

Los Alamos National Laboratory Advances Scientific Data Discovery with Progress Federal Solutions

CASE STUDY



COMPANY

Los Alamos National Laboratory

INDUSTRY

Public Sector/Federal

PRODUCT

Progress® Data Platform,
Progress® MarkLogic

COUNTRY

USA

SUMMARY

Los Alamos National Laboratory, a U.S. Department of Energy laboratory supporting national security research, needed to improve access to scientific and technical data stored across siloed repositories. Using the Progress MarkLogic solution to harmonize and standardize metadata, the laboratory established a scalable foundation for discoverability, governance and enterprise-wide data reuse.

Challenge

At [Los Alamos National Laboratory \(LANL\)](#), decades of scientific and weapons research generated massive volumes of data distributed across siloed systems. Much of this data lacked consistent or complete metadata, making it difficult to identify, access and reuse valuable information. Researchers often spent significant time searching for relevant data or recreating work, slowing collaboration and impacting mission efficiency.

This fragmentation was compounded by the absence of standardized metadata practices across the organization. Data existed in many formats and repositories, with varying levels of structure and quality. It became difficult to discover or trust critical technical information, limiting its usability for ongoing research and national security initiatives.

Recognizing both the scale of the problem and the importance of preserving institutional knowledge, LANL identified the need for a secure, enterprise-grade data solution. The organization sought a platform that could unify disparate data sources, standardize metadata and support large-scale, governed data discovery—so that “weapons data needed a home” where it could be reliably accessed and reused.

Solution

After careful evaluation, LANL selected Progress® MarkLogic® platform, a core component of the Progress® Data Platform, and partnered with Progress Federal Solutions to build the National Security Data Solution (NSDS), a mission-critical application developed on top of the platform.

Using the flexible data model and powerful metadata capabilities of the MarkLogic platform, LANL established a unified layer that could accommodate structured and unstructured data, evolving standards and controlled vocabularies. This approach enabled consistent metadata management across systems and teams, while preserving the flexibility required for scientific research and mission-critical operations.

“We selected MarkLogic and partnered with Progress to build the National Security Data Solution (NSDS)—a platform that has supported mission-critical weapons data at Los Alamos for over seven years and continues to evolve.”

Michael Ham,

Director of Mission Data Stewardship Alliance at
Los Alamos National Laboratory

Over more than seven years of partnership, NSDS has matured into a trusted, operational platform supporting sensitive weapons data. As noted by the NSDS team leading the project, “We selected MarkLogic and partnered with Progress to build the National Security Data Solution (NSDS)—a platform that has supported mission-critical weapons data at Los Alamos for over seven years and continues to evolve.” The solution provides a governed, scalable foundation for enterprise-wide data discovery and management.

Results

With the NSDS in place, LANL has established a centralized environment for ingesting and managing decades of historical scientific and weapons data. While ingestion is ongoing—and some legacy assets continue to undergo OCR and metadata enrichment—the platform already provides significantly improved visibility into available data across the laboratory.

Researchers and data stewards now benefit from enhanced discoverability, more consistent metadata and streamlined access to critical information. This has reduced friction in locating and reusing data, enabling more efficient collaboration and helping unlock the value of previously siloed or underutilized datasets.

Today, the NSDS stands as a proven, mission-critical platform powered by the Progress Data Platform and MarkLogic platform. It continues to scale as new data is onboarded and is expanding beyond its initial scope to support the broader nuclear security enterprise. What began as a need for a centralized data home has evolved into a foundation for long-term governance, reuse and mission success, “powering secure, scalable weapons data at Los Alamos and expanding across the complex.”

About LANL

LANL is a multi-program, federally funded research and development center for the National Nuclear Security Administration (NNSA) of the U.S. Department of Energy (DOE). LANL's priority roles are serving as a nuclear weapons design agency and a nuclear weapons production agency; addressing nuclear threats; and performing national security science, technology and engineering. <https://www.lanl.gov/>



Modernize and govern mission critical data with Progress Federal Solutions.

About Progress Software

Progress Software (Nasdaq: PRGS) empowers organizations to achieve transformational success in the face of disruptive change. Our software enables our customers to develop, deploy and manage responsible AI-powered applications and personalized digital experiences with agility and ease. Businesses of all sizes get a trusted provider in Progress, with the products, expertise and vision they need to turn AI disruption into a competitive advantage. Millions of developers and technologists at hundreds of thousands of organizations depend on Progress every day. Learn more at www.progress.com

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