White Paper

Intel® AI for Enterprise

Unleashing AI's potential for enterprise

An open, systems-based approach to enterprise AI enables businesses to right-size their AI investments and realize value

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Introduction

New breakthroughs in AI technology are changing the very nature of work at a scale and speed in line with the mass adoption of the internet. AI's emerging capabilities have the potential to transform how businesses operate, creating new opportunities to scale smartly and increase efficiency. As such, the demand for scalable, secure and flexible AI solutions has surged. Whether employing traditional machine learning and AI approaches or using more novel applications, enterprise AI can address a business's specific needs and complexities across hardware, software and solutions at scale, resulting in operational efficiencies, cost savings and other quantifiable business value.

But realizing that potential requires significant investments of time, energy and capital. And although organizations are adopting AI at a faster pace than the internet or cloud computing sectors, significant challenges including scalability, flexibility and security often result in expensive, abandoned pilot projects.

To bridge the gap between enterprise needs and AI potential, Intel is innovating open, easy-to-deploy AI solutions that businesses can adopt across the entire continuum of use cases, enabling organizations to reimagine their operations and capture the value of AI across their enterprise.

The evolution of AI

As enterprises navigate the complexities of modern markets, understanding the evolution of AI becomes crucial to unlocking its full potential. The transformative impact of AI gained significant momentum in 2017, when Google researchers introduced the Transformer architecture in their foundational paper "Attention is All You Need."[1] This revolutionary network architecture, capable of processing and contextualizing vast amounts data more efficiently, laid the groundwork for the development of generative AI and large language models (LLMs). These advancements have directly influenced the scalability, flexibility and security of AI solutions available today.

The evolution of AI from theoretical models to practical, scalable solutions means that enterprises can now leverage these technologies to drive operational efficiencies, improve decision-making and achieve measurable return on investment (ROI). However, the journey from advanced capabilities to real-world applications is not without its challenges. Implementing AI at scale requires a strategic approach—one that not only embraces the power of AI but also addresses the inherent obstacles of integrating these technologies into existing business processes.

How AI can help enterprises thrive

AI implementation drives value as long as it is tailored to an enterprise's unique needs and challenges. And recent data shows that even modest investments deliver results.

+20%
Revenue[2]
From AI revenue (projected)

+30%
KPI Perfomance[2]
At companies scaling their AI integrations

Increased efficiency and productivity

AI can automate repetitive tasks, reduce human error and streamline workflows, increasing efficiency and improving productivity.

+40%
worker productivity[3]
AI users vs. non-users

10-15%
production increase[4]
in manufacturing sector

Multiplied cost savings

By improving operational efficiencies, AI can result in significant cost-savings.

+$360
billion savings[5]
from AI implementation in healthcare sector

Enhanced innovation

A recent Harvard Business Review article found that automation of repetitive tasks, faster pattern recognition and other AI capabilities create room for people to ask "why" and spark change. According to the HBR survey, AI not only increases the velocity, variety and novelty of questions asked, use of AI "led respondents to ask unique questions that changed the direction of their team, organization, or industry 75% of the time."[6]

Easy scalability

AI can improve efficiencies by optimizing resource allocation, automating time-consuming tasks and streamlining workflows, and AI-powered predictive analytics could help organizations anticipate market trends and future needs.

5 key attributes of successful AI deployment

In light of such promising numbers, it's no surprise that AI adoption increased dramatically between 2023 and the first half of 2024: 72% of respondents report using AI and 65% report using GenAI according to a recent McKinsey report.[7]

While AI is beginning to generate business value, it's also beginning to cause negative business consequences. Nearly half of respondents reported that their organization had experienced one or more consequences associated with the risks of using GenAI.

To successfully capture value from AI and mitigate risk, enterprises must develop programs with the following five attributes.

1. **Scalability, reliability, manageability and interoperability**

   The rate of change across economic sectors is staggering; between technological advances and fluctuating economic conditions, only an agile enterprise can survive and thrive. This requires reliable infrastructure that prevents downtime and related financial losses and reputational damage; the ability to fully support and optimize workflows, transfer across systems and operate in multi-cloud usages; and integration with preexisting systems.

2. **Flexibility and choice**

   Many AI technologies come with vendor lock-in, preventing organizations from adopting modular solutions suited to their unique needs, increasing risk and adding costs. Successful AI adoption requires modular options and open ecosystems that enable enterprises to customize solutions to their unique needs and complexities and stay abreast of technological advancements. Businesses must also adopt open standards and certified solutions to de-risk investments.

3. **Affordability and clear ROI**

   Gartner estimates that upwards of 30% of AI projects[8] will be abandoned after proof of concept due to the cost of building and integrating custom models. AI solutions must offer measurable ROI and show provable impacts to business outcomes in order to reach production. Businesses should also ensure AI solutions integrate with existing infrastructure, thus preventing "rip and replace" systems that require costly customized infrastructure.

4. **Security and compliance**

   Enterprises rely on large volumes of proprietary, domain-specific data from various internal and external sources that require extensive pre-processing and cleaning. That's why fail-safes must be part and parcel of any AI solution. Solutions should be built to handle the inherently sensitive nature of business data while adhering to regulations such as General Data Protection Regulation (GDPR), the Health Insurance Portability and Accountability Act (HIPAA) and industry-specific standards.

5. **Responsible use and sustainability**

   The spread of AI naturally comes with growing energy usage. To successfully implement AI across business needs, solutions need to balance high performance with energy efficiency. This requires a focus on product, software and model optimizations to enhance efficiency. Additionally, businesses must ensure adherence to the tenets of responsible AI.

Why Intel AI for Enterprise

Intel AI for Enterprise helps organizations deploy scalable AI solutions characterized by the above attributes. Intel's expertise in world-class processors and semiconductors positions us to innovate across the entire AI continuum, from the hardware that powers devices to interoperable, open-source tools that integrate seamlessly with the infrastructure enterprises already have in place. From PC to edge to data center, we provide the silicon, software and developer tools needed to deliver measurable business results that ultimately impact the bottom line.

Easy to deploy

At a time when the complexities associated with AI implementation present significant barriers to true integration, Intel develops solutions that make it simpler to become an AI-driven enterprise. Intel's approach empowers developers to build AI solutions tailored to each enterprise's needs with software-defined simplicity.

Open and flexible

While many competitors require vendor lock-in or otherwise make integrating with third-party components exceedingly challenging, Intel provides choice. Intel is committed to open standards and open-source solutions. This commitment to open ecosystems empowers customers to customize their solutions to achieve their goals.

Enterprise ready

Built to integrate seamlessly into your IT operations, no matter where they reside, Intel AI for Enterprise solutions are meant to maximize productivity, increase revenue and ensure business continuity.

Efficient and cost-effective

Enterprises looking to increase profitability and save costs through AI need to balance the operating expenses, energy demands, total cost of ownership and cost of investment to fully implement AI in their operations. Intel AI for Enterprise uses less energy, accelerates at one-third the cost of the competition and integrates with your current infrastructure for additional cost savings.

An open, systems-based approach for maximum choice and flexibility

Enterprises who fully embrace AI are pulling ahead, but rapid AI innovation is leading to a fragmented technology landscape. Businesses must navigate a proliferation of AI tools and techniques that do not share unified standards, potentially sacrificing long-term flexibility for rapid ROI.

Open, interoperable solutions offer a way to address this challenge by helping enterprises deploy and get to market quickly without locking them into specific vendor solutions. That's why an open ecosystem approach to enterprise AI is critical—it positions businesses to unlock rapid value while also ensuring the flexibility needed to support future growth.

Open ecosystem fosters the development of unified frameworks and standardized components so businesses can develop composable GenAI solutions and assesses them for enterprise-readiness. Intel is collaborating with leading industry partners – including Anyscale, Cloudera, DataStax, Domino Datalabs, Hugging Face, IBM, KX Systems, MariaDB Foundation, MinIO, Qdrant, Red Hat, Redis, SAS, Yellowbrick Data, and Zilliz – on the Open Platform for Enterprise AI (OPEA). This sandbox-level project within The Linux Foundation AI & Data Project enables the creation of open, robust, multi-provider, composable generative AI solutions by providing a standardized platform for assessment, development and deployment of GenAI solutions, including retrieval-augmented generation (RAG).

An open, systems-based approach to GenAI undergirds the entire Intel enterprise AI ecosystem. Intel's approach prioritizes enterprise needs, minimizes integration challenges and delivers genuine ROI for AI deployments ranging in size and complexity from entry to mainstream to high performance.

Open infrastructure ecosystem

Intel AI Systems provides infrastructure optimized for AI workloads like inferencing, fine-tuning, retraining and training. With options for the full spectrum of enterprise devices, from AI PC to edge AI and data center AI, Intel AI Systems are sized for your optimal investment, whether that's increasing employee productivity with AI PCs or powering high compute, wide-scale AI workloads with a super cluster.

Open software platform

Intel's open software platform provides open source, Intel-developed and partner-developed tools for data management, AI models and frameworks, infrastructure foundational software and more. Because solutions are open source, the platform supports your ability to choose the vendors, tools and software platforms that work best for your business.

Open application ecosystem

Intel's open application ecosystem offers Intel and partner-developed applications and microservices to simplify the development and deployment of AI applications.

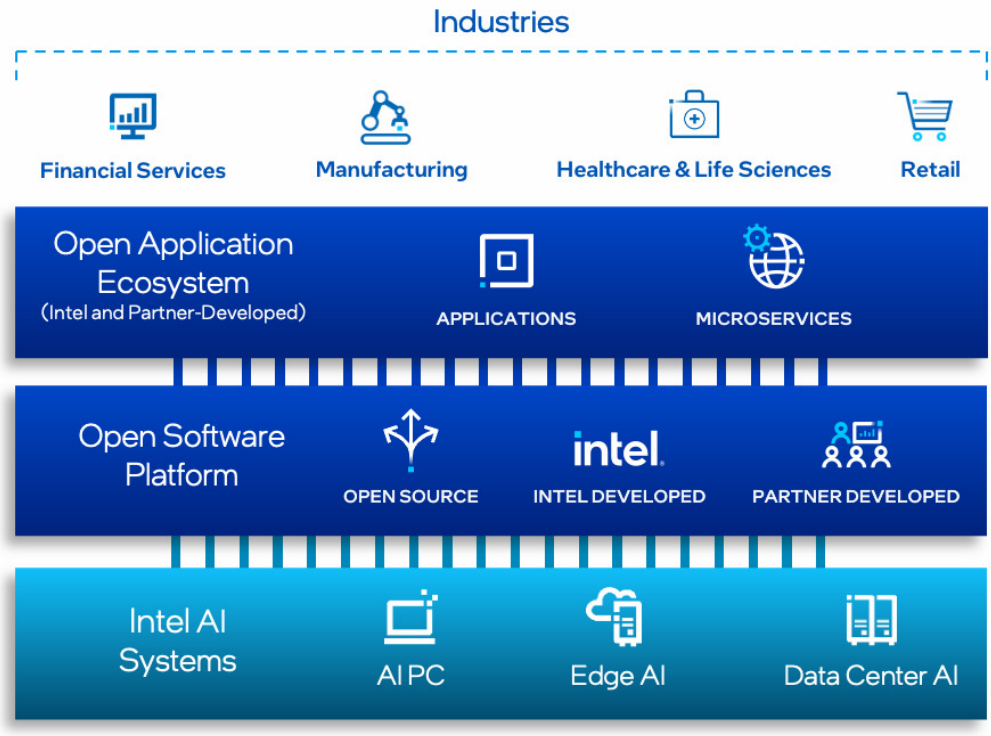

Figure 1. Intel® AI for Enterprise Network Infrastructure

Let's build the future together with open AI solutions

Intel is committed to fostering an open, flexible and secure AI-powered future by bringing AI everywhere. With these secure, manageable solutions, enterprises can scale smartly and usher in a new, smart era.

Let's build the future together.

Learn more about Intel AI for Enterprise.

intel ai

[1] Ashish Vaswani, Noam Shazeer, Niki Parmar, Jakob Uszkoreit, Llion Jones, Aidan N. Gomez, Lukasz Kaiser, Illia Polosukhin – Attention is All You Need, NIPS 2017.

[2] Vladimir Lukic, Karalee Close, Michael Grebe, Romain de Laubier, Marc Roman Franke, Michael Leyh, Tauseef Charanya, Clemens Nopp. Scaling AI Pays Off, No Matter the Investment, Boston Consulting Group, Jan 2023.

[3] Meredith Somers. How generative AI can boost highly skilled workers' productivity. MIT Sloan School of Management, Oct 2023.

[4] McKinsey & Company. AI: The next frontier of performance in industrial processing plants, Sept 2023.

[5] Nikhil Sahni, George Stein, Rodney Zemmel, David M. Cutler. The Potential Impact of Artificial Intelligence on Healthcare Spending, National Bureau of Economic Research, Jan 2023.

[6] Hal Gregersen, Nicola Morini Bianzino. AI Can Help You Ask Better Questions – and Solve Bigger Problems, *Harvard Business Review*, May 2023.

[7] McKinsey & Company. The state of AI in early 2024: Gen AI adoption spikes and starts to generate value, May 2024.

[8] Gartner. Gartner Predicts 30% of Generative AI Projects Will Be Abandoned After Proof of Concept By End of 2025, July 2024.