

Global Innovation

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The AI revolution – Changing the face of global computing

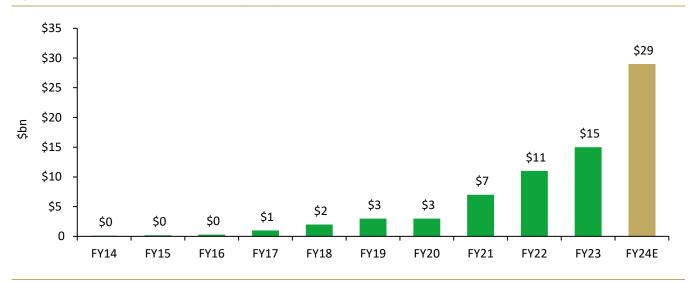
In the past few months, Nvidia's CEO and founder, Jensen Huang, has propelled himself into the league of iconic business trailblazers such as Steve Jobs and Bill Gates. Huang has made it clear: Nvidia isn't merely an entrant in the race to infuse AI into the global computing matrix, it's leading the pack and arguably dominating the field.

The meteoric surge in Nvidia's stock price over this period calls for a deep dive into its fundamentals. This exploration reveals a solid foundation. The company's latest financial forecast, unveiled just two weeks ago, was breath-taking even for the most seasoned industry experts. It didn't just outperform Q1 estimates; it sent shockwaves through the market with an astounding 60% and 100% upward revision respectively of Q2 revenue and earnings.

Alongside this remarkable outlook, Huang underscored the vast potential of the data centre market—a \$300 billion opportunity primed for Nvidia's state-of-the-art, cost-effective, and blisteringly powerful computing chips and architecture. Nvidia's bold undertaking to replace the outdated CPU-driven infrastructure with its advanced computing stack will be a decade-long endeavour. As chart 1 shows, Nvidia is still in the early days of this journey, with the company expected to achieve \$29 billion of revenue from the data centre in 2024, just 10% of the overall potential.



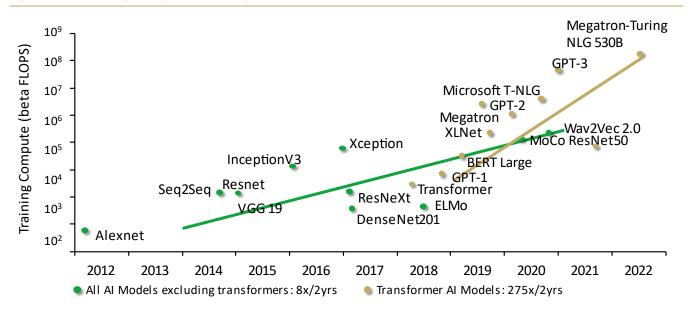
Figure 1: Nvidia Datacentre Revenues (£bn)



Source: Nvidia and Liontrust (2023)

Why overhaul society's high-level computing infrastructure? Firstly, Moore's law — the doubling in computing performance historically achieved every 18 months under the existing CPU-based infrastructure has recently flatlined, rendering the conventional CPU upgrade cycle inadequate for propelling growth. Secondly, the age of AI is finally and indisputably here, with adoption accelerating across the entire economy, and the huge computational requirements for AI model training necessitate much more powerful computing, indeed nothing less than a paradigm shift. Chart 2 illustrates the accelerating computational demands of AI models in recent years (expressed in petaFLOPS — a measure of the speed at which calculations are made). At this critical juncture, only Nvidia can meet them.

Figure 2: AI Training computational requirements



Source: Nvidia (2022)

Why not Intel or AMD? By their own admission, both of these giants are finding it more than challenging to surmount the barrier that Nvidia's software offering, CUDA, presents. Over the past decade, Huang has focused on building a robust software ecosystem that now boasts four million developers around the world. This enormous army of innovators create software libraries that enable Nvidia's cutting-edge chips (the latest being the H100 Hopper) to be harnessed in industries across the whole economy, from life sciences to aeronautics to customer service help desks. Indeed, given this ecosystem, Nvidia's leadership in supplying the tools for AI computing may



by now be unassailable. This convergence of hardware and software has led Huang to liken it to the "iPhone moment"—a juncture where the supply of technology meets massive broad-based demand and creates an unanticipated revolution.

But Huang's vision extends further. The "Nvidia full stack platform with \$1tn of opportunity" section in Nvidia's 2022 Investor Day revealed the \$300 billion Data Centre total addressable market (TAM) that Nvidia is now executing on. Further growth drivers over the next decade include the Automotive sector (\$300 billion), expected to begin to make a significant financial impact next year; the Gaming industry (\$100 billion), NVIDIA's heritage segment poised to rebound from a tough spell; and the emerging AI Enterprise Software opportunity (\$150 billion), highlighted by alliances with Microsoft, Service Now, Adobe, and others. The Omniverse represents yet another long-term prospect to watch.

What we are witnessing today is the fruition of a decade's meticulous strategising, and it is just getting started. Nvidia has adeptly positioned itself to capitalise on these promising markets. With no rival on the horizon, it appears the goal is there for the taking.

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