Futurum

2025 Research Agenda

Key Topics & Coverage Areas

Futurum Intelligence provides critical insights into digital transformation, focusing on adoption, innovation, and disruption. Backed by a team of industry experts, we deliver research through personalized analyst-client interaction and client portals with visualization dashboards and qualitative and quantitative data reports.

Our research is organized into practice areas aligned with key digital transformation topics, addressing critical business questions. Each area includes analyst coverage and planned deliverables for the year. Through collaboration and strong industry relationships, we identify emerging trends early, helping clients make informed business decisions.

Please select an image to view the agenda of a specific practice area.

Artificial Intelligence Software & Tools

AI Devices

Channels & Go-to-Market

CIO Insights

Data Management & Analytics

Cybersecurity

DevOps and Application Development

Enterprise Applications

Semiconductors

Last updated: March 12, 2025

Artificial Intelligence Software & Tools

Generative AI represents a platform shift, and when shifts like that happen, they have consequences up and down the technology stack, as well as in areas such as the nature of work, regulations, and, in the case of AI, environmental sustainability. To that end, the Futurum AI practice area covers the core elements of AI while liaising with other Futurum practice areas to reflect that AI spans chips to applications and everything else in between.

The AI area is moving so fast that issues that will be important in 12 months may not even be considered at this point. Nevertheless, organizations need to reflect on what might be coming, and our research aims to support vendors, users, and investors in making the right decisions. As such, these are key coverage areas for the AI practice in the coming 6-12 months.

Key Issues for 2025

Agentic AI has started to disrupt the business application universe.

Agentic AI - the concept of semi-autonomous agents making decisions and taking actions - is still nascent. Still, in 2025, the concept and the agents will start disrupting the traditional application software industry. Vendors that sell large multi-purpose application suites will find that, increasingly, users are not directly interacting with their interfaces; instead, they are using agents to do that on their behalf. This could have all sorts of implications, including, but not limited to, a possible shift from product licenses to agent-usage-based pricing, which might reduce the need for dedicated integration platforms and middleware or result in consolidation of aspects of the software market, such as customer service automation and essential productivity tools. Of course, the application vendors are not sitting idly by and watching this happen; they are developing their agentic platforms. However, the question remains: Do companies want to use a range of different agentic platforms or have one sit above all their significant applications, abstracting away the complexity of all the application and data integration points for them?

Less emphasis on text and more on every other modality in Gen AI & size matters

Large language models are the source of the Gen AI revolution, starting with ChatGPT. Still, while better, more performant models of various sizes will continue to be released regularly, more emphasis than ever will be placed on models of other modalities. These include images, video, audio, and code and modalities prevalent in chemistry and biology, such as chemical structure generation, prediction, protein folding, and molecular design. These might include time series data in financial pattern analysis and process ad workflow optimization. Although large models tend to grab headlines, they are smaller models that enterprise and service providers will increasingly look to as they aim to develop and use models that perform narrower tasks and thus don't need to be trained on the entirety of the Web. Areas we expect to see traction here include edge computing use cases such as local voice assistants, IoT device control as well as privacy-sensitive domains such as healthcare data processing, latency-critical applications such as gaming, trading systems, and industrial control systems, as well as hybrid architectural issues such as local preprocessing before moving to the cloud and small models for triage and routing.

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GenAIOps to tackle the challenges of AI production

GenAIOps, the tools and frameworks that address the unique challenges of deploying and managing generative AI systems in production environments, will evolve. These are partly technology changes but also responses to market forces. We suspect that, at some point, solutions will be consolidated into platforms, and the large cloud providers will expand their GenAIOps offerings. Industry-specific GenAiOps tools could emerge, though it might be too early. There will be more focus on multi-model and multimodal management. On the technical side, there will be more sophisticated prompt management and versioning, automated testing of LLM outputs at scale, and better tools for managing model drift and other aspects in RAG systems. There will be challenges to address, though, including cost management at scale integration with ITOPs, security, and AI governance tools and ensuring consistent performance across deployments.

Data data everywhere - but the real issue is access

Companies have been experimenting with generative AI for two years, but such experiments don't necessarily lead to successful implementations. What is often lacking is a way to ground models in prosperity enterprise data held in siloed, on-premises systems; they will not all simply upload it all to their favorite cloud platform of choice. Therefore, data-related issues will continue to cause challenges and require solutions. Major issues include data quality and governance, including Automated data cleanup and validation, Synthetic data validation and verification, and data lineage for training purposes. Emerging challenges include multi-modal data management, data sovereignty issues, and open-source data quality. At the data architecture layer, issues such as vector database scaling and RAG system optimization will be prominent.

Planned Deliverables

- Market Data - bi-annual market sizing & five-year forecast (2x per year)
- Buyer Survey - bi-annual IT Decision Maker survey (2x per year)
- Buyer Survey - bi-annual IT Decision Maker survey (every six months)
- Analyst Insight - a monthly report on critical issues in the industry (every month)
- State of the Market - a quarterly report on technology, markets, products, and vendors (once per quarter)
- Market Landscape - an annual report on product segments and representative vendors, deployment types, buying personas, and use cases
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AI Devices

Futurum covers a broad range of AI-enabled consumer and commercial devices. This includes PCs and peripherals, tablets, mobile handsets, XR, hearables and wearables, and IOT, IIOT, and automotive segments. The expansion of AI training and inference from a cloud-centric model to a more hybrid edge-to-cloud model is driving a rapid transformation across the devices segment of the tech stack. With next-gen AI-capable PCs capable of handling 13 billion-parameter models, mobile handsets capable of handling 7 billion parameter models, and wearables pushing against the 1 billion parameter mark, large language models (LLMs) and large mixed models (LMMs) are increasingly moving away from thermally expensive cloud-based silicon to the more thermally efficient silicon powering AI-capable consumer and commercial devices.

The next 6 to 12 months will see an acceleration of AI capabilities in devices. This transition will disrupt core device segments and the entire technology ecosystem around them as cloud service providers (CSPs), independent software vendors (ISVs), and their partners adapt to the emerging hybrid, interwoven AI services model.

Key Issues for 2025

PC Segment

- A new generation of NPU-equipped AI PCs powered by entirely new AI-capable processors will continue to disrupt the PC segment. While a full reset of the PC refresh cycle may still be 18-24 months away, the next 6 months will accelerate the entry of AI PCs into the market and the replacement of traditional non-AI PCs ahead of the October 2025 end of Windows 10 support.

- NPU-equipped Windows 11 Microsoft Copilot+ PCs, with their minimum 40 NPU TOPS performance, will continue to set standards for premium and flagship AI PCs and provide Windows PC vendors with a hedge against MacBook proliferation.

- The current AI PC processor vendor trifecta (Qualcomm/Snapdragon, AMD/Ryzen AI, and Intel/Core Ultra) will continue to compete for market share in the AI PC segment, but rumors of NVIDIA also entering the market in 6-12 months could bring additional disruption and performance targets to this fast-moving PC segment reset.

Mobile Segment

- Mobile chipset vendors like Qualcomm, MediaTek, Google, and Apple will focus on bringing AI-enabled multimodal, contextual, and agentic capabilities to mobile platforms.

- An additional focus for handset OEMs will be to leverage further hybrid multimodal AI capabilities (on device and in the cloud) to deliver more differentiation and more personalized AI-powered experiences for users.

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XR Segment

- The next wave of AI-enabled capabilities for XR platforms will likely come in H1 2025 and will be powered mainly by a new generation of Snapdragon chipsets. We expect the next evolution of AI integration in the XR segment to focus on connecting cameras on smart glasses and mixed reality headsets to contextual, agentic workloads, with chipsets capable of handling up to 1 billion parameters.

Other Device segments

- Automotive: Multimodal and agentic AI capabilities will continue to advance the cockpit, infotainment, and ADAS capabilities of next-gen smart vehicles, making them smarter, more capable, and more secure.
- Printers and workspace peripherals: Agentic AI is also beginning to enter the printer and workspace peripherals segments, driving both utility and value for users.
- Hearables and wearables: We are also seeing AI's impact on smartwatch capabilities and audio solutions, and the next 6 to 12 months will bring significantly improved predictive and agentic user experiences to those product categories.

Planned Deliverables

- Market Data - quarterly market sizing & five-year forecast (up to 4x per year) for AI PCs, every six months for other categories
- Buyer Survey - bi-annual IT Decision Maker survey (2x per year)
- Analyst Insight - a monthly report on critical issues in the industry (every month)
- State of the Market - a quarterly report on technology, markets, products, and vendors (once per quarter)Market Landscape - an annual report on product segments and representative vendors, deployment types, buying personas, and use cases (once annually)
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Channels & Go-to-Market

Across the technology landscape, vendors are increasingly leaning into their indirect go-to-market strategies and fostering more ecosystem partnerships. There are several drivers for this changing mindset. Economically, vendors are scrutinizing their cost structures more than ever as we have moved away from near-zero interest environments. Companies can no longer justify 'rampant-hiring' in their sales & marketing divisions as a GTM tactic. Meanwhile, from a technology standpoint, customer IT environments are getting more complex, residing on multiple clouds and multiple architectures, while the application landscape is becoming increasingly customized. In short, no technology company can service a customer's IT needs entirely through its portfolio; partnering is the only way to close the gaps.

Futurum will explore the discipline of partnering in the technology space amidst these trends and future disruptors such as AI. We will explore how GTM is evolving horizontally (e.g., partnering with other technology stacks) and vertically (e.g., embracing an ecosystem of partners engaged in product deployment and service offerings).

Key Issues for 2025

Vendors will prioritize the top 20% of their 'partner ecosystem' in 2025

- ROI pressures and longer sales cycles mean vendors must prioritize their efforts on their closest and strongest partners where real impact can be generated.
- Skills (identified through competencies and specializations) are increasingly mandated by vendors that want to ensure a best-in-class experience in their technology deployments. Investments needed to achieve these accreditations will become a natural limiter for the breadth of partners engaged.
- New technology alliances (such as that between AWS and Salesforce) will garner significant resourcing to expand into existing large installed bases.
- Rationalization is happening on both sides of the aisle. Even channel partners are designing their partner programs to determine how much resourcing to apply to their different vendors.

Cloud marketplaces will become as big a GTM for ISVs as traditional distribution is for commercial hardware.

- Cloud marketplaces have emerged as one of the fastest-growing RTMs as enterprise cloud commits have grown, and the hyperscalers have launched more programs to engage partners and ISVs.
- These marketplaces attract startup ISVs looking to access a customer base and large, established software companies looking to capture pre-committed dollars.

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- Marketplace fees continue to fall, making them more cost-effective RTMs. Coupled with indirect partner programs (such as Private Party Offers) allows more partners to play in the marketplace economy.
- New innovations, such as Marketplace embedded, will create new revenue streams for partners targeting this RTM.
- However, building programs and processes for managing marketplace sales is still an operational challenge for most ISVs.

Large resellers will become the next wave of service integrators, defining a new category and displacing legacy GSIs

- Value-added resellers, forever faced with margin pressures in their product business, are increasing their focus and investments in their professional services practices. For some, this will profoundly impact the fundamental business models.
- Larger resellers have the financial resources to make large-scale transformations through acquisitions and will target smaller, highly specialized services and consultancy firms.
- Resellers who can successfully navigate this transition will possess a combination of technical know-how, deep vendor relationships, and the internal operating model to run a services-oriented practice.
- Meanwhile, a few GSIs will struggle to reinvent themselves as they become burdened by legacy contract systems and grapple with the rising costs of skilled workers.

Planned Deliverables

- Analyst Insight (monthly) - an analyst report on critical issues facing partner leaders
- Market Data - market sizing & five-year forecast of key technology sectors by RTM
- Partner Survey (2x year) - a survey of IT partners assessing key issues they are facing and opportunities they are focused on
- Cybersecurity Market Data - GTM Brief - go-to-market insights on the Cybersecurity market
- Enterprise Applications Market Data - GTM Brief - go-to-market insights on the eEnterprise Applications market
- AI Devices Market Data - GTM Brief - go-to-market insights on the AI Devices market
- AI Partner Programs - special report
- Inquiry sessions - 30-minute one-on-one time with our expert analysts to explore your challenges and opportunities
- Advisory Days - half-day virtual or full-day onsite strategy session with key stakeholders

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CIO Insights

Futurum provides hard-hitting coverage for IT leaders that focuses on the evolving role of the chief information officer (CIO) in today's technology-driven business landscape. As tech becomes more pervasive, CIOs are not just stewards of IT infrastructure but key players in driving strategic innovation, business transformation, and data-driven decision-making. The surge of artificial intelligence (AI), cloud computing, data management challenges, and increased pressure to ensure security and compliance place CIOs at the forefront of the most critical business decisions. Futurm's coverage delves deep into these trends, providing actionable insights on how CIOs can successfully navigate the complexities of a digital-first world.

A significant focus of our research is the rising demand for CIOs to master the integration of AI and advanced analytics. AI is no longer a distant technology but a driving force behind operational efficiency, customer experiences, and even new business models. As organizations urgently need to leverage AI and cloud infrastructures, CIOs grapple with the dual challenge of scaling these technologies while ensuring ethical, secure, and compliant implementations. Our reports offer deep dives into how CIOs can lead AI strategies, align them with business goals, and avoid the potential pitfalls of poorly managed deployments.

CIOs today must also navigate the complexities of multi-cloud environments and evolving IT architectures, which can either drive agility or result in cost overruns and data silos. Futurum's CIO Insights helps IT leaders anticipate and respond to these challenges by providing strategic guidance on vendor selection, cloud orchestration, and optimizing hybrid IT ecosystems. Our analysis equips tech companies with a clearer understanding of what CIOs need to succeed. It offers actionable recommendations that help enterprises future-proof their technology stacks, improve resilience, and drive sustained innovation.

Finally, CIO Insights connects with hundreds of leading CIOs around the world and regularly gathers data on key trends, spending patterns, and market shifts. This data is available in our research and in Futurum Intelligence.

Key Issues for 2025

- CIOs are increasingly leading business innovation and need collaboration to succeed. In 2025, the CIO's role will go beyond technology oversight as they spearhead innovation initiatives that drive business growth. However, to effectively lead these efforts, CIOs require support from both vendors and peer networks to co-create new tools, frameworks, and best practices for scalable innovation.

- Shifting workloads between public and private cloud environments. As hybrid cloud strategies mature, CIOs face the challenge of balancing cost efficiency, security, and performance while shifting workloads between public and private clouds. The ability to dynamically manage these transitions is crucial for optimizing IT resources and maintaining operational agility.

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- Leveraging AI for competitive differentiation and transformation. AI is a key differentiator in 2025, with CIOs under increasing pressure to use it not only for operational improvements but also to create new business models and revenue streams. Success in AI deployment will hinge on how effectively CIOs align AI with broader digital transformation strategies, ensuring it drives true competitive advantage.

- Ensuring cybersecurity resilience in an evolving threat landscape. As cyber threats become more sophisticated, CIOs in 2025 must prioritize building cybersecurity frameworks that are both resilient and adaptable. With the rise of distributed workforces and cloud-based infrastructures, securing data and maintaining compliance while fostering innovation will remain a top challenge.

Planned Deliverables

- Quarterly CIO Insight surveys (4 per year)
- Monthly CIO Pulse Reports (12 per year)
- Private vs. Public: Shifting Workloads Redefine the Cloud Narrative (updated once per year)
- Enterprise AI Strategy for the CIO: What's Working (updated once per year)
- CIO as Innovation Leader: The State of the Role (updated once per year)
- Inquiry sessions - 30-minute one-on-one time with our expert analysts to explore your challenges and opportunities
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Cybersecurity

Futurum covers a broad spectrum of cybersecurity-related technologies, including application, cloud, data, endpoint, network security, identity and access management (IAM), and integrated risk management and Security Operations Center (SOC) markets. With this in mind, our vantage point spans key use cases, including threat hunting and intelligence, incident response, attack detection, and cyber-recovery. Key themes of our coverage include the modernization of the SOC and the adoption of technologies that intrinsically enhance cyber-resiliency for data, applications, and infrastructure.

Key Issues for 2025

- Artificial Intelligence (AI) accelerates the race between attackers and defenders.
    - Malicious actors are using AI to develop more evasive and sophisticated threats with greater speed and efficiency. In response, defenders must also adopt AI-powered tools to reduce the likelihood of a successful breach and mitigate the resulting damage in the event of a successful breach. Vendors are responding in kind by baking AI-based capabilities into their solutions to support security and infrastructure teams alike from the standpoint of their cyber-resiliency.
- The intersection of faster-moving, more innovative attack techniques and expanding attack surfaces creates new technology requirements.
    - Attack surfaces are sprawling and becoming more splintered than ever, thanks to the rise of remote work, the Internet of Things (IoT), and multi-hybrid cloud IT and application environments. This is compounding the fact that threat vectors are changing at an unprecedented pace and becoming more sophisticated than ever, as discussed in the prior bullet. More than half of organizations plan to add a new cybersecurity vendor to address these changing requirements, and 45% plan to add a new cybersecurity product category in 2024, according to The Futurum Group's Cybersecurity Decision Maker IQ data.
- A market long characterized by point, best-of-breed solutions begins to accept a platform-based approach.
    - The network of cybersecurity tools typical enterprises use is overwhelmingly large - with organizations typically counting their tools in the dozens. The need for faster reactiveness to next-generation vulnerabilities and attacks, coupled with the need for security and IT operations teams to scale across larger and more complex application and IT environments, is driving the need for a more consolidated approach to streamline operations, reduce protection and detection gaps, and to accelerate threat response. That being said, decision-makers will be mindful of relying on fewer vendors - the risk of which was evidenced by the July 2024 CrowdStrike outage.

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- Data protection evolves into cyber-resiliency.
    - With data constantly under threat, organizations require far more than traditional snapshot, replication, backup, and operational recovery capabilities. Vendors are responding to facilitate a more preventative stance against attackers and minimize data loss and downtime of critical business services following an attack. For example, they are baking in and acquiring capabilities for detecting potentially malicious activity, incident response, and data security posture management (DSPM).

Planned Deliverables

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Data Management & Analytics

Enterprise data is the lifeblood of business. No endeavor, whether a simple order-to-cash process or a complex, agentic AI solution, can survive without timely access to accurate, high-quality, secure, and governed data. Given these high stakes, companies are understandably torn between innovation and governance.

This is reflected in the markets covered by Futurum, which range from stalking new ideas such as real-time data integration and orchestration tools to exploring the re-invention of traditional business intelligence (BI) at the hands of Generative AI (GenAI).

Specifically, Futurum tracks the modern data intelligence platform marketplace, covering both converged and best-of-breed databases, data management and orchestration products, DataOps practices and tools, insight-oriented data infrastructure, and visualization and analytics solutions—all powered by and built to empower AI innovation.

Key Issues for 2025

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DevOps and Application Development

We are experiencing one of the greatest periods of innovation in creating and utilizing software. Once considered a back office expense, business strategies rely heavily upon their technology organizations and partners to rapidly deliver innovations, competitive capabilities, and compelling digital customer experiences through software. DevOps and Application Development are crucial practices encompassing end-to-end aspects of creating and operationalizing software across the Software Development Lifecycle (SDLC).

DevOps is not static; it continues to evolve and adapt to the changes in how we create software and the technologies used in contemporary software and infrastructure stacks. This evolution is evident in the development pipelines that span containers, container orchestration, microservices, distributed architectures, cloud, multi-cloud, on-prem, and legacy applications. The principles of DevOps and Agile have not only adapted but also led to the creation of new disciplines, including system reliability engineering (SRE), platform engineering, DataOps, AIOps, SecOps, GitOps, ITOps, FinOps, and more.

Security and AI/ML/GenAI are as much a part of software creation as writing, building, and testing software. DevSecOps continues to mature and expand its scope across the SDLC. AI-based copilots, code generation, QA planning and testing, and agentic and guided AI agents are reshaping the technologies and workflows we use to create, deliver, secure, and operate software.

Key Issues for 2025

Technology and business leaders must track advances that can aid them in making sound decisions that fulfill today's needs and deliver on their organization's strategic business objectives, which rely on software.

- Maturation of DevOps (and XOps) and the increasing value delivered
- Shift to platforms for DevOps, data, AI and operational systems
- The prevalent and widespread adoption of Kubernetes as the common workload operational system across applications, cloud services and vendor offerings.
- Securing the software supply chain, sources, and underlying toolchains
- Improving AppSec, APISec, and software infrastructure security
- Effective uses of AI, beyond the hype, across the SDLC
- Successful application modernization strategies
- Building resilient software and systems

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Enterprise Applications

Enterprise Applications are the lifeblood and framework for accomplishing work in the modern organization. We examine 12 categories of applications used in the enterprise, including CRM, ERP, Project Management, Productivity, Collaboration, CCaaS/UCaaS, Digital Transformation/Data and Process Management, Business Intelligence/ Analytics & Visualization, Data Management/Platform, HR/Employee Experience/Rewards. Content Management, Line of Business, Marketing Automation, and SCM, and delve into how they shape the broader enterprise information architecture. We also focus on the underlying technologies and systems that power these applications, including artificial intelligence and automation, and assess how employee engagement and experience trends impact the market.

Key Issues for 2025

The Continued Progress of Generative AI in Enterprise Applications

In under two years, generative AI has progressed from a novel new technology with few defined use cases to an integral part of many enterprise applications and platforms. Including the tech has not led to significant productivity or efficiency gains yet. Still, the arrival of AI-powered agents will likely be the catalyst for driving substantial ROI. The challenge will largely be around prioritizing the accuracy and efficiency of these agents and generating trust among those responsible for business outcomes and everyday workers being asked to interact with these tools.

Shifting Pricing and Business Models

The rise of generative AI also impacts the expected pricing models and approaches of application vendors. Greater efficiency and the lower cost of using automation is driving a reassessment of traditional seat pricing models. New approaches, including consumption-based and outcome-based pricing, are being floated and tested by the market. It is still early for new models, but the market will likely rely on something other than expanding seat licenses to drive revenue growth.

Enterprise Technology Stack Management

The proliferation of applications purchased and used by enterprises ballooned over the past several years, in part due to the need to quickly stand up new features during the COVID-19 pandemic but also in response to the desire to digitally transform all facets of a company's operations. The result is often a mishmash of applications, often with several applications performing similar functions and some simply dormant applications, creating a combination of security issues, economic waste, and technical debt that organizations must address. As pricing models shift, we can expect a further inspection of the enterprise tech stack, which may lead to market share shifts.

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A Focus on Offering Industry-Specific Solutions:

Organizations operating within specific industry segments have traditionally selected point solutions from vendors that were entrenched in their sector and, as a result, built applications that took into account the specific and nuanced features, workflows, and regulatory requirements that accompany each distinct industry. But as larger enterprise platforms seek to gain market share, they're increasingly using their might to release industry-specific versions of their platforms and applications, often loaded with the latest features and functions, promises of frequent updates, and greater flexibility. Vendors of all stripes have realized the opportunities created by scaling and segmenting their product offerings to meet the distinct needs of these industry-specific customers.

Ultimately, enterprise applications and how they are deployed, consumed, and priced are at a crossroads, thanks to the rapid ascension of generative AI and the changing nature of work. Vendors will be focused heavily on leveraging generative AI and integrations to help position their respective platforms as the center or hub where enterprise work is conducted.

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Semiconductors

For more than 50 years semiconductors have been the enabling technology that have transformed the global economy and society by delivering innovations in Computing, Telecommunications, Consumer Electronics, Automotive, Industrial Electronics, and Military and Civil Aerospace. The semiconductor market has grown to over $600 billion in annual sales (in 2024) and, as the era of Artificial Intelligence (AI) begins, annual sales exceeding $1 trillion are expected within a decade as the semiconductor industry once again plays a critical role in delivering technological advances.

Key Issues for 2025

Semiconductor Industry Cycle

The semiconductor industry is highly cyclical with revenue growth heavily influenced by the timing of step function increases in manufacturing capacity set against ongoing, incremental increases in demand. Demonstrating its volatility, semiconductor chip market growth of about 20% in 2024 will give way to modest growth of less than 10% in 2025, as supply and demand comes more into balance. Spending on semiconductor manufacturing equipment is estimated to have grown by about 7% in 2024 and, as the industry attempts to pace investment in manufacturing capacity with market demand, another year of modest, single-digit growth is expected in 2025.

End Market Drivers

The drivers of semiconductor market growth are shifting away from the traditional high-volume but lower growth mainstream markets, such as Cell Phones and PCs, towards more premium, higher growth markets defined by the high-performance technologies, such as AI Processors and High Bandwidth Memory (HBM), required by Data Centers and Autonomous Vehicles, and the specialist technologies, such as compound semiconductors, used in Electric Vehicles.

Semiconductor Manufacturing

Demand for advanced node foundry capacity is expected to continue apace, driven by the needs of high-performance computing (HPC) applications. Semiconductor manufacturers will accelerate the move to sub 20nm node production for leading edge chips and will begin readying 2nm process technology for mass production in the most advanced fabs. Mainstream and mature node manufacturing will continue to recover and soak up excess fab capacity for greater than 20nm node production, driven by China's self-sufficiency strategy and ongoing demand from a wide range of end markets, including Automotive and IoT.

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Technology Roadmap

For decades, Moore's Law delivered performance and cost improvements through shrinking transistor geometries, increased die sizes and larger diameter wafers.

However, as Moore's Law slows down, the industry is expanding investments in "More Than Moore" innovations such as:

- **Advanced Packaging:** As overcoming the technical challenges associated with this monolithic scaling has become too expensive to justify for all but a few semiconductor device types, industry investment has shifted more towards advances in packaging technology.

- **Chiplets:** By partitioning the chip into separate functional elements (chiplets) only the advanced logic functions need to be fabricated on leading edge process nodes. Less-critical functions can be processed using legacy nodes or a different process technology altogether. Chiplets also have the advantage of the higher yields typically associated with smaller die.

- **Heterogeneous Integration:** As well as facilitating higher speed data processing and transfer, heterogeneous integration also enables lower power consumption and better heat dissipation, which are increasingly important system performance metrics.

And in Emerging Technologies, such as:

- **Stacked Die:** Heterogeneous integration utilizes a variety of 2.5D and 3D advanced packaging process technologies including Hybrid Bonding and Thermo Compression Bonding (TCB)

- **High Bandwidth Memory (HBM):** For use in applications such as high-performance computing (HPC), HBM is able to achieve much higher bandwidth than standard DRAM by stacking multiple vertically-interconnected DRAM dies.

- **Silicon Photonics and Co-packaged Optics:** Co-Packaged Optics (CPO) is the advanced heterogeneous integration of optical components and semiconductor devices on a single package, aimed at addressing performance and power challenges in high-bandwidth data-center applications.

- **Advanced Materials:** Silicon-based semiconductors have served the industry well as a proven, general-purpose technology supporting a wide range of electronic system functionality, performance, and cost requirements. However, major disruptions in end markets, such as the trends towards Electric and Autonomous Vehicles, and Renewable Energy, as well as the ongoing imperative of improved Power Management in general, are creating opportunities for novel semiconductor materials, such as Silicon Carbide (SiC) and Gallium Arsenide (GaS), which have better characteristics for dealing with higher voltage, higher temperature, and higher switching-frequency applications.

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Geopolitics

Global political tensions and disruptions are influencing the semiconductor industry structure and dynamics more than ever as governments around the world increasingly recognise that the industry is a vital national security asset. Policies designed to mitigate the risks associated with globalization (such as supply chain disruption) are being rolled out, for example:

- Reshoring – building up domestic semiconductor design and manufacturing capabilities
- Technology Transfer – restricting foreign access to semiconductor technology know-how
- Tariffs and Trade – applying financial and/or administrative levies to semiconductor-related goods and services originating overseas

Regulatory Environment

In recent years, the global trend in developed economies has been towards "big government" and a tighter regulatory environment. Initiatives such as "DEI" (Diversity, Equity and Inclusion and "ESG" (Environmental, Social and Governance) and "Net Zero", load up the industry with increased compliance costs and divert funds away from investment in productivity-enhancing innovations. In the unfolding era of AI, as semiconductors are becoming an even more important enabling technology, helping to deliver solutions to problems across society, environmental regulations that are too onerous and lack of access to cheap and reliable sources of energy are of particular concern to semiconductor industry leaders.

Planned Deliverables

- Market Data - quarterly market sizing & five-year forecast (up to 4x per year)
- Decision Maker Survey - bi-annual IT Decision Maker survey (2x per year)
- Analyst Insight - a monthly report on critical issues in the industry (every month)
- State of the Market - a quarterly report on technology, markets, products, and vendors (once per quarter)
- Market Landscape - an annual report on product segments and representative vendors, deployment types, buying personas, and use cases
- Inquiry sessions - 30-minute one-on-one time with our expert analysts to explore your challenges and opportunities
- Advisory Days - half-day virtual or full-day onsite strategy session with key stakeholders

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