critical for Mission Success

As the Department of War accelerates AI adoption across warfighter, intelligence, cyber, and enterprise operations, success depends on more than deploying new models—it requires trusted, governed, and mission-accessible data at scale.

Traditional centralized architectures cannot keep pace with the speed, security, and interoperability demands of modern defense environments. An AI-Data Mesh architecture, combined with automated data classification and policy-driven governance, enables agencies to securely discover, share, and operationalize distributed data across domains while maintaining Zero Trust principles and compliance with the VAULTIS framework (see below). This foundation empowers mission teams to accelerate AI initiatives with greater confidence, transparency, and operational agility.



THE VAULTIS FRAMEWORK

DoD has outlined seven goals that are part of its effort to become a data-centric organization:

Visible – Users can locate the needed data.

Accessible – Users can retrieve the data.

Understandable – Users can find descriptions of data to recognize the content, context and applicability.

Linked – Users can exploit complementary data elements through innate relationships.

Trustworthy – Users can have confidence in all aspects of data for decision-making.

Interoperable – Users and producers have a common representation and comprehension of data.

Secure – Users know that data is protected from unauthorized use and manipulation.

The Challenge: A Distributed, Heterogenous Environment

There's no shortage of data across the military ecosystem. But getting to that data and making it actionable has proven challenging for military leaders. The problem is that in a multi-domain, multi-branch military environment, data is scattered across countless systems and stored in varying formats.

Traditionally, defense leaders turned to data warehouses, data lakes and related solutions to store and manage data. But these approaches, based on rigid ETL (extract, transform and load) scripts, are time- and resource-intensive to create and modify, making it difficult to respond to changes in the environment or new requirements.

A new approach is needed.

"The data landscape is going to change constantly. With an abstraction layer, you're futureproofing your environment."

– **Kevin Bohan**, Director of Product Marketing, Denodo

The Solution: A Logical Approach to Data Management

The key is to create a data abstraction layer using a logical data management architecture that provides a unified view of data without requiring the data to be physically migrated, stored and managed in one place. The Denodo Platform achieves this by providing all the key capabilities required to build an AI-Data Mesh — an architecture that makes it easy to access and use data, no matter where the data is stored or in what format.

Key capabilities include:

Improved Access to New Data Sources

Denodo's logical data layer centralizes data access, including data stored on premises and in the cloud, with semantic consistency. That makes it possible to access new data sources easily, without having to create complex ETL jobs.

Data virtualization is the core technology enabling logical data management capabilities. It establishes a single, centralized data access layer that enables real-time access across all those heterogenous data siloes. Users can get access to the data they need and see the lineage, so they know where it came from.

Real-Time Data to Drive Decision-Making

To act effectively, military leaders increasingly need access to real-time data. The platform puts that power in their hands, enabling them to retrieve requested data from a given source and access it instantly.

This is a major improvement over the conventional approach, which introduces time lag by replicating data into a central repository before it can be accessed for analysis. Denodo eliminates the delay, giving commanders and others the insight they need to make decisions at the speed of battle.

Advanced Semantics

Most organizations will use multiple analytics tools — Tableau, Power BI, etc. — each with its own semantic model, its own high-level formula for creating relationships between data. That leads to a lot of repetitive effort in order to make that data consumable by the end user.

Denodo's centralized data access layer delivers a single semantic model that can be shared across the enterprise, to present the information in a format customized to the needs of the end user.

Supporting the VAULTIS Framework

Here is how a logical approach to data management supports the goals of the VAULTIS framework:



Visible

With the Denodo Data Marketplace, there is now only one location to go and access data, regardless of where it resides. The marketplace empowers everyone to explore, find, access, integrate and share data.



Accessible

Different systems store information differently, making it hard to access. Denodo simplifies data retrieval by delivering unified access to disparate data sources. A single interface offers streamlined retrieval, with data normalized in a consistent format. Combining the data catalog with a centralized data access layer gives commanders and others access to data needed to drive mission outcomes.



Understandable

With fragmented semantic approaches across heterogenous systems, it's difficult and time-consuming to deliver data that can be readily understood. The Denodo Platform provides rich metadata and descriptions: When users have this, it greatly enhances data comprehension. Its semantic layer transforms data into a common, readily usable format. It abstracts the underlying complexity to deliver a unified and coherent view of data.



Linked

The VAULTIS framework calls for users to be able to utilize interrelated data. That means DoW needs a way to link the data so that dependencies can be uncovered and maintained. Data virtualization is key here, integrating and making disparate data visible in a shared or derived view, while a lineage tab makes it easy to see the underlying relationships.



Trustworthy

Military leaders need to be able to trust the data they use to make life-or-death decisions. To that end, Denodo delivers data integrity and reliability through features like data lineage tracking, metadata management and data profiling. Its approach to access control and authentication centralizes the consistent definition of access policies and adds an extra layer of security, ensuring only authorized users can access the data. This is accomplished with tight integration with third-party security, data governance and data quality tools.



Interoperable

In this fast-paced operational environment, military leaders need the ability to tap data across multiple systems, without having to reinvent the wheel. With its flexible architecture, Denodo empowers them to work across data siloes without having to initiate elaborate ETL jobs. All that happens automatically, freeing decision-makers to focus on the mission at hand.



Secure

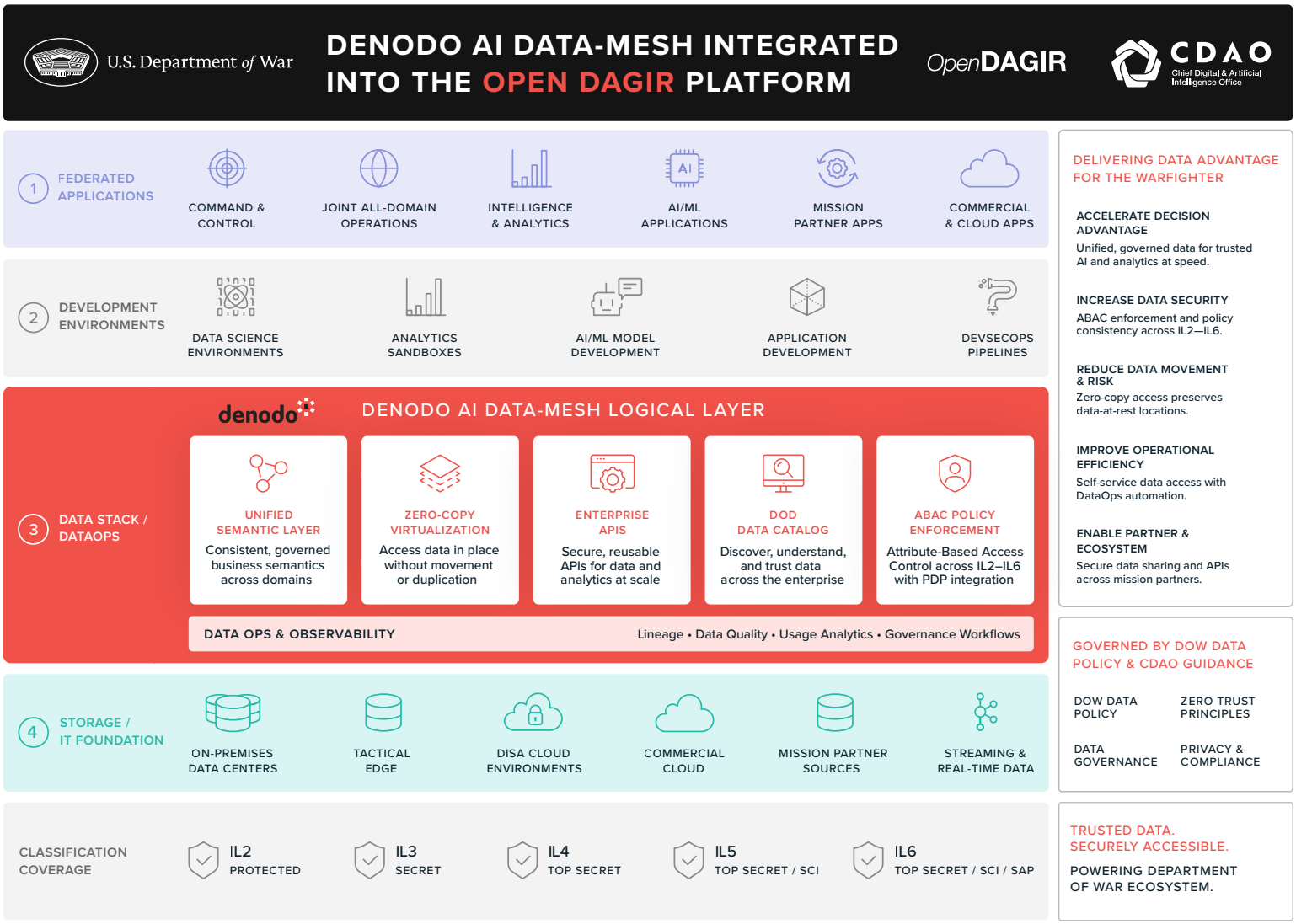
Military data must be safeguarded — that's axiomatic. The Denodo Platform's central data access layer is also a central location where security and compliance teams can define policies and apply them consistently across all data sources.

Through data virtualization, the Denodo Platform delivers comprehensive data and metadata discovery, with management capabilities including data governance, data lineage and change impact analysis. Virtualization empowers DoW to create centralized access, governance and security policies across structured and unstructured data sources, whether spread across geographies or divided between on premises and cloud.

The Department of War's Trusted Partner for Accelerating AI Dominance

Transform your data strategy with Denodo, the leading solution for intelligent data management. Trustworthy agentic AI requires that agents have live situational awareness, can access the most relevant data for its decisions and actions, and stay within all compliance and zero-trust mandates, across all data from all sources - hybrid, multi-cloud, on-prem, SaaS and 3rd-party.

Only the Denodo Platform meets ALL of these requirements by providing zero-copy live data, consistent semantics with up-to-date data classification, and centralized governance and compliance, across all data sources without data movement or duplication, and automatically optimized for AI-scale workloads.



Connect with Denodo today!

Learn more at www.denodo.com

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