Lenovo
Education

# Lenovo and NVIDIA:
# Data governance and security in AI-powered workstations

## Navigating the data-driven future of AI

As AI drives modern innovation and becomes crucial in higher education, managing and securing large-scale datasets is essential. AI development projects, involving data from various silos, unlock the future of AI through model creation, training, and fine-tuning. However, these workflows demand significant computing power.

Lenovo ThinkStation & ThinkPad Workstations are built to handle complex datasets, from student records to advanced research. Their security-first approach ensures compliance with GDPR and FERPA, while effective data governance, including sandbox AI environments, determines the quality and success of AI projects.

Incorporating Lenovo ThinkStation and ThinkPad P Series workstations into AI workflows accelerates AI adoption by helping institutions manage cost and timeline challenges.

From data preparation to machine learning, model training, and AI inference, these secure platforms reduce reliance on costly cloud resources. Powered by NVIDIA RTX™ professional GPUs and Intel® Xeon® processors, they deliver unmatched performance and security for handling demanding AI workloads.

The number of institutions handle an estimated

**2.5 quintillion**

bytes of data daily[1]

NVIDIA

Smarter technology for all

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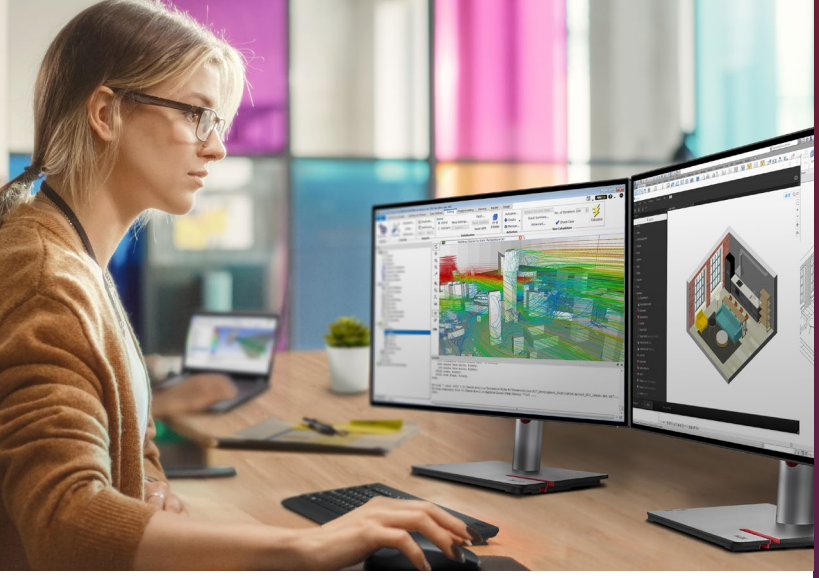

# Challenges in data governance for AI workstations

Higher education institutions face significant challenges when integrating AI, especially in managing sensitive data like student records and research. Poor data quality and inadequate security can compromise AI model accuracy. Lenovo's ThinkShield offers solutions for privacy compliance and safeguarding data from unauthorized access.

Handling large datasets is central to AI projects, and Lenovo's workstations, powered by NVIDIA® AI Enterprise, optimize data management for deep learning. Maintaining data quality, through cleaning and compliance, is essential for producing reliable AI outputs and ensuring GDPR and FERPA compliance.

**92%**

of surveyed leaders believe shifting to an AI-first model is crucial within the next year.[2]

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# Key principles of data governance for AI

## 01. Data Governance and Compliance

### Data Ownership, Access Control, and Integrity

Lenovo's role-based access control (RBAC) ensures only authorized personnel handle sensitive data, protecting intellectual property and research. Lenovo ThinkStation PX systems maintain data integrity through real-time validation and transformation, keeping data clean and standardized throughout the AI model lifecycle.

### Compliance and Legal Considerations

Institutions must comply with GDPR and FERPA. Lenovo workstations are optimized for compliance, offering secure, auditable systems that track data lineage and storage locations.

## 02. AI and Data Lifecycle Management

### Data Provenance, Lineage, and Security

Lenovo workstations, combined with NVIDIA® AI Workbench for AI development and NVIDIA® AI Enterprise for deployment, provide the computational power and security needed for AI workflows. While complete data tracking requires external software solutions, Lenovo workstations, when integrated with these tools, help maintain a full record of data origins and usage, supporting the ethical use of AI. With Lenovo ThinkShield, institutions can deploy AI-driven security systems that monitor and predict threats in real time.

### Data Quality and Enrichment

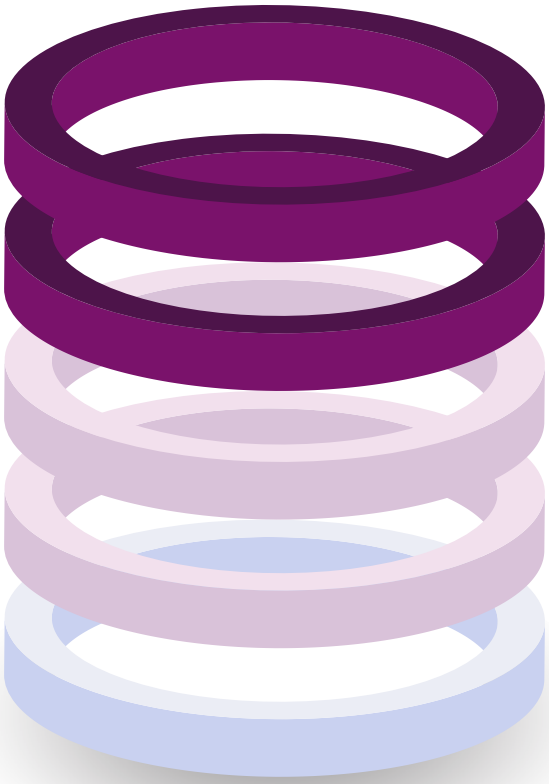
Ensuring consistent, high-quality data is a key challenge in AI. Lenovo workstations facilitate the normalization and blending of data from various sources, which is critical for avoiding biases in AI models. Higher education institutions can further enrich their datasets by incorporating synthetic data or third-party sources, especially when internal data is insufficient.

# A Secure AI Development Workstation

A multi-layered security strategy is crucial for securing AI development workstations, ensuring sensitive data remains protected from hardware to the cloud. Lenovo workstations, featuring ThinkShield, offer comprehensive security with lockable side panels, secure front-access storage, and multi-factor authentication (MFA). These built-in features help safeguard local AI workflows while maintaining compliance.

However, even with strong built-in security, user compliance is key. Effective data governance and best practices must be in place to ensure secure AI projects. Lenovo's AI-driven security tools allow institutions to develop AI close to the data source, minimizing risks while enhancing workflow efficiency.

## Layered security for data integrity and compliance



**Cloud Security** 05
Secure data transfers, cloud encryption for both personal and work information.
AES-256

**Identity Security** 04
Multi-factor authentication (MFA), credential protection.
ThinkShield

**Application Security** 03
Application control, isolation, and driver security.
ThinkShield

**Operating System Security** 02
AI-driven threat detection, ensuring proactive protection at the operating system level.
NVIDIA® AI Enterprise

**Hardware Security (Chip Level)** 01
Root of trust, silicon-assisted security.
ThinkShield Trusted end-to-end supply chain

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Checklist

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# Key steps for managing data governance and AI integrity

Use this checklist to guide your institution's strategic planning efforts, ensuring proper data governance, integrity, and compliance across AI systems.

## 1. Data Access and Control

- ☐ **Establish robust data governance policies:** Define clear roles for data access and set up security protocols using Lenovo ThinkShield.
- ☐ **Implement Role-Based Access Controls (RBAC):** Restrict access to sensitive data by using RBAC on Lenovo workstations to ensure only authorized personnel can handle it.

## 2. Data Integrity and Security

- ☐ **Maintain Data Integrity with Regular Audits:** Frequently audit AI models and training data using Lenovo's AI-powered validation tools to ensure accuracy.
- ☐ **Ensure Data Normalization:** Regularly clean and normalize data inputs to avoid discrepancies in AI model results.
- ☐ **Encrypt Sensitive Data:** Apply AES-256 encryption to secure data both at rest and in transit.

Lenovo ThinkPad

**Lenovo ThinkPad P1**

The Lenovo ThinkPad P1 is equipped with **NVIDIA RTX™ 3000 Ada Generation GPUs**, capable of delivering over

**300 trillion**

**operations per second (TOPS)**

NVIDIA

# Checklist

## 3. Data Tracking and Compliance

- ☐ **Track Data Provenance:** Utilize Lenovo's real-time tools to monitor the entire data lifecycle, ensuring transparency and accountability.
- ☐ **Compliance with Data Privacy Regulations:** Ensure all AI workstations comply with regulations like GDPR and FERPA, using Lenovo's built-in compliance tools.

## 4. Data Enrichment

- ☐ **Utilize Synthetic and Third-Party Data:** When internal data is limited, supplement AI models with synthetic or external datasets to enhance model accuracy.

## 5. Advanced Security Measures

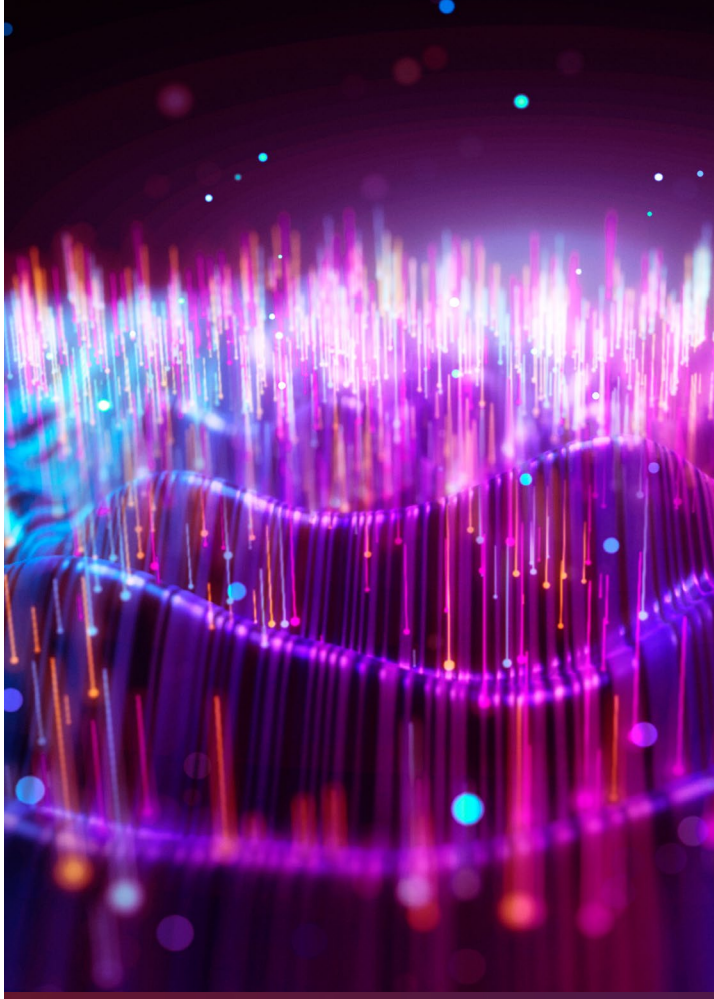
- ☐ **Implement AI-Driven Threat Detection:** Use Lenovo's AI-enhanced security tools to detect and respond to security threats in real time.
- ☐ **Use Multi-Factor Authentication (MFA):** Enforce MFA for all users accessing sensitive systems.

## 6. Data Retention and Recovery

- ☐ **Set Data Retention Policies:** Ensure that data is retained and deleted in compliance with institutional and legal requirements.
- ☐ **Secure Backup and Disaster Recovery:** Regularly back up critical data using Lenovo ThinkSystem Servers, ensuring rapid recovery from any potential data loss.

1 Analytic Insight 2023
2 People AI-data and security blog 2024





**Lenovo ThinkStation and ThinkPad P Series workstations offer unmatched performance, security, and scalability for higher education.**

In addition to ThinkShield security, NVIDIA RTX™ professional GPUs, and Intel® processors, Lenovo provides a comprehensive infrastructure that scales with your institution's AI environment—from development to full production—supporting secure, compliant data management as your projects grow.

**Start your journey toward secure and efficient AI today. Connect with your Lenovo representative or visit the higher education page to learn more.**

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