

# ALGER

## ARTIFICIAL INTELLIGENCE: Investment Map

Unlock Your Growth Potential.™

# An Artificial Intelligence-Driven Revolution

We believe that we are at the beginning of an Artificial Intelligence (AI)-driven revolution that will foster unprecedented change over the next couple of decades. Understanding the economic impact of AI is important as the growth and integration of AI across the world will create potential investment opportunities.

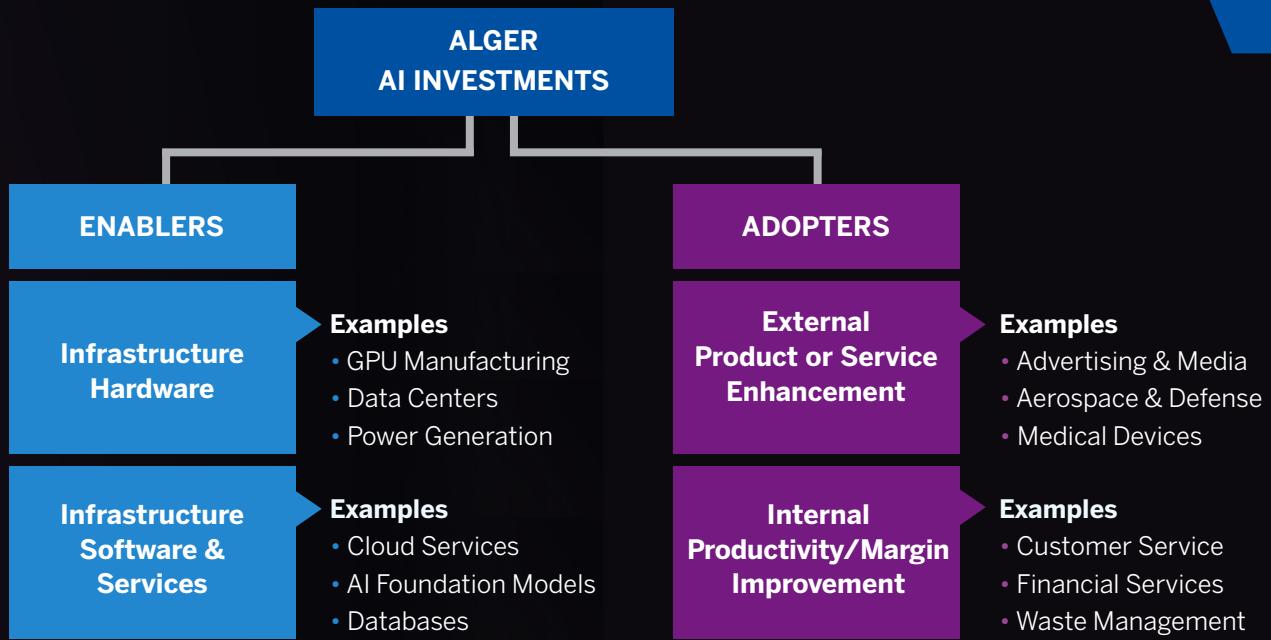
## Alger's Approach to Investing in AI

Alger's approach to investing in AI includes identifying companies that are the "Enablers" and "Adopters" of this powerful technology.

- **Enablers:** Companies developing the building block components for, and investing in, AI infrastructure such as machinery, hardware, software and services.
- **Adopters:** Companies that integrate AI into their businesses to enhance their products or services or make their operations more productive.

We can point to companies today that are leading the way in both enabling and adopting AI, but we believe those classifications will shift over time as AI becomes ubiquitous.

## Examples of Potential AI Investment Opportunities



## How to Interpret Alger's AI Investment Map

The AI investment map on pages 4-5 highlights some of the main areas within the AI investment space that Alger currently finds potentially attractive. We divide the universe into two categories: AI Enablers and AI Adopters.

Within AI Enablers, the space is split between infrastructure hardware on the left side and infrastructure software on the right side. Infrastructure hardware refers to the physical components enabling AI workloads, with the data center being the central hub for AI training and inference. Infrastructure software provides access to AI-based applications from cloud service providers. These applications include database systems that help interpret unstructured data from sources like social media, images, and audio—critical for training and querying AI foundation models like ChatGPT.

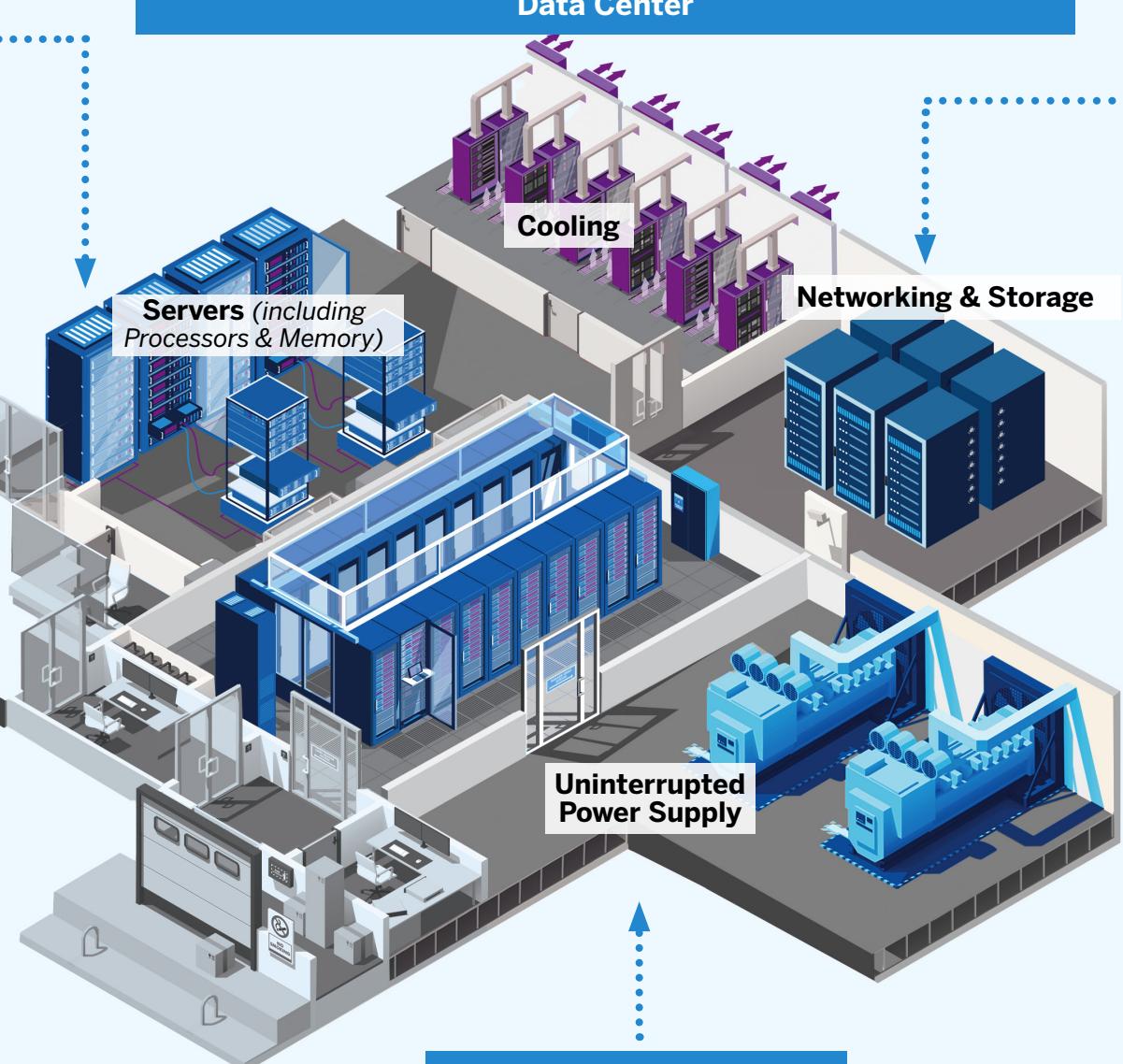
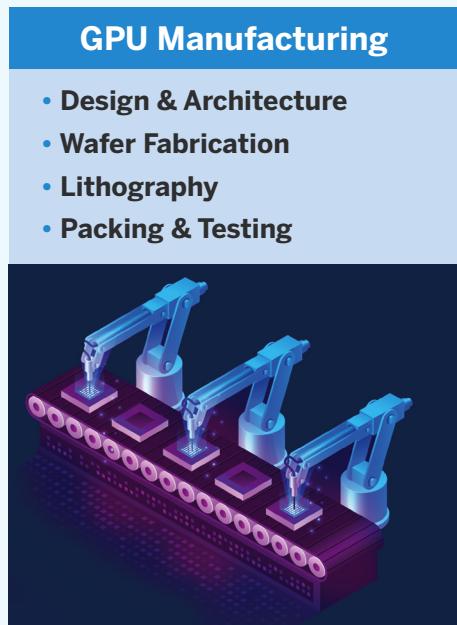
AI Adopters (on the far right) refers to companies leveraging AI to enhance their operations. These companies are categorized into two key areas: 1) external product enhancement, and 2) internal productivity or margin improvement. We provide several industry examples where companies are successfully implementing AI into their businesses.

Pages 6–10 provide a deeper dive into each component featured on the map, offering detailed descriptions and investment cases. This section provides insights into the potential opportunities and dynamics within each area.

We hope this brochure serves as a helpful guide to navigate the interconnected ecosystem of AI investments and identify areas that align with your investment goals.

### INFRASTRUCTURE HARDWARE

#### Data Center



#### Power Transmission & Distribution



### INFRASTRUCTURE SOFTWARE

#### Cloud Services

- Hyperscalers
- Neoclouds
- Monitoring



#### AI Foundation Model

- Large Language Models
- AI Agents



#### Databases

- Relational Database
- Non-relational Database



Looking ahead, all companies will likely adopt AI in some form, much like the internet. In our view, companies that adopt AI strategically and execute effectively may fare better than those that adopt it ineffectively, creating advantages like stronger productivity, margins, and market share over time. While the examples listed below are not exhaustive, they highlight industries and use-cases where we have observed companies successfully implementing AI, either externally or internally. Additionally, the two buckets are not mutually exclusive—many companies use AI both externally (i.e., for revenue generation) and internally (i.e., for cost savings).

### External Product Enhancement

- Advertising & Media
- Aerospace & Defense
- Autonomous Driving/Robotaxis
- Cybersecurity
- Medical Devices
- Predictive Maintenance

### Internal Productivity / Margin Improvement

- Construction
- Customer Service
- Data Providers
- Entertainment
- Financial Services
- Logistics & Warehouse Automation
- Waste Management

# AI Enablers Descriptions



**AI ENABLERS:** Companies developing the building block components for, and investing in, AI infrastructure.

## INFRASTRUCTURE HARDWARE

**Data Centers:** A data center is a physical facility that houses and operates computer systems, networking components, and storage devices. These facilities are crucial for AI computing as they provide the necessary infrastructure to process, store, and analyze the massive amounts of data required for training and running AI models.

- **Servers:** High-performance computers within a data center that process and store data. In AI computing, a server is a powerful computer that runs AI software, stores data and models, and hosts the processors (e.g., ASICs, GPUs, TPUs) that train and run those models. These servers are mounted in server racks, which are tall metal frames that hold many servers (and their networking and power gear) in a compact, organized stack so they can be cooled and powered efficiently. A cluster of servers are connected together so they can work as one large system, splitting up AI workloads across many machines at the same time. Below are some of the critical components within the server that are needed for AI training and inferencing:

- **Processors** are the “brains” of AI computing, referring to chips such as CPUs, GPUs, and ASICs that interpret instructions and perform the large-scale mathematical operations needed to train and run AI models.

- **Central Processing Unit (CPU)** is a general-purpose processor that runs most of a computer’s tasks, such as operating the system, handling applications, and managing background processes. The CPU can be thought of as a single-lane highway that can handle many different kinds of vehicles but can still move only a limited number of cars at once.

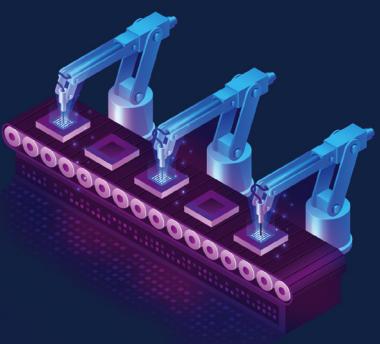
- **Graphics Processing Unit (GPU)** is a specialized processor designed to handle many similar calculations in parallel, which makes it especially useful for AI workloads and a backbone of AI computing by accelerating the training and inference of complex models. The GPU can be thought of as a large multilane highway built for one type of vehicle, allowing thousands of similar cars to move forward at the same time.

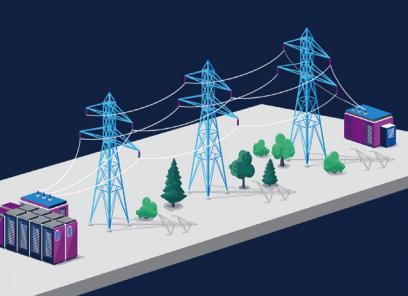
- **Application-Specific Integrated Circuit (ASIC)** is a custom-built chip designed to run specific AI workloads, such as neural network training or inference, far more efficiently and with better performance-per-watt than general-purpose CPUs or many GPUs. For example, a Tensor Processing Unit (TPU) is a type of ASIC optimized for matrix operations, allowing large AI models to be trained and run more quickly and efficiently than on general-purpose CPUs or GPUs in many workloads.

- **Memory:** High-bandwidth memory (HBM) is crucial for AI computing because it provides a high-speed interface between the processor and its memory. This enables the GPU to access and handle data at a much faster rate, which is essential for training and running complex AI models.
- **Cooling:** Data center cooling is the process of removing heat from computer equipment within a data center to maintain optimal operating temperatures. The industry has shifted from air cooling to direct-to-chip cooling within the server. This method circulates liquid coolant through cold plates that sit directly on top of processors, pulling heat away more efficiently than blowing air over the chips.
- **Storage:** Data storage is where all the information and models are kept so the processors (GPUs, TPUs, CPUs) can use them. Solid state drives (SSDs) are fast “digital filing cabinets” that let the system quickly grab the data it needs right now, while hard disk drivers (HDDs) are larger, slower “warehouse storage” used to hold huge amounts of data more cheaply. Together, SSDs handle speed and HDDs handle capacity, so AI workloads can run efficiently at scale.
- **Networking** is the high-speed connection that links servers so AI computing can move quickly and reliably for massive training and inference workloads. It can be thought of as a highway system that interconnects servers, storage devices, and other components, enabling them to share and transfer data quickly and efficiently. This connectivity is critical for AI workloads because training and deploying models require rapid movement of large datasets across multiple systems. Networking supports scalability (i.e., ability to handle intense AI workloads) in three key ways by allowing systems to:
  - 1) scale up by linking servers and components within a single cluster (e.g., GPUs, CPUs, memory),
  - 2) scale out by connecting multiple compute clusters or racks to expand capacity horizontally, and
  - 3) scale across by bridging separate data centers to create a unified infrastructure.In essence, networking is the backbone that ensures AI systems can operate at speed and scale.
- **Uninterrupted power supply (UPS):** Systems that provide a continuous power source to data center equipment in the event of a power outage. They are crucial for AI computing as unexpected power failures can disrupt the training and operation of AI models, leading to data loss and costly downtime.

## GPU Manufacturing:

- **Design & Architecture** refers to the planning and development of the GPU's structure, including the number of cores, clock speed, memory, and power usage. It's crucial for AI computing as it determines the GPU's capabilities and efficiency in handling complex calculations and data processing tasks.

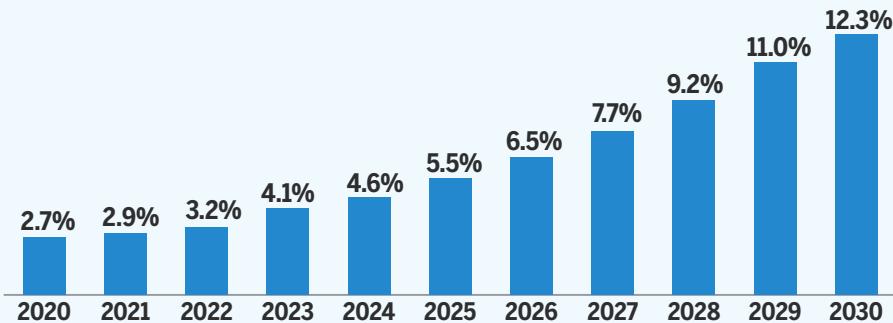




- **Wafer Fabrication** is the production of the silicon wafers that form the foundation of the GPU. It's essential for AI computing as the quality and consistency of the wafers directly impact the reliability and performance of the GPU.
- **Lithography** is the process of transferring patterns onto silicon wafers to create the intricate circuits and components of the GPU. It's crucial for AI computing as the accuracy and precision of the lithography process determine the functionality and performance of the GPU.
- **Packaging & Testing** involves encapsulating a GPU chip in a protective package and conducting rigorous testing to ensure its quality and reliability. It's essential for AI computing as proper packaging protects the GPU from damage during transportation and use, while testing guarantees its functionality and performance.

**Power Generation:** Given the intense electrical power AI programs require, constant electrical power is critical for data centers to operate effectively. Data centers consume approximately 5% of total electricity in the U.S. today. However, given the intensifying demands from AI workloads, we estimate that data centers could potentially consume roughly 12% of total electricity in the U.S. by the end of the decade, posing significant challenges for electric grid operators, in our view.<sup>1</sup> Recently, data center operators have turned to on-site power generation using diesel and natural gas turbines to bridge the gap while waiting for grid interconnection, which can take several years.

### Data Center as % of Electricity Consumption in the U.S.



Source: U.S. Energy Information Administration Annual Energy Outlook 2025, International Energy Agency World Energy Outlook Special Report 2025, and Alger. Estimates are from 2025 through 2030.

**Power Transmission & Distribution:** As AI programs increasingly consume electricity, data centers are facing challenges in securing adequate power from the grid. In fact, much of the U.S. electrical grid was constructed in the 1960s and 1970s and is now struggling to meet modern energy demands. According to the U.S. Department of Energy, approximately 70% of transmission lines are over 25 years old, with many nearing the end of their 50- to 80-year lifespans.<sup>2</sup>

## INFRASTRUCTURE SOFTWARE

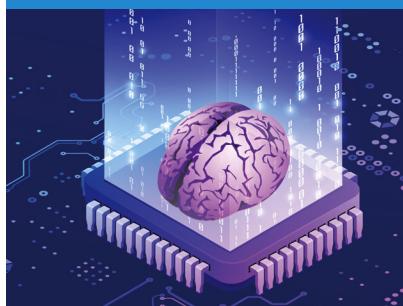
**Cloud Services** are on-demand computing resources (e.g., storage, networking, and processing) delivered over the internet. AI infrastructure software runs on top of these resources to efficiently build, deploy, and manage AI models and applications at scale.

- **Hyperscalers** are the major cloud providers—like Amazon, Microsoft, and Google—that build and operate massive, highly automated data center networks, giving them the scale and infrastructure needed to power today's AI platforms and services.
- **Neoclouds** are AI-first cloud providers that specialize in renting high-performance GPU infrastructure and related tools for training and running AI models, often offering more flexible, cost-efficient AI compute than the hyperscalers.
- **Monitoring** in AI and cloud services means continuously tracking metrics, logs, and traces for models and infrastructure (e.g., latency, errors, GPU/CPU utilization, and cost) so teams can quickly detect issues and optimize performance.

**AI Foundation Models:** Large-scale language models trained on massive amounts of text data. They are crucial for AI computing as they provide a powerful and versatile foundation for developing various AI applications, from natural language processing to content generation and machine translation (e.g., ChatGPT, Gemini, LLaMA). Agentic AI refers to an autonomous system endowed with the ability to set goals, plan and execute actions, and adapt its behavior in pursuit of those goals with little to no human intervention.

**Databases** are crucial for AI computing as they provide a structured and efficient way to store, retrieve, and analyze the large datasets required for training and running AI models. In today's economy, we believe data is the new oil, an essential raw material fueling digital transformation. We believe that businesses increasingly need to digitize and organize their data in order to automate processes and become more efficient.

- **Relational Database:** Structured data is commonly organized into rows and columns and stored in a relational database (i.e., a collection of information that organizes data in predefined relationships) supporting applications such as customer relationship management or billing systems.
- **Non-relational Database:** Unstructured data - encompassing formats such as text messages and emails, social media, webpages, and business documents—is stored in non-relational databases. Generative AI, for example, is particularly dependent on this kind of data for its training. Unstructured data and non-relational databases are growing faster than structured databases.



# AI Adoptors Descriptions

**AI ADOPTERS:** Companies that integrate AI into their businesses to enhance their products or services or make their operations more productive. Within this framework, we further categorize these firms based on their application of AI in two key areas:

- 1) external product enhancement and
- 2) internal productivity or margin improvement.

As previously mentioned, the classifications below are not unique as many companies use AI both externally and internally.

**External Product Enhancement:** Companies leverage existing AI technology, such as large language models, to improve their client-facing products.

- **Advertising & Media:** Companies use AI to personalize ads and content in real time, improving targeting, engagement, and conversion rates for clients and audiences.
- **Aerospace & Defense:** Companies use AI to enhance mission systems, automate threat detection, and optimize flight performance. Law enforcement applies AI-enabled drones, sensors, and analytics to improve surveillance and search-and-rescue operations, while also using AI tools to accelerate report writing and administrative tasks.
- **Autonomous Driving/Robotaxis:** Companies leverage AI to interpret sensor data, anticipate traffic scenarios, and make split-second driving decisions. Vision-based systems use cameras and computer vision to understand the environment, while LiDAR-based systems employ laser pulses to build precise 3D maps—delivering superior depth perception.
- **Cybersecurity:** Vendors use AI to detect anomalies, identify threats, and automate incident responses, delivering faster and more accurate protection for customers' networks and data.
- **Medical Devices:** Companies embed AI into imaging, diagnostics, and monitoring devices to improve accuracy, enable earlier detection of disease, and personalize treatment recommendations. Additionally, robotic surgery systems integrating AI enable greater precision and efficiency in operating rooms, potentially reducing complications and shortening recovery times.
- **Predictive Maintenance:** Industrial firms apply AI models to sensor data to predict equipment failures before they occur, reducing downtime and cutting maintenance costs.

**Internal Productivity/Margin Improvement:** When used internally, AI technology can help drive margin improvement.

- **Construction:** Companies use AI to optimize project scheduling, reduce material waste, and predict cost overruns, improving job-site efficiency and profitability.
- **Customer Service:** Companies deploy AI-powered chatbots and agent-assist tools to handle routine inquiries, shorten call times, and reduce staffing requirements, resulting in lower costs.
- **Data Providers:** Data vendors use AI to clean, classify, and enrich datasets automatically, cutting manual processing costs and accelerating product delivery.
- **Entertainment:** Studios and platforms use AI to automate editing, localization, and content tagging, cutting production costs and accelerating time to market.
- **Financial Services:** Institutions use AI to automate compliance checks, credit underwriting, and back-office workflows, reducing errors and labor expenses. In fact, some banks have used AI technology to achieve an 80-90% productivity improvement in the laborious “know your customer” (KYC) protocol, which requires data collection and identity verification.<sup>3</sup>
- **Logistics & Warehouse Automation:** Companies use AI to optimize route planning, load balancing, and delivery scheduling to reduce fuel consumption and improve on-time performance. In warehouses, AI coordinates robotic systems, streamlines picking routes, and enhances inventory placement to improve throughput.
- **Waste Management:** Firms use AI-powered vision and routing tools to improve recycling sorting accuracy and optimize collection routes, reducing fuel, labor, and landfill fees.

<sup>1</sup>U.S. Energy Information Administration, Annual Energy Outlook 2025, International Energy Agency, World Energy Outlook Special Report 2025, and Alger estimates. The projected 3x increase in electricity demand from data centers is from 2024 through 2030.

<sup>2</sup>U.S. Department of Energy.

<sup>3</sup>Brown, D. (2023, October 26). JPMorgan KYC Operations Up to 90% More Productive with AI. Bank Automation News.

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