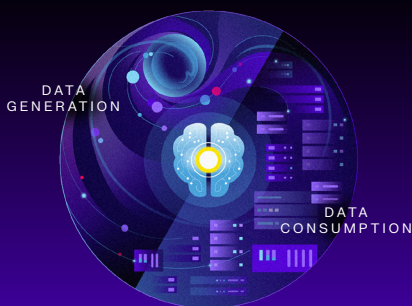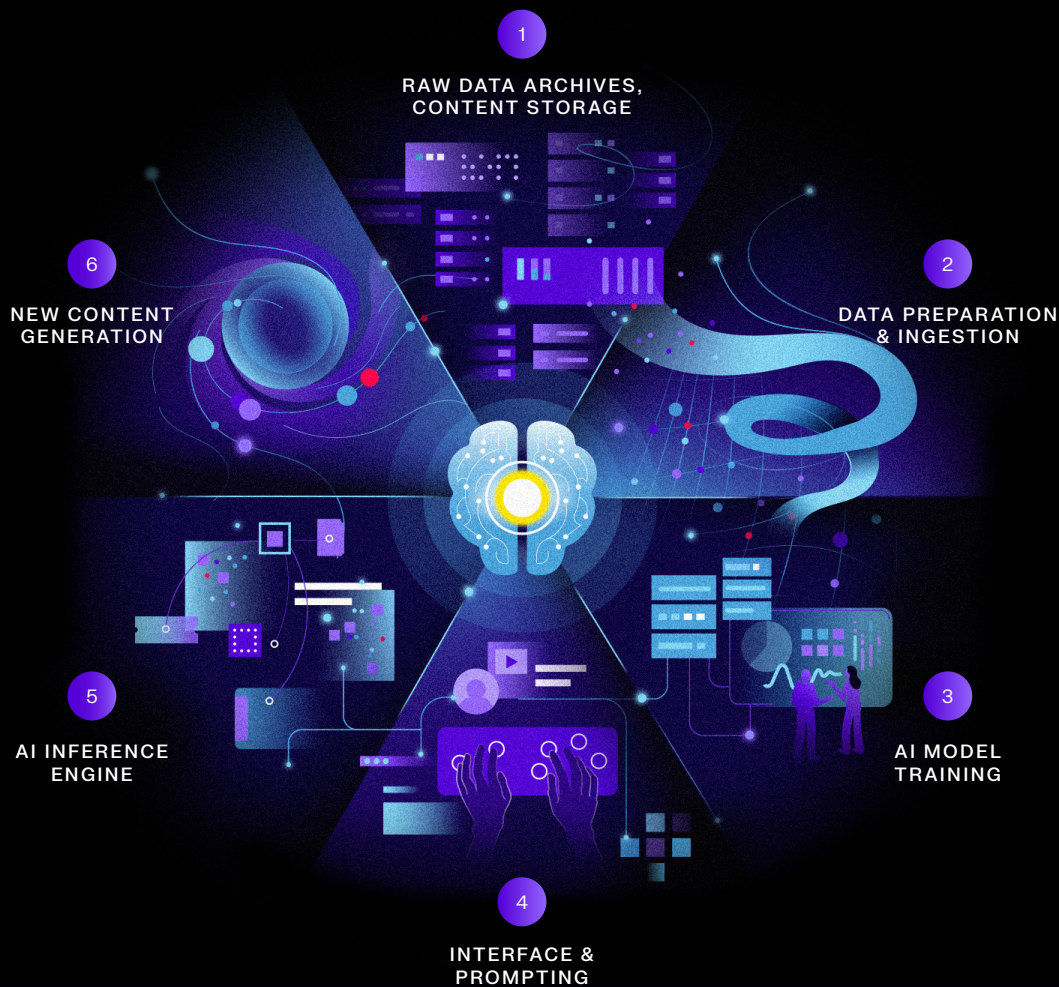# THE AI DATA CYCLE

Western Digital

The explosion of data that is being created and consumed by Artificial intelligence (AI) models **is fueling AI's massive growth**. The more data created, the better AI is trained, leading to more data stored in that model. Today, most AI is used to produce text, video, images and many more interesting things that get created using these powerful tools. All of this means **storage is increasingly becoming important to the future growth and evolution of AI.**

While AI is transforming lives and inspiring a world of new applications, at its core, it's fundamentally about data utilization and data generation. As AI systems process and analyze existing data, they create new data, much of which will be stored because it's useful or entertaining. They also make existing repositories and additional data sources more valuable for model context and training, powering a cycle where increased data generation fuels expanded data storage which fuels further data generation.

Western Digital Creates Leading Storage Solutions for All Stages of the AI Data Cycle

24%↑ IDC EXPECTS THAT 394ZB OF DATA WILL BE GENERATED IN 2028, REPRESENTING A 2023-2028 CAGR OF 24%*

1 RAW DATA ARCHIVES, CONTENT STORAGE

2 DATA PREPARATION & INGESTION

3 AI MODEL TRAINING

4 INTERFACE & PROMPTING

5 AI INFERENCE ENGINE

6 NEW CONTENT GENERATION

A self-perpetuating cycle of increased data generation

DATA GENERATION

DATA CONSUMPTION

This continuous loop of data generation and consumption is not only increasing the need for scalable data storage solutions but efficient and secure storage solutions that can keep pace with the rapid advancements in AI technology. Increasingly, performance driven and scalable storage technologies are becoming crucial for managing large AI data sets and re-factoring complex data efficiently.

The AI Data Cycle: Framework that defines the optimal storage mix for AI workloads at scale

1 RAW DATA ARCHIVES, CONTENT STORAGE

Raw data is collected and stored from various sources securely and efficiently. The quality and diversity of collected data are critical, setting the foundation for everything that follows.

Storage needs:

Capacity enterprise hard disk drives (eHDDs)

2 DATA PREPARATION & INGESTION

Data is processed, cleaned, and transformed for input to model training. Data center owners are implementing upgraded storage infrastructure such as faster data lakes to support preparation and ingestion.

Storage needs:

High-capacity enterprise solid state drives (eSSDs) for fast data lakes

3 AI MODEL TRAINING

It is during this stage where AI models are trained iteratively to make accurate predictions based on the training data. Specifically, models are trained on high-performance supercomputers which require specialized and high-performance storage to operate efficiently.

Storage needs:

High-performance compute enterprise solid state drives (eSSDs) for model checkpointing and caching; High-capacity enterprise solid state drives (eSSDs) for fast data lakes

4 INTERFACE & PROMPTING

This stage involves creating user-friendly interfaces for AI models, including APIs, dashboards, and tools that combine context-specific data with end-user prompts. AI models will be integrated into existing internet and client applications, enhancing them without replacing current systems. This means maintaining current systems alongside new AI compute, driving further storage needs.

Storage needs:

High-performance compute enterprise solid state drives (eSSDs) for caching; High-capacity enterprise solid state drives (eSSDs) for fast data lakes; High-capacity client solid state drives (cSSDs) and embedded Flash in AI-enabled edge devices

5 AI INFERENCE ENGINE

Stage 5 is where the magic happens in real-time. This stage involves deploying the trained models into production environments where they can analyze new data and provide real-time predictions or generate new content. The efficiency of the inference engine is crucial for timely and accurate AI responses, requiring comprehensive data analysis and significant storage performance.

Storage needs:

High-performance compute enterprise solid state drives (eSSDs) for caching; High-capacity enterprise solid state drives (eSSDs) for fast data lakes; High-capacity client solid state drives (cSSDs) and embedded Flash in AI-enabled edge devices

6 NEW CONTENT GENERATION

The final Stage is where new content is created. The insights produced by the AI models often generates new data, which is stored because it proves valuable or engaging. While this stage closes the loop, it also feeds back into the data cycle, driving continuous improvement and innovation by increasing the value of data for training or analysis by future models.

Storage needs:

Capacity enterprise hard disk drives (eHDDs); High-capacity client solid state drives (cSSDs) and embedded Flash in AI-enabled edge devices

Western Digital has strategically aligned its technology roadmap in order to ensure customers have the most advanced, reliable solutions to stay ahead in the rapidly changing AI landscape. Our new additions to Western Digital's industry-leading suite of storage products are engineered to power AI now and into the future. View the Press Release here.

Western Digital has a wide range of storage solutions ideally situated to meet the dynamic needs of today's AI workflows. Our innovative storage technologies support all aspects of the AI Data Cycle. From high-performance compute SSDs to high-capacity enterprise-class HDDs and everything in between, Western Digital can meet your storage needs for any AI use case.

Learn how you can build a powerful storage environment that meets the needs of your AI initiatives.

Visit www.westerndigital.com/topics/data-storage-for-ai