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Is AI the tech theme of the decade?

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With improving visibility for AI infrastructure spending, we've raised our revenue estimate for the industry by 40%. In CIO, we believe AI could be one of the fastest-growing and largest segments within global tech and arguably the “tech theme of the decade,” as we don’t see similar growth profiles elsewhere in tech.

Last year, we introduced our AI estimates, expecting the industry’s revenues to grow from USD 28bn in 2022 to USD 300bn in 2027—a 61% CAGR. However, with improving visibility for AI infrastructure spending that should extend beyond the initial training and inferencing boom and amid broadening demand for AI applications and models, we have raised our revenue estimate for the industry by 40%. We now expect AI industry revenues to grow 15x between 2022 and 2027, expanding from USD 28bn in 2022 to USD 420bn in 2027—a 72% CAGR.

The strong upward revision in our revenue estimate is consistent with our playbook on the computing cycle, where investors have rewarded every cycle with strong returns thanks to solid growth prospects. The computing cycle has evolved in such a way that each one has lasted for at least 10–15 years, with a significant 10x or so expansion in annual shipments. Annual shipments for mainframes were only about 1mn units until the 1980s, when they ballooned to around 10mn as microcomputers became mainstream computing devices. This was followed by a sharp increase during the PC era, when annual PC shipments shot up to more than 100mn units, with PC shipments eventually reaching an annual run-rate of nearly 300mn. Smart devices, which include smartphones and tablet PCs, crossed 1bn shipments during the mid-2010s. Currently, annual shipments are close to 1.5bn units. With AI, we expect this 10x growth trend to continue, with annual AI chatbots and applications potentially crossing 10bn units.

Read the full report for a detailed breakdown of our bottom-up assumptions behind the strong upward revision. Even on a top-down basis, our forecast of USD 420bn in revenues in 2027 is conservative at 0.3–0.4% of global GDP given the significant cost savings and new business opportunities AI offers. Meanwhile, our confidence in strong end-demand for AI stems from improving visibility for the infrastructure segment and broadening demand for AI applications and models.

AI infrastructure mainly includes spending to train and run the AI models and applications. These include spending on computing, like graphics processing units (GPUs) and other chips, and other infrastructure spending on hardware, including networking, edge AI devices, etc. On a consolidated basis, we expect the AI infrastructure segment to grow from USD 25.8bn in 2022 to USD 195bn in 2027—a 50% CAGR, much higher than our previous estimate of a 38% CAGR. The stronger outlook is also consistent with the guidance from leading AI suppliers in Asia, where we see additional drivers like GPU cloud, AI edge-computing, etc. on top of strong demand for training and inferencing.

Meanwhile, we believe the recent strong rollouts of AI applications and models underscore the view that the App Store for the AI industry has arrived. Many industry pundits claim ChatGPT is the "iPhone moment" for AI, stimulating strong user adoption. However, there are many bears out there who are still not convinced about AI monetization, and they are waiting for tangible evidence. The availability of many AI products like copilots, AI vision, etc. since 4Q23 gives us more confidence about AI monetization. These developments are akin to the "App Store moment" for the smart device industry, which attracted millions of developers to build apps and in turn users to embrace smart devices by replacing traditional PCs and other consumer electronics. Against this backdrop, we believe increased AI applications in the next few months should drive significant user adoption. We now expect the AI applications and models segment to snowball, albeit due to a low base, from USD 2.2bn in 2022 to USD 225bn in 2027—that's more than 100x and a 152% CAGR (versus our previous estimate of 139% CAGR).

What is the best way to position in AI in 2024?

We believe the semiconductor and software industries (with a combined market cap of more than USD 10tr) are the best ways to play the strong and improving visibility for AI. Semiconductors, while cyclical, are well-positioned to benefit from solid near-term demand for AI infrastructure. Meanwhile, software, with broadening AI demand trends from applications and models, is a defensive play, thanks to its strong recurring revenue base. We expect both industries to post strong operating margins—33% for semiconductors and 36% for software—which are significantly above the global IT average of 22% and global average of 16%.

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For more on CIO's revised AI estimates, read the report **TechGPT: Raising AI revenue forecast by 40%**, January 2024.

Watch: CIO Artificial Intelligence video series