

What lies ahead?

Decoding the future of enterprise tech



by Suparna Chawla Bhasin

“Transformation” is an ongoing cycle for enterprises. And technology is an enabler and the pivot on which transformation takes place. For enterprises, what started with cloud computing has now transcended to not just accessing or using the cloud or its resources but building and optimizing cloud applications to maximize the potential of cloud environments. This is amplified by artificial intelligence that not only synergizes with cloud computing but are mutually reinforcing. While cloud computing offers the infrastructure AI needs to thrive, AI makes cloud services smarter, more secure, and efficient. This synergy is driving innovation across industries today.

The Perfect Catalysts for a Smarter Future

AI took enterprise technology by storm and scaled cloud computing to the next level. From automation and optimization, to enhanced data analytics powered by AI, and AIaaS (AI as a Service) democratizing access to AI, enabling companies of all sizes to leverage AI.

Today, there are more catalyst technologies to accelerate and disrupt enterprise companies. Intel is enabling businesses to anticipate and navigate disruptions through investments in game-changing technologies. Intel’s investments in various key areas—AI, quantum computing, memory technologies, computational storage,

neuromorphic computing, and security—are strategic steps toward addressing the challenges of tomorrow’s cloud and enterprise ecosystems.

Preparing for Tomorrow

While the cost of innovation may no longer be the sole barrier for organizations ten years from now, the focus will shift to operational efficiency and resource optimization, and enterprises grappling with rising energy costs, cloud expenditures, and infrastructure demands today will need robust solutions that maximize performance per dollar.

In a rapidly transforming technological landscape, Intel’s approach is to prepare enterprises for the future by enabling businesses to anticipate and navigate disruptions. Instead of scrambling to adopt new technologies as they emerge, businesses equipped with Intel-powered solutions will have the flexibility to seamlessly integrate advancements. This scalability will define their ability to innovate at pace, meeting unique demands while keeping costs and complexity in check.

The Catalyst – AI Accelerator and AI Computing

While AI took enterprises by storm, the journey has just started. The growing amount of Large Language Models (LLMs) allow new use cases, new industries and markets to leverage and innovate with the use of AI.

But given we are currently in the age of AI training, there are considerable changes expected in AI technology—most notably, the trend of LLMs becoming smaller and more specialized. There will be a shift to AI inference—applying the trained AI models in practical, cost-effective ways, driven by commercial needs with cost efficiency as a pivotal factor.

Jan Krueger, Account Director & CTO at Intel emphasizes, “As the focus transitions, large models will continue to

A leaner AI ecosystem will dominate industries that will deliver faster, cost-effective innovations.

grow in intelligence, but their size will decrease to meet specific industry requirements. For instance, instead of one massive, generalized model, we will see smaller models tailored to their targeted industry use cases, such as healthcare, automotive, or retail. These models may only consist of a billion parameters but will be highly optimized for their respective domains to drive costs down. This will not only ensure efficiency, both in cost and performance, but will make AI more accessible for targeted applications.” A leaner AI ecosystem will dominate industries, enabling tailored solutions for healthcare, manufacturing, retail, and beyond, delivering faster, cost-effective innovations.

Intel continues its investment to maintain Intel Xeon processor platform as perfect choice for running AI based services, while continuing to innovate in AI Training focused accelerators. Both will drive innovation and market adoption.

The Catalyst - Quantum Computing

Quantum computing is poised to revolutionize the industry, although it is not yet available for enterprise use. However, its implications are already being felt. Quantum computing has changed our view on cryptographic algorithms, that could easily be compromised via quantum computing, prompting Intel to invest in quantum-resistant cryptography for the past years. Prior to the rise of quantum computing, Intel’s products had already incorporated new algorithms enabling enterprise customers to

adopt the quantum resistant cryptography that protects data at rest, in transit and in use.

Besides the implications to cyber security and cryptography, quantum computing itself offers an entire new way to solve technological problems that will eventually impact the life of everyone on the planet. Intel has made significant strides in advancing quantum technology through its development of “hot” silicon spin-qubits that enable smaller, high-temperature devices using expertise in high-volume transistor manufacturing. Intel’s latest innovation, the Tunnel Falls chip, represents a milestone in creating scalable and reliable quantum systems. Built using advanced CMOS transistor technology, it offers a 95% yield rate and is available to the research community to foster breakthroughs in qubit research and quantum dot technologies. These advancements bring the world closer to quantum computing’s transformative potential in fields like materials science, cryptography, and climate modeling.

The Catalyst – Computation with New Memory Technologies

In past decades, software solutions were limited by the size and capabilities of memory technologies. Computational performance remains directly dependent on an applications ability to get the most out of the currently available memory technologies. However, since compute would soon outgrow the available memory in a server platform, Intel as a founding member of the Compute Express Link consortium, aims to develop and standardize the next evolution of how compute and memory can be used.

With Compute Express Link (CXL) technology, memory will be connected into a compute platform, like disks were a decade ago. CXL also allows memory to be shared across server boundaries via networking technologies, similar

to how storage technologies evolved. Instead of installing memory into the server, with all its limitations, a central memory system will serve multiple compute platforms and applications can subscribe or unsubscribe to memory, depending on workload needs. CXL offers much higher flexibility to architect solutions going forward, while promising to reduce the overall costs, given the improved resource allocation.

The Catalyst – Confidential Computing

Cybersecurity has never been more critical. Quantum computing challenges current cryptography methods and cloud adoption requires superb data privacy and security, since a breach effects millions or billions. Intel has invested in technologies to ensure resilient data protection, including post-quantum resistant cryptography to address this need. However, a key area, Data in Use protection, remains an open flank to most enterprise solutions. Intel’s Trust Domain Extensions (TDX) encrypts and decrypts all memory used by the CPU in real time and addresses this open flank. Applications processing confidential or privacy sensitive information can rest assured that, at no time are they exposed in clear text. With Intel TDX, all three aspects of 360° encryption are fulfilled — Data at Rest Encryption, Data in Transit Encryption (VPN) and Data in Use Encryption (TDX).

The Catalyst – Innovations in Intel Process Technology

In order to enable innovations in Intel process technology, computation not only becomes more specific, but also more sophisticated and demanding. Intel’s process technology innovation goes beyond the physical, chemical and manufacturing possibilities to produce microprocessors that can deliver the performance and scale required. Over the years, Intel has moved from 10 Nanometer Process Node

down to 18 Angstrom (1.8 nanometer) process nodes. Combined with innovating new transistor and power designs, Intel’s 18A process node delivers performance and scale. In addition, the smaller architecture significantly improves Performance / Watt, which will pay into the sustainability goals of enterprises today and going forward.

The Catalyst – Sustainable Compute Platforms

Sustainability is a primary focus for Intel. The latest Intel Xeon 6 platform offers customers a choice between performance cores and efficiency cores. Performance cores deliver high per-thread performance, while efficiency cores provide great performance at a fraction of the power consumption. Intel continues to invest in both types of cores and process nodes to reduce power consumption and improve performance. These advancements align with Intel’s broader commitment to sustainable computing, enabling data centers, enterprises, and cloud providers to achieve their sustainability targets without compromising on capability or speed. The Intel Xeon platform underscores Intel’s vision of driving sustainability across industries, empowering customers to meet the growing demands of modern workloads

Intel-powered innovations can unlock greater efficiency, scalability, and security across enterprise systems.

while reducing environmental impact. As Stefan Bäuerle, Senior VP, Head of Database, SAP HANA Database & Analytics emphasizes, “Our collaboration with Intel extends to enhancing the energy efficiency of modern data centers including our own co-located facilities and those who share with our partners. For SAP HANA cloud, it is key to provide industry leading performance and scalability while being mindful of energy consumption. Intel’s 76 CPU with efficient cores is an important and effortless step to take for SAP HANA cloud to optimize performance while improving energy efficiency. In the first test with analytical workloads on SAP HANA and SAP HANA cloud, we were able to achieve a similar performance and scalability compared to current generations of Intel CPUs, while reducing the power consumption by up to 60%.”

The Not So Isolated Effects

Intel’s strategic investments in AI, cloud-native computing, security, quality operations, and sustainability are poised to revolutionize cloud computing. These are not isolated advancements but interconnected pillars that together form a cohesive ecosystem, designed to meet the evolving demands of modern enterprises. By prioritizing these critical areas, Intel is not only driving innovation but also reshaping the future of the industry. Enterprises looking to enhance performance and sustainability can benefit from Intel’s cutting-edge technologies, which are designed to seamlessly elevate cloud and data environments. By integrating Intel-powered innovations, organizations can unlock greater efficiency, scalability, and security across their enterprise systems. This comprehensive approach enables businesses to drive meaningful transformation, positioning them for long-term success in a smarter, more sustainable future.