

BUY
\$143.85
+52%
exit
\$223

NVIDIA | NYSE:NVDA

Once-in-a-Lifetime | Generational Opportunity

NVIDIA is the definitive AI platform play, commanding 80–95% share of AI accelerator market empowered by ubiquitous software moat (CUDA, 6M+ developers). Yet stock trades at just **0.52x PEG vs 1.9x** for peers (Fig 8-1). A rare asymmetry with volatility as opportunity to **average up into weakness**.

Once-in-a-lifetime paradigm shift in compute and automation with AI on track to exceed **\$1 trn (trn) TAM by 2026F** (fig 2-1) NVIDIA is not just participating, it is defining the rules of engagement.

Consensus is behind the curve as it expects Nvidia market share peak in 2025 @ 75% & downtrend to below 50% (2026) with growth decelerating to +50% (vs +147%yoy FY25, below industry forecasts +80%) and implying margin compression.

CEO Jensen Huang embodies NVIDIA's innovation DNA and its concentration risk. His track record is generational: **+3,500x TSR** since IPO, navigating near-death cycles with bold reinvention. At 62, his commitment likely endures through the next major leg or NVIDIA reaches **\$10 trn market cap**. That said, Nvidia's deep executive bench (section 5) & operational continuity across functions should assuage succession concerns.

Valuation dislocation remains stark. Our 6Σ intrinsic model values NVIDIA at **\$223/share**, assuming a conservative **0.8x exit PEG**. Near-term macro risks (Middle East tensions, U.S. tariffs, fiscal gridlock) continue to suppress sentiment but also create strategic accumulation windows, with the stock trading in a **\$93–\$140 band** since Jun'24. Much like the PC (Microsoft 25+yrs domination), Internet Infrastructure (Cisco Systems 15+yrs), Mobile Phone revolution (Apple, 20+years), Nvidia-AI is on the cusp of a historic inflection point.

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Mkt cap: \$2.83 trn [\$145 20Jun25]

Intrinsic Value: \$223

1m advt: \$25bn

United States

Information Technology

Semiconductors & Semiconductor Equipment

6Σ Forecast	12/24	12/25F	12/26F	12/27F
Revenue \$mil	60,920	130,500	212,50	279,262
Consensus Rev\$m			199,670	249,400
EBIT \$mil	33,210	82,490	134,636	183,296
Net Income \$mil	29,760	72,880	114,477	155,725
EPS (\$)	1.19	2.94	4.69	6.50
Consensus EPS (\$)			4.29	5.74
P/E (x)	120.7	48.9	30.6	22.1
PE/G			0.51	0.61
Rule 95 (%)	180	177	126	97
ROAE (%)	91	119	84	58
Target PE/G			.80	1.00
Intrinsic Value			223	251

Industry Valuation	PE 2025F	PE 2026F	PEG 2025F	PEG 2026F
Nvidia	30.7	22.1	0.5	0.6
AMD	32.1	22.4	1.6	0.5
Intel	70.3	26.0	0.2	0.2
ARM Holdings	81.5	60.4	8.8	1.8
Qualcomm	12.9	12.7	0.8	10.2
Broadcom	37.9	30.9	1.1	1.4
Infineon (EUR)	24.1	17.5	-1.0	0.5
S&P	21.7	na	2.9	na
Avg ex Nvidia	43.1	28.3	1.9	2.4



Ratios & Valuations

	1/24	1/25	1/26F	1/27F
PE (x)	120.9	49.0	30.7	22.1
PE/G		0.34	0.52	0.61
Target PE/G			0.80	1.00
Intrinsic Value			223	251
Mkt Cap/Sales (x)	59	27	17	12
Rule 95 (%)	180	177	126	97
Div Yield (%)	0.01	0.02	0.03	0.03
Capital Return (%)	0.72	1.44	1.75	2.09
FCF yield (%)	0.72	1.21	4.31	8.68
P/BVPS (x)	83	44	18	10
ROAE (%)	91	119	84	58

Revenue/staff (\$mil)	2.1	3.6	4.9	5.4
Debt/EBIT (x)	0.33	0.12	0.07	0.05
Interest cover (x)	128	330	562	868
Debt/Equity (%)	25.7	12.9	5.2	2.6

Growth & Margins (%)

	1/24	1/25	1/26F	1/27F
Total revenue growth	126	114	63	31
Operating Profit growth	681	147	63	36
EPS growth	600	147	60	39
DPS growth	1	50	33	25
Gross margin	73	75	77	80
EBIT margin	54	62	63	66

Income Statement \$mil

	1/24	1/25	1/26F	1/27F
Revenue	60,920	130,500	212,500	279,262
Cost of goods sold	(16,621)	(32,639)	(47,833)	(56,575)
SG&A	(2,654)	(3,491)	(4,531)	(5,880)
R&D	(8,675)	(12,914)	(25,500)	(33,511)
EBITDA	5,720	34,720	80,963	102,210
Depn & amortization	(1,508)	(1,864)	(2,423)	(2,908)
EBIT	33,210	82,490	134,636	183,296
Net int income/(expense)	609	1,539	2,462	3,201
Pre-tax profit	33,818	84,026	137,099	186,497
tax rate (%)	12.0	13.3	16.5	16.5
Taxes	(4,058)	(11,146)	(22,621)	(30,772)
Net Profit	29,760	72,880	114,477	155,725

EPS (basic) \$	1.21	2.97	4.74	6.57
EPS (FD) \$	1.19	2.94	4.69	6.50
Consensus EPS			4.29	5.74
DPS \$	0.02	0.03	0.04	0.05
payout ratio (%)	1.68	1.02	0.85	0.77
Wt avg sh o/s (basic) mil	24,690	24,555	24,170	23,709
Wt avg sh o/s (FD) mil	24,940	24,804	24,420	23,959
Share Buy-back \$mil	25,000	50,000	60,000	70,000
# staff year-end	29,600	36,000	43,200	51,840

Balance Sheet \$mil

	1/24	1/25	1/26F	1/27F
Cash & ST invest	25,984	43,210	136,986	271,726
Accounts receivable	9,999	23,065	28,831	40,364
Inventory	5,282	10,080	15,120	19,656
Other current assets	3,080	3,771	4,525	4,751
Total current assets	44,345	80,126	185,463	336,497
Net PP&E	5,260	8,076	10,499	11,024
Net intangibles	5,542	5,995	6,345	6,695
Trademarks/Patents	449	449	471	495
Total investments	1,546	3,387	6,097	7,316
Other long-term assets	9,037	14,016	14,717	16,924
Total assets	65,730	111,600	223,592	378,951

Accounts payable	7,775	15,321	18,385	21,143
Short-term debt	1,478	288	1,000	200
Current lease liabilities	228	288	330	355
Other current liabilities	1,150	2,150	1,290	1,061
Total current liabilities	10,631	18,047	21,005	22,759
Long-term debt	9,578	9,982	8,982	8,782
Non-current lease liabilities	1,119	1,519	1,174	919
Total long-term liabilities	12,119	14,227	10,156	9,701
Total liabilities	22,750	32,270	31,161	32,460
Total Debt	11,060	10,270	9,982	8,982
Preferred shares	-	-	-	-
Equity	42,980	79,330	192,431	346,491
Retained Earnings	29,817	68,038	181,539	336,066
Total liabilities & equity	65,730	111,600	223,592	378,951
BVPS (\$)	1.74	3.24	8.0	14.6

CashFlow \$mil

	1/24	1/25	1/26F	1/27F
CF operating	29,760	72,880	80,963	102,210
Net change working capital	(4,236)	(10,604)	(7,742)	(13,311)
Others	2,566	1,813	4,200	5,000
CF from Operations	28,090	64,089	77,420	93,899
Capital Expenditure	(10,359)	(19,436)	(11,833)	(7,952)
Acquisitions / (Divestitures)	(83)	(1,007)	(1,200)	(1,200)
Others	(124)	22		
CF from Investing	(10,566)	(20,421)	(13,033)	(9,152)
Dividends paid	(395)	(834)	(967)	(1,185)
Share issue /(repurchased)	(11,913)	(40,146)	(48,000)	(56,000)
Debt issuance	(1,250)	(1,250)	(1,000)	(200)
Others	(75)	(129)		
CF from Financing	(13,633)	(42,359)	(49,967)	(57,385)
Net CF	3,891	1,309	14,420	27,362
Free CF	25,984	43,210	151,407	299,088
FCF per shr (basic) \$	1.0	1.7	6.2	12.5

Source: Company data, 6σ estimates

EXECUTIVE SUMMARY

Nvidia represents a generational investment opportunity trading at a substantial discount to intrinsic value, the primary beneficiary and highest leverage into the largest technology transformation since the internet. With estimated **intrinsic value of \$223** per share (55% potential upside), NVDA offers direct exposure to a \$3.8 trn (trn) AI infrastructure (*fig 2-1*) buildout, with CUDA [18yrs \$60bn (bn)] ecosystem solidifying its dominant market share (>90% data centre). 1Q26 results saw robust 78% gross margins, 94% revenue growth driven by \$39bn data center revenue. This trend is likely to be supported by the top 4 Cloud providers with Goldman Sachs estimating +84% yoy growth to \$405bn (*fig 2-3*). Similar to Edison's electrical infrastructure or Microsoft's PC dominance, NVDA is the cheapest AI industry play currently trading at 0.52 PEG (*fig 8-6, pg 61*).

Nvidia's **impenetrable competitive moat** was built through **18 years and \$60+ bn in CUDA ecosystem development**, creating switching costs comparable to Microsoft Office's dominance in productivity software. Unlike previous technology cycles, AI represents fundamental infrastructure: an "AI exoskeleton" for the global economy, driving sustained capital expenditure across enterprises, cloud providers, and sovereign nations.

Currently, Large Language Models (LLMs) dominating newsflow on AI but we believe emerging new markets (*fig 3-3*) in Autonomous driving (**BYD, Xpeng, Tesla**), followed by Cybersecurity AI (Fortinet, Cloud Guard), NextGen AI defence systems (Palantir), Advanced Medical AI (Intuitive Surgical) applications are likely to foster new and significant demand for Nvidia's compute chip & software technology.

While overall global AI infrastructure Total Addressable Market (TAM) is expected to expand from \$368bn to \$707bn by 2026F (*fig 3-2*), in light of these potential new AI industry forays, we feel that the implied +38% compounded annual growth rate (CAGR) maybe too conservative.

Current consensus forecast implies Nvidia losing market share over the next 18months (*fig 2-3*), to suffer significantly slower growth momentum and margin contraction going into FY27F.

1Q26 results saw Nvidia maintaining a commanding 80-95% market share in AI training and inference chips. Cloud providers alone committed over \$240 bn in 2024 capital expenditure with projects like Microsoft and OpenAI's \$500 bn Project Stargate demonstrating the scale of infrastructure investment required. We believe Nvidia's dominating grip on AI industry will continue at least over the medium term, with **high upside earnings risks (vs consensus)**.

At current price of \$144, investors are getting free Nvidia Patent Portfolio optionality (section 7). IP ensures market share integrity: We delve into Nvidia's acquisition strategy, and the corollary impact of acquiring a sizable patent portfolio. 6Σ estimate Nvidia's Patent portfolio's NPV circa \$44-60bn. While Nvidia's IP provides direct economic benefits (similar to Pharmaceuticals) on Patent licensing fees, royalties, etc, the larger intangible benefit is the protection of Nvidia's lead in AI, essentially giving Nvidia exclusive premium product pricing capabilities much like Drug companies before expiration of patents, offering (potential) competitors more economical solution to work with/licence Nvidia's IP rights.

Nvidia represents a rare convergence of technological leadership, market expansion, and reasonable valuation during a generational technology transformation. **The \$223 target price assumes PEG multiple expansion** to 0.8 (from current 0.52) while the company executes on the largest infrastructure buildout in computing history.

Like Microsoft's PC (*section 3.2, fig 3-5*), Cisco systems internet infrastructure, Apple's iPhone revolution or Tesla's electric vehicle transformation, AI infrastructure represents a foundational shift requiring decades of deployment and continuous innovation.

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2. Overview : GENERATIONAL AI OPPORTUNITY

Nvidia (NVDA) represents a generational investment opportunity positioned as the primary beneficiary of the largest technology transformation since the internet. NVIDIA has transformed from a graphics chip vendor into the world's preeminent AI computing infrastructure company, dominating the global market for AI accelerators and full-stack computing platforms. The company's 1Q2026 financials reflect sustained explosive growth, driven by unprecedented demand for Artificial Intelligence (AI) hardware and software, with Data Center now contributing nearly 90% of total revenue. CEO Jensen HUANG has transformed Nvidia, diversified its products, de-risked company by radically shortening its production life cycle and adopting forward-looking design architecture which facilitate future hardware upgrade plug-ins, pursued strategic acquisition growth (17) and created an ecosystem lock-in for its new markets (section 2-3-1 Autonomous Driving, 2-3-3 Enterprise AI Software). Nvidia is well positioned to capture significant value from AI market growth (fig 2-1 pg 7) from \$1.2 trn (2025) to \$3.8 trn (2030). We are able to quantify Nvidia's Total Addressable Market (TAM) by using the top 4 cloud providers' AI capex as proxy (figure 2-2) and estimate its relative market shares (figure 2-3).

2-1 Biz model, business lines, risk factors

NVIDIA's business model is a full-stack platform, monetizing hardware, software, and cloud services, with an ecosystem-centric approach that drives high-margin, recurring revenue and deep customer lock-in.

Nvidia started off as a leading developer of graphics processing units (GPUs), to enhance the gaming experience on PCs and console platforms by taking workload off the Central Processing Unit (CPU). Despite its technological edge over its competitors (superior hardware with compatible/backward software adaptation for existing & older generation games) amongst gaming industry developers, its business model carries substantial risks with short product revenue life cycle (circa 9-12mths) vs long development cycle (including R&D) or Time to Market circa 2-3yrs. Despite trailblazing the industry with leading edge products, innovations and disciplined marketing launches, Nvidia nevertheless face industry-wide volatility and remains 1 product failure away from imminent demise.

De-risking Graphics Industry Life-cycle

CEO JH and team decided to reorganize its entire company to truncate and reduce product development to a more manageable 9-12mths by enforcing highly scalable chip architecture discipline for all new designs, allowing significant feature enhancements that can be added/removed without need for chip architectural re-design/overhaul. In short, Nvidia was able to leverage on this model by using same/similar architecture for multiple product launches.

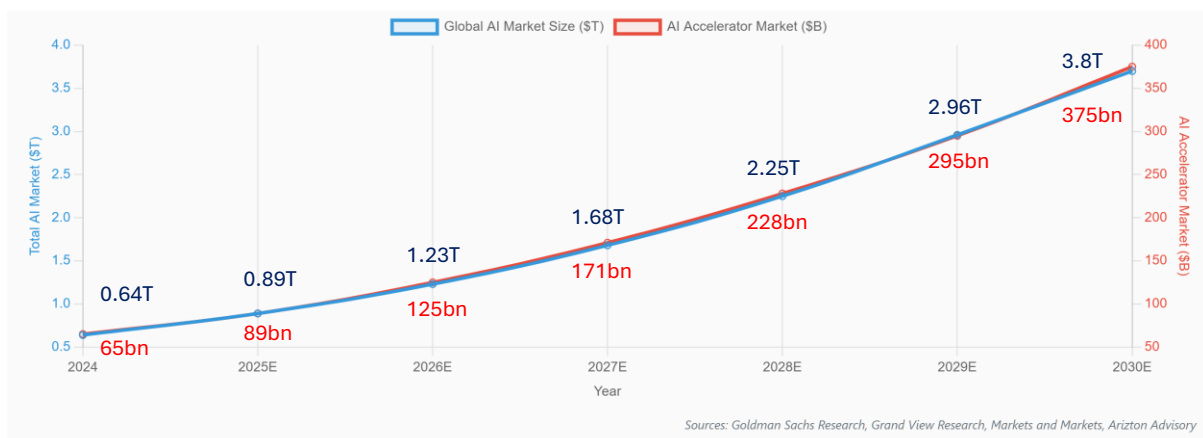
Parallel Computing, Compute Unified Device Architecture (CUDA)

Having established technological superiority in GPU hardware, NVIDIA recognized the potential of GPUs for broader computational tasks beyond graphics. They saw an opportunity to transform GPUs into versatile computing platforms. CEO JH and team embarked on strategic decision to transformed GPUs into a programmable platform, rivalling CPUs on the motherboard. The GPU's architecture initially designed for graphics, could be leveraged for general-purpose computing due to their inherent parallel processing capabilities with numerous processing cores. **CUDA Development (since early 2000)** became the first commercially available platform for general-purpose computing on GPUs. NVIDIA made CUDA a central part of its hardware and software ecosystem, embedding it deeply into its GPUs and developing tools and libraries to support it. CUDA did not just revolutionized how GPUs are used, it enabled them to tackle complex scientific simulations, data processing, and, more recently, AI and deep learning tasks.

The AI infrastructure imperative drives unprecedented demand

The global AI market is experiencing explosive expansion from \$279-638 bn in 2024 to a projected **\$1.8-3.8 trn by 2030 (see figure: Global AI market & Accelerator Growth Projections)**, representing a 19-36% compound annual growth rate (fig 2-1). This growth translates directly into data center infrastructure demands, with the GPU accelerator market growing at 21-28% CAGR to reach \$295-500 bn by 2030.

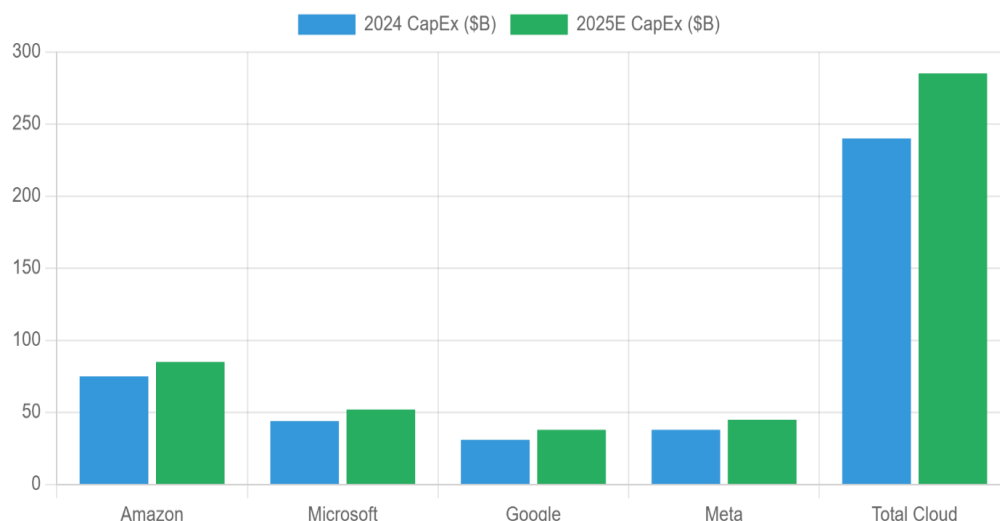
Figure 2-1: Global AI Market & Accelerator Growth Projections (2024-2030)



- Global AI market expanding from \$638 bn (2024) to **\$3.7trn by 2030**.
- **Demand Visibility:** Multi-year AI infrastructure deployment cycle provides revenue visibility
- AI accelerator market (circa 10% of AI industry) growing **21-28% CAGR** to reach \$375B by 2030.
- Cloud providers committed **\$240B+ CapEx in 2024** for AI infrastructure

Nvidia maintains commanding 80-95% market share in AI training and inference chips, capturing the majority of this expansion. Cloud providers alone committed over \$240 bn in 2024 capital expenditure, with projects like Microsoft and OpenAI's \$500 bn Project Stargate demonstrating the scale of infrastructure investment required. This represents not cyclical demand but structural transformation—enterprises are building permanent AI capabilities requiring continuous hardware refreshment and expansion.

Figure 2-2: Cloud Provider Capex for AI Infrastructure



AMGM
\$405bn¹
FY26F

Cloud Provider	2024 CapEx	2025E CapEx	AI/GPU Portion	NVDA Exposure
Amazon (AWS)	\$75.0B	\$85.0B	~40%	High
Microsoft (Azure)	\$44.0B	\$52.0B	~45%	Very High
Google Cloud	\$31.0B	\$38.0B	~35%	High
Meta	\$38.0B	\$45.0B	~50%	Very High
Total Big 4	2024 \$188 bn	2025 \$220 bn	~42%	High
All Cloud Providers	\$240 bn	\$285 bn	~40%	High

2026F
\$405 bn¹
Est \$521bn²

Source: Company data (1)The outlook for AI adoption as advancements in the technology accelerate 9Jun25: Goldman Sachs (2)6Σ Research

GS Research latest estimates for AI industry to hit \$405 bn¹ spending by the above 4 Cloud Providers. We extrapolate the 47% CAGR (2024-2026) to obtain 2027F estimate of \$521bn (fig 2-3). Using these numbers as proxy for AI Total Addressable Market (TAM), we were able to configure a simple market share analyses based on Nvidia’s revenues.

Figure 2-3: Nvidia’s revenues and estimated market share of TAM Cloud Providers

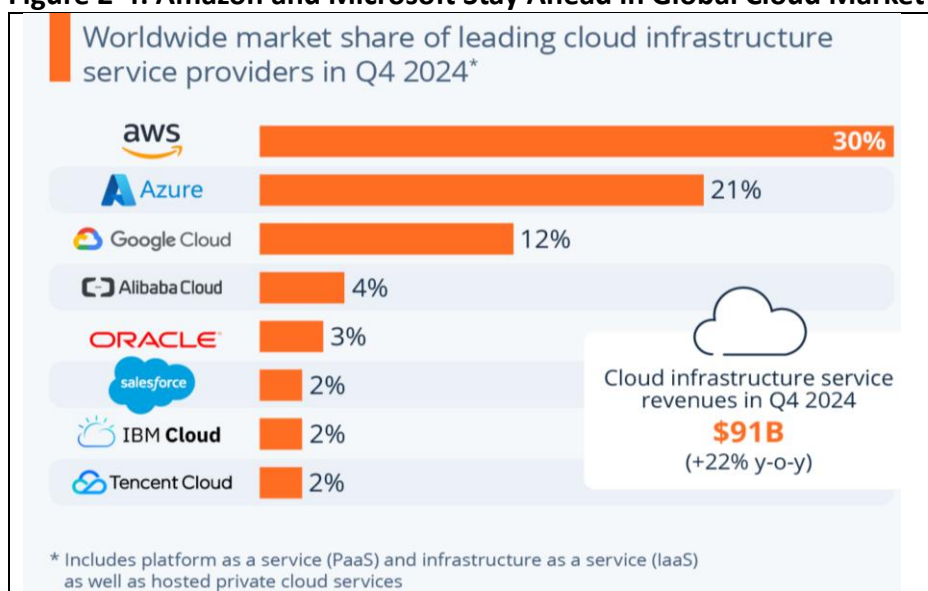
		\$ bn	2024	2025F	2026F	25/24	26/25
a	TOP 4		188	220	405	17%	84%
b	Market		240	285	521		83%
c = b/a	Top 4/Market		78.3%	77.2%	77.8%		
		\$ mil	1/25	1/26F	1/27F		
d	Nvidia Revenues		130,500	212,500	279,262	63%	31%
e = d/a	% of Top 4		69%	97%	69%		
f = d/b	% of Market		54%	75%	54%		
g	Consensus Revenue			199,670	249,400	53%	25%
h = g/a	% of Top 4			91%	62%		
i = g/b	% of Market			70%	48%		

Source: Goldman Sachs, Company data, 6Σ Research

Figure 2-3 shows the relative market shares (row e and f) of Nvidia’s reported revenues (row d) vs the AI Capex spend by the TOP 4 Cloud providers (row a) and also the wider industry (row b). Based on management guidance for 2Q26 and figure 2-2 anticipated +84% AI capex ramp-up this year, we adjusted Nvidia’s FY26F revenue forecasts to reflect a stronger 2H26F (+50% HoH) for FY26F (+60% YoY) and FY27F is assumed to grow (+30%).

Consensus earnings forecasts FY26F of \$199.6bn implies unchanged growth rates 1H26F vs 2H26F, and as percentage market share proxy of TOP4 (row h) and wider market (row i) in figure 2-3, it shows drastic market share contraction at least 10% points (red highlights) vs 2025 (yellow highlights). Note there are other new mega Hyperscalers (xAI Colossus, Lambda Labs) not captured in the TOP 4 collective in figure 2-3.

Figure 2-4: Amazon and Microsoft Stay Ahead in Global Cloud Market



Source: Synergy Research

Figure 2-4 shows in Q4 2024, global cloud infrastructure service spending grew \$17 bn or 22 percent compared to the fourth quarter of 2024, bringing total spending to \$91 bn for the

three months ended December 31, 2024. Looking at the full year 2024, cloud infrastructure service revenues climbed to \$330 bn, explaining why the market is so fiercely contested. Despite its size, the cloud market is still growing strongly, with year-over-year growth even re-accelerating in 2024.

Figure 2-5: AI Accelerator Market Share 2024 and Gross Margins of AI suppliers

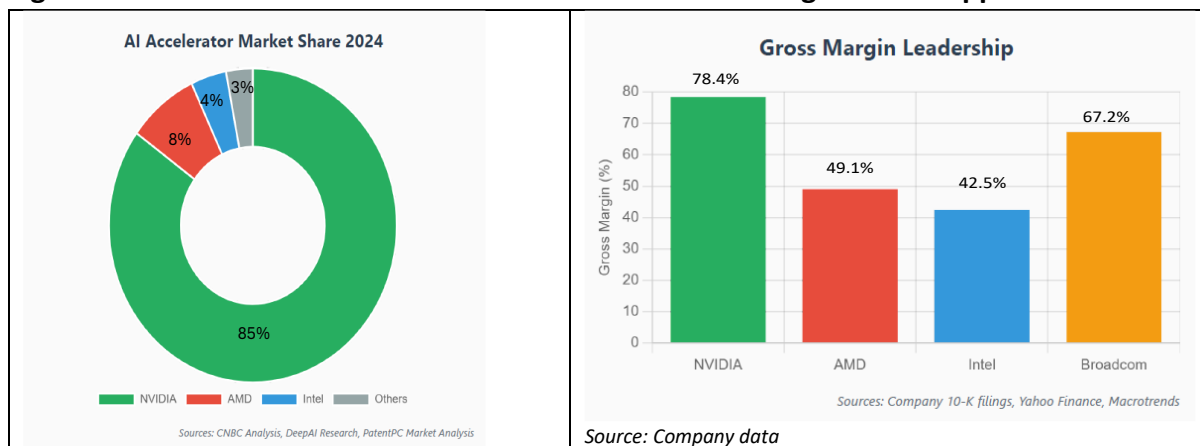


Figure 2-5 shows NVIDIA’s FY2025 relative composition AI Accelerator industry with **85% market share** in AI training and inference chips. This is made possible because of its **CUDA ecosystem moat which spans** 18 years of development, over \$60 bn investment, and currently has 6mil of developers. All these resulted in its strong 78.4% gross margin vs 49% AMD and 43% Intel.

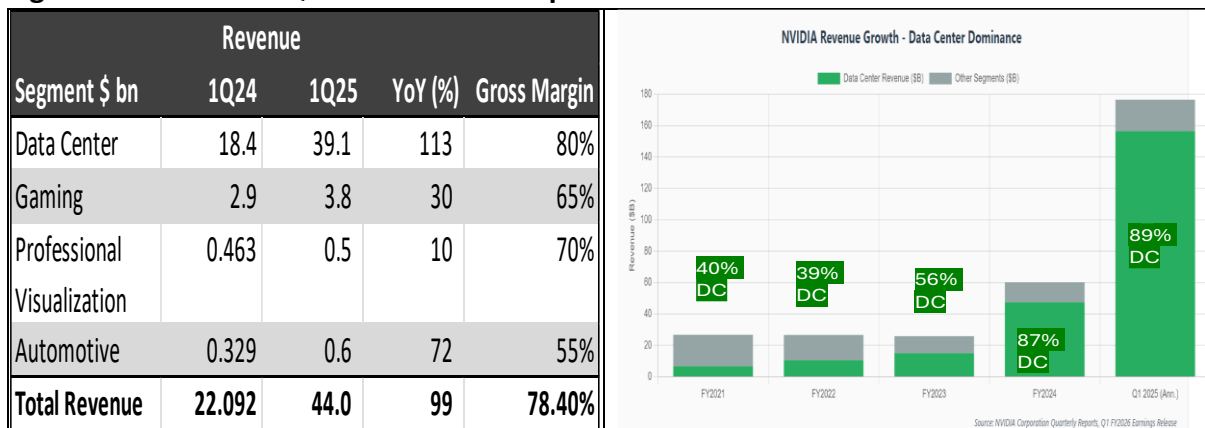
Figure 2-6: AI Accelerator products FY25

Company	Market Share (AI Accelerators)	Key Products	Ecosystem Strength
NVIDIA	80-90%	H100, Blackwell, CUDA	Unmatched (CUDA, NGC)
AMD	~10%	MI300, EPYC	ROCm (growing)
Intel	<5%	Gaudi2/3, Xeon	oneAPI (limited)
Google	<5%	TPU v4/v5	TensorFlow (internal)
AWS	<5%	Trainium, Inferentia	AWS-only
Startups	<1%	Cerebras, Groq, etc.	Niche

Source: Company data

Nvidia’s Q1 2026 results validated this upward trajectory with **\$44.1 bn revenue (+69% yoy)** with data center contributing \$39.1 bn (+113% yoy) of revenue (89% total revenue). Mgt guidance for 2Q26F at \$45bn implies ongoing growth momentum despite Trump’s tariff interruption, CHINA ban and Middle East conflict.

Figure 2-7: Nvidia’s 1Q2026 revenue composition



Despite \$15 bn in lost revenue from China export restrictions, demand from other regions more than compensated, with management guidance of \$45 bn for Q2 2025 indicating sustained momentum.

Figure 2-8: Consensus Risks

Risk Factor	Probability	Impact	Risk Level	Mitigation Factors	Timeline
China Export Restrictions	High	High	Critical	Global demand growth, product diversification	Immediate
AMD/Intel Competition	Medium	Medium	Moderate	CUDA ecosystem moat, performance leadership	2-3 years
Custom Cloud Chips	Medium	Medium	Moderate	Software ecosystem, switching costs	3-5 years
AI Demand Slowdown	Low	High	Moderate	Infrastructure nature of AI, multiple verticals	2-4 years
Valuation Compression	Medium	Medium	Moderate	Earnings growth, reasonable multiples	Near-term

Sources: CNBC Risk Analysis, Axios Policy Reports, Company Risk Disclosures

Figure 2-8 shows the collective tangible risks to Nvidia’s growth momentum, much of it echoed by Market commentators with increasing visibility from competition. However, we take comfort from Nvidia’s business model that has created sufficiently high technical and switching cost barriers as to mitigate most of these topical, but likely low probability risks.

2-1-1 CUDA: creating an impenetrable competitive fortress

Nvidia's true competitive advantage lies not in hardware alone but in the **CUDA software ecosystem developed over 18 years with cumulative \$60+ bn investment (Figure 2-9)**. This platform supports mils of developers globally and exhibits network effects reminiscent of Microsoft's operating system dominance: the more developers who optimize for CUDA, the stronger its performance advantages become.

Figure 2-9: CUDA: The Microsoft Office of AI Computing

Platform Comparison	NVIDIA CUDA	AMD ROCm	Intel oneAPI	Cloud Custom
Development Time	18 years	8 years	5 years	3-5 years
R&D Investment	\$60B+	\$8B+	\$12B+	\$5-15B each
Developer Adoption	4M+ developers	50K+ developers	100K+ developers	Internal only
Framework Support	Full optimization	Limited support	Growing support	Custom frameworks
Switching Costs	Very High	Medium	Medium	Low (captive)

Sources: Modular AI Research, EE Times Europe, Company Developer Portals, Wccftech Analysis

Network Effects

The more developers optimize for CUDA, the stronger NVIDIA's competitive advantage becomes: creating an "impenetrable fortress" against competitors.

CUDA's moat characteristics mirror Edison's light bulb ecosystem advantage (section 3-2): while competitors can build alternative bulbs, the entire electrical infrastructure assumes Edison's standard. Similarly, every major AI framework (PyTorch, TensorFlow) optimizes primarily for CUDA, creating bn-dollar switching costs for enterprises already invested in AI infrastructure. Chinese technology giants resist switching to domestic alternatives despite geopolitical pressure, demonstrating CUDA's technical superiority and ecosystem lock-in effects.

The competitive landscape validates this moat strength. AMD, Intel, and cloud provider custom chips offer niche advantages but lack CUDA's comprehensive ecosystem. **Nvidia's 78% gross margins** (versus AMD's 49% and Intel's 35%) reflect pricing power from technological leadership rather than monopolistic behavior—customers pay premiums for superior performance and ecosystem integration.

2-2 Current Business Model

Nvidia's competitive dynamics and market positioning strengths are evident from its:

1. Dominant Market Share: 90% discrete GPU market share in Q3 2024
2. Technology Leadership: First to market with each generation of AI chips
3. Ecosystem Lock-in: CUDA has created massive switching costs
4. Full-Stack Approach: Hardware + software + services integration
5. Customer Relationships: Deep partnerships with all major cloud providers

As we saw with the evolution and growth of Nvidia from a single product company to a portfolio of high-tech hardware and software solutions, Nvidia remains susceptible to:

1. Hyperscaler Competition: Custom chips from AWS, Google, Microsoft pose bigger threat than traditional competitors
2. Supply Constraints: Advanced packaging capacity limits growth
3. Geopolitical Risks: Export restrictions to China affecting ~20% of data center revenue
4. Market Concentration: Heavy dependence on few large customers

It currently operates through four integrated business lines that collectively create a full-stack AI computing platform.

Figure 2-10: NVDA Business lines overview

Business Line	Core Offering	Prime Customers	Downstream Demand	Key Competitors	5–10-Year Drivers
A. Hardware [4]	GPUs, CPUs, Networking, DGX/HGX systems	Hyperscalers, enterprises, research labs, gamers	Data centers, cloud AI, HPC users	AMD Instinct (HPC/AI GPUs); Intel (new Gaudi chips); AWS Trainium, Google TPUs	Generative AI, HPC, robotics, autonomous systems, immersive graphics
B. Software [3]	CUDA-X libraries, frameworks (NeMo, NIM), enterprise suites	AI developers, enterprises, academic HPC	Accelerated AI/data workflows	Intel OneAPI, AMD ROCm, open-source	Developer inertia, AI proliferation, HPC needs
C. Services [3]	DGX Cloud, GeForce NOW, Omniverse	Enterprises, gamers, designers, digital twin teams	AI supercomputing, streaming gaming, simulation	AWS/GCP, CoreWeave; Unity/Unreal/Blender	Metaverse, cloud gaming, SaaS AI compute
D. Ecosystem	SDKs, tools, partnerships	Developers, OEMs, ISVs, academia	Drive hardware/software adoption	Intel/AMD ecosystems, open-source platforms	Ecosystem lock-in, software stack dominance

Source: company, 6Σ estimates

A. HARDWARE (88% of FY2025 Revenue)

A-1. Data Center GPUs & Systems

- **Products:** H100/H200 (Hopper architecture), B100/B200/B300 (Blackwell architecture), Grace CPU, DGX/HGX integrated systems, Spectrum-X networking
- **Market Position:** 90% share in AI accelerators, facing emerging competition from AMD Instinct, Intel Gaudi, and hyperscaler custom chips (AWS Trainium, Google TPUs)
- **Growth Catalysts:** AI market expansion from \$279bn (2024) to \$1.8 trn (2030) at 35.9% CAGR; sovereign AI initiatives; enterprise AI adoption; shift from training to inference workloads
- **Revenue Impact:** Expected to reach \$80.69bn market size by 2030

A-2 Gaming GPUs

- **Products:** GeForce RTX 50 series featuring DLSS 4, Multi Frame Generation, and Reflex 2 technology
- **Market Position:** 83-90% discrete GPU share vs AMD Radeon (10-17%) and Intel Arc (1-2%)
- **Growth Drivers:** 8K gaming adoption, cloud gaming expansion, AI-enhanced features, VR/AR applications
- **Outlook:** Steady growth expected despite data center dominance

A-3 Professional Visualization

- **Products:** Quadro/RTX workstation GPUs, virtual GPU (vGPU) software
- **Target Markets:** AEC firms, media studios, medical imaging, manufacturing design
- **Applications:** CAD/CAM, 3D rendering, virtual production, scientific visualization
- **Growth Catalysts:** Digital twin adoption, AI-enhanced workflows, remote workstation trends

A-4 Automotive Platforms

- **Products:** DRIVE Orin/Thor platforms for autonomous vehicles and AI cockpits
- **Key Partnerships:** Toyota, Hyundai Motor Group, Mercedes-Benz, Volvo, BYD
- **Market Opportunity:** Level 2+ ADAS, fully autonomous vehicles, software-defined vehicles
- **Performance:** 55% revenue growth to \$1.7bn in FY2025

B. SOFTWARE PLATFORM

B-1 CUDA Ecosystem

- **Function:** Foundational parallel computing platform and API
- **Strategic Value:** 6+ mil developers creating massive switching costs
- **Competitive Moat:** Extensive libraries and frameworks lock-in vs Intel OneAPI, AMD ROCm

B-2 AI Enterprise Software

- **Components:** NIM microservices, NeMo LLM framework, RAPIDS analytics, Triton Inference Server
- **Business Model:** Perpetual licenses and annual subscriptions
- **Growth Drivers:** Enterprise AI adoption, production deployment needs, hybrid cloud trends

B-3 Omniverse Platform

- **Applications:** Digital twins, collaborative 3D design, virtual production, robotics simulation
- **Target Industries:** Manufacturing, AEC, game development, film production
- **Market Opportunity:** \$150bn industrial metaverse TAM

C. SERVICES**C-1 DGX Cloud**

- **Offering:** AI-training-as-a-service with full software stack
- **Strategic Importance:** Direct customer relationships, recurring revenue model
- **Investment:** \$9B committed cloud infrastructure spend

C-2 GeForce NOW

- **Position:** Cloud gaming service competing with Xbox Cloud Gaming, PlayStation Now
- **Differentiation:** RTX technology integration, extensive game library

C-3 AI Foundry Services

- **Purpose:** Custom AI application development for enterprises
- **Value Proposition:** Leverages NVIDIA expertise and infrastructure

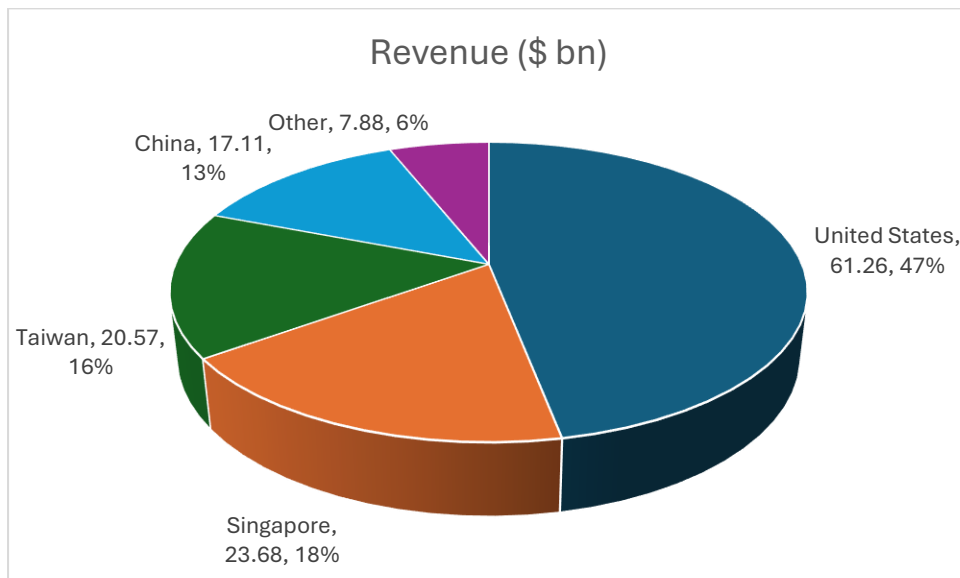
D. ECOSYSTEM & PARTNERSHIPS

- **Components:** Developer tools, SDKs, strategic partnerships
- **Key Relationships:** All major cloud providers, OEMs, ISVs, academic institutions
- **Strategic Value:** Drives hardware/software adoption, creates platform network effects

2-2-1 Geographic Revenue

NVIDIA’s revenue is globally diversified, with the U.S. and Asia-Pacific as dominant contributors. The company is positioned to capture multi-trn dollar TAM as AI infrastructure proliferates across sectors and geographies.

Figure 2-11: Revenue by Geography (FY2025)



Region	Revenue (\$ bn)	% of Total
United States	61.26	47%
Singapore	23.68	18%*
Taiwan	20.57	16%
China	17.11	13%
Other	7.88	6%

*Note: Singapore is primarily an invoicing hub; actual end-demand is distributed globally.

Growth Markets

- Key Growth Geographies: U.S. (cloud/enterprise AI), China (constrained by export controls), Europe (sovereign AI), Middle East (AI labs), Japan, Korea
- Industry TAM Expansion: Tech, finance, healthcare, manufacturing, automotive, telecom, defense, robotics, IoT

2-2-2. Customer Base and Demand Drivers

NVIDIA's customer base is concentrated among hyperscalers and large enterprises, with growing diversity as AI adoption spreads. Customer stickiness is reinforced by CUDA/software lock-in and high switching costs.

Figure 2-12: Major Customers, Mkt Cap, R&D / AI capex

Entity	Segment	Market Cap (\$ bn)	R&D Expenses FY2024 \$bn (YoY)	R&D 2025F \$ bn	AI Budget 2025F \$ bn
Microsoft	Hyperscaler	3.64 trn	29.5 (+8.5%)	30+	80 AI infrastructure
Nvidia	Technology	3.6 trn	12.9 (+48.3%)	10+	Integrated in R&D
Apple	Technology	2.99 trn	31.37 (+4.9%)	33	Apple Intelligence integrated
Amazon	Hyperscaler	2.18 trn	85.6 (Tech & Infra)	90+	105 AI/AWS expansion
Alphabet/Google	Hyperscaler	2.1 trn	49.33 (+8.6%)	52	75 AI infrastructure
Meta	Hyperscaler	1.45 trn	43.87 (+14%)	48	68 AI infrastructure
Tesla	Automotive/Robotics	1.07 trn	3.5	4	10 AI training/ inference
xAI	Enterprise AI	Private (~50)	2	3-5	Full focus on AI
OpenAI	Enterprise AI	Private (~80)	N/A	N/A	7 operational costs
Dell	OEMs/ODMs	81.9	1.5	2	AI server business
HPE	OEMs/ODMs	23.8	1.2	1.5	AI infrastructure
Supermicro	OEMs/ODMs	25.5	0.4	0.5	AI server specialist
Lambda Labs	Hyperscaler	Private (2.5)	0.1	0.15	GPU cloud services
Toyota	Automotive/Robotics	250	10	11	Autonomous driving AI
Mercedes-Benz	Automotive/Robotics	80	8	9	AI-driven vehicles
Sub-total		17.624 trn	279.27	295.15	

Source: company data

Figure 2-12 subtotal FY2025F expected AI budget of \$295.15bn (1.67% of mkt cap) +5.7% YoY. Note that above table excludes Sovereign AI budgets and other AI developers in Automotive like Mobileye, Luminar or industries like Cybersecurity, Defence, Biotech etc

2-3 Product Lines | Revenue Streams

Distilling from Nvidia's business lines, figure 2-13 shows Nvidia revenues by product segments. Where possible, we have included estimates of TAM for baseline comparison/ forecasting. For autonomous driving, we cross-reference key participants and their respective growth projections (Waymo, Mobileye, Luminar Technologies, BYD, Xpeng).

Figure 2-13: Product Lines FY2025

Segment	Revenue (\$bn)	% of Total	YoY	Current TAM \$bn	2030F	Key Drivers
Data Center ¹	115.2	88%	+142%	120	228	AI/LLM demand, Blackwell/Hopper
Gaming ²	11.4	9%	+9%	82	352	GeForce RTX 40/50 series
Pro Visualization ³	1.9	1.4%	+21%	17.5	137	Omniverse, RTX A-series
Automotive ⁴	1.7	1.3%	+55%	5.22	14.92	DRIVE, Jetson, robotics
ADAS				33.5	83.6	
Autonomous Driving				1.8	3.3	
Total	130.5	100%	+114%	224.72	731.92	

Source: 1. 360iresearch, 2. Futuremarketinsights, 3. market.us, 4. Maximizemarketresearch

Figure 2-13a: Interpolating from fig 2-13

Segment	Revenue \$bn	% of Total	YoY	TAM				
				2024	2025F	2026F	2030F	CAGR
Data Center	115.2	88%	142%	120	133.5	148.6	228	11.3%
Gaming	11.4	9%	9%	82	104.5	133.3	352	27.5%
Pro Visualization	1.9	1.40%	21%	17.5	24.7	34.7	137	40.9%
Automotive				5.22	6.2	7.4	14.92	19.1%
ADAS				33.5	39.0	45.4	83.6	16.5%
Autonomous Driving	1.7	1.30%	55%	1.8	2.0	2.2	3.3	10.6%
Total	130.5	100%	114%	224.72	310.0	371.7	731.92	21.8%

Source: 360iresearch, Futuremarketinsights, market.us, Maximizemarketresearch, 6Σ estimates

Based on fig 2-13, we are able to intrapolate near term market size numbers for our TAM analyses (Figure 2-13a), which is summarized in figure 3-2.

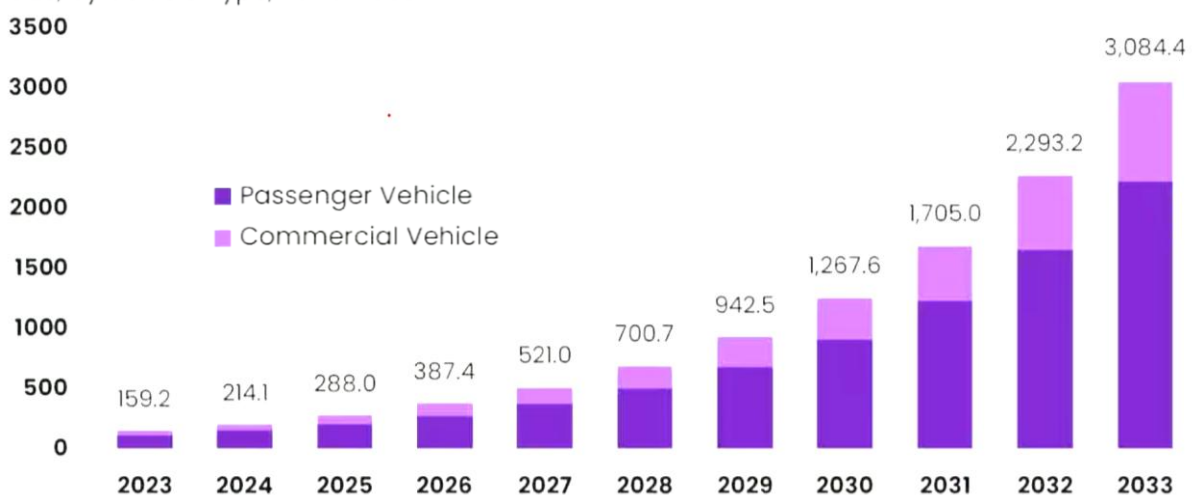
2-3-1 Automotive AI, Advanced Driver Assistance Systems (ADAS), Autonomous Driving

AI industry bifurcates Autonomous Driving

Given market's expectation for tremendous growth in Autonomous Vehicles market (figure 2-14), we segregated Autonomous Vehicles market in 3 distinct AI categories (fig 2-13): Automotive AI, ADAS and Autonomous Driving.

Figure 2-14: Global Autonomous Vehicles Market with 34.5% CAGR

Size, By Vehicle Type, 2024-2033



Source: us.market

- **CAGR of 34.5%** during the forecast period from 2024 to 2033.
- In 2023, **Passenger Vehicles** held a dominant market position in the by-vehicle type segment of the Autonomous Vehicles Market, with a **72.3% share**.
- In 2023, **Level 1** held a dominant market position in the By Level segment of the Autonomous Vehicles Market, with a **48.3% share**.
- In 2023, **Transportation** held a dominant market position in the By Application segment of the Autonomous Vehicles Market, with an **88.3% share**.
- **North America** dominated a **39.4% market share** in 2023 and held **USD 62.7 Bn** in revenue from the Autonomous Vehicles Market.

ADAS components: \$33.5 bn (2024) expected to grow to \$83.6 bn by 2032 at 12.1% CAGR.

These are safety technologies designed to automate, adapt, and enhance vehicle systems for safer and better driving. ADAS represents a crucial stepping stone toward fully autonomous vehicles, sitting between traditional manual driving and complete self-driving cars. These systems use sensors, cameras, radar/lidar to monitor the vehicle's surroundings and assist the driver or take corrective actions.

Common ADAS features include:

- Adaptive Cruise Control (ACC) - automatically adjusts speed to maintain safe following distance
- Lane Departure Warning/Lane Keeping Assist - alerts when drifting out of lanes or actively steers back

- Automatic Emergency Braking (AEB) - detects potential collisions and applies brakes
- Blind Spot Monitoring - warns of vehicles in blind spots
- Parking Assistance - helps with parallel parking or parking in tight spaces
- Traffic Sign Recognition - identifies and displays speed limits and other signs
- Driver Monitoring Systems - tracks driver alertness and fatigue

ADAS levels (figure 2-15) are often classified using the SAE (Society of Automotive Engineers) automation levels:

Figure 2-15: ADAS levels & Estimated Compute requirements

ADAS level	Description	Compute (TOPS*)	Applications / Developments
0	No automation (traditional cars)	Na	- Simple sensor fusion from cameras/radar - Basic pattern recognition for single functions - Mostly real-time edge processing
1	Driver assistance (single automated function like cruise control)	1-10	
2	Partial automation (multiple functions like steering + acceleration)	10-50	- Multiple sensor streams requiring fusion - Real-time object detection and tracking - Path planning for steering/acceleration - Examples: Tesla Autopilot, GM Super Cruise
3	Conditional Automation	50-200	-Complex scene understanding and prediction -Advanced sensor fusion (camera, radar, lidar) -Sophisticated decision-making algorithms -Fallback systems when human takeover needed
4-5	High/Full Automation	200-1000+	- Real-time processing of multiple high-res sensor streams - Complex AI models for perception, prediction, planning - Redundant safety systems - Advanced mapping and localization

Source: NHTSA, Mobileye

Most current production vehicles with ADAS operate at Level 1 or 2, requiring constant driver attention and readiness to take control. ADAS serves as both a safety enhancement for current driving and a testbed for the sensors and algorithms needed for future autonomous vehicles. As shown in figure 2-15, the compute requirements (TOPS*) scale dramatically across ADAS levels, creating significant revenue opportunities for different types of AI infrastructure providers.

*TOPS-Tera Operations Per Second (trn operations per second). A measure of computational throughput specifically for AI/machine learning workloads. TOPS measures how many mathematical operations (typically integer or floating-point calculations) an AI processor can perform per second. For automotive AI, this usually refers to:

- Inference operations: Running trained neural networks in real-time Matrix multiplications: Core operations in deep learning models
- Tensor operations: Multi-dimensional array calculations used in AI
- 1 TOPS = 1 trn operations per second
- A smartphone might have 5-15 TOPS of AI compute
- High-end automotive chips like Nvidia Drive Orin provide ~250 TOPS
- Tesla's FSD computer delivers ~144 TOPS

Figure 2-16: Edge Computing (In-Vehicle) applications / developments

Automotive semiconductor market (Nvidia, Qualcomm, Intel) is projected to reach \$1,267bn by 2030:

1) Cloud/Data Center Infrastructure for Automotive AI: Expected Simulation / Training

* Google's Gemini 1.0 Ultra \$192 mil,

* xAI's Grok-2 \$107 mil

* Tesla's single Autopilot build takes over 70,000 GPU training hours

2) Fleet Management: Real-time coordination of autonomous fleets:

i. Route optimization across thousands of vehicles

ii. Real-time traffic and demand prediction

iii. Continuous learning from fleet data

Source: Mordor Intelligence (2025): \$80.81 bn in 2025, reaching \$137.03 bn by 2030 (11.14% CAGR),

Allied Market Research: \$153.9 bn by 2032, Precedence Research (2022): \$115.78 bn by 2030,

Precedence Research (Updated 2024): \$102.15 bn by 2034

Hybrid Edge-Cloud Models

- Map Updates: High-definition maps requiring cloud processing
- Model Updates: Over the air (OTA) updates for improved AI models
- Collective Learning: Aggregating data from vehicle fleets
- Hardware vendors (Nvidia, AMD, Intel): Selling specialized AI chips
- Cloud providers (AWS, Google Cloud, Azure): Training and simulation workloads
- AI infrastructure companies: Specialized autonomous driving compute platforms
- Software platforms: Tools for managing distributed AI workloads

The shift from Level 2 to Level 4+ (figure 2-10) represents roughly a 10-20x increase in compute requirements, making this one of the largest drivers of AI infrastructure demand outside of large language models (LLMs).

2-3-2 CHINA's growing Autonomous Driving market

We take a look at 2 Chinese leading EV manufacturers (BYD and Xpeng) as indicative guide of where the industry might develop in terms of Autonomous Driving and the parallel uptick in demand for AI workloads and chips. We included significant background information and development history to provide investors with high conviction probabilities that these companies continue to maintain significant profitability over competitors and hence their financial capability to deploy significant resources into AI to maintain their technological edge in the global market.

A. BYD

Global EV Market Dominance

BYD Co. Ltd has fundamentally reshaped the global automotive landscape, surpassing Tesla as the world's largest EV manufacturer with \$107 bn in 2024 revenue versus Tesla's \$97.7 bn. The Chinese automaker's vertically integrated business model, revolutionary battery technology, and aggressive global expansion strategy position it as the dominant force in the electric vehicle transition. **BYD achieved record 4.27 mil vehicle sales in 2024 (+41%yoy)**, while maintaining superior cost structure and technological advantages that create substantial competitive moats for long-term market leadership.

This transformation from a mobile phone battery manufacturer to global automotive leader demonstrates remarkable strategic execution. BYD's success stems from controlling 75% of vehicle components in-house versus Tesla's 46%, enabling cost leadership and supply chain resilience. The company targets doubling international sales to 800,000 units in 2025 despite significant trade headwinds, leveraging localization strategies across key growth markets.

From battery startup to automotive giant

BYD's evolution represents one of the most successful industrial transformations in modern business history. Founded in 1995 by Wang Chuanfu as a battery manufacturer, the company strategically leveraged its electrochemical expertise to enter automotive markets through the 2003 acquisition of Xi'an Qinchuan Automobile for \$269 mil. **Warren Buffett's prescient \$230 mil investment in 2008 for a 10% stake** validated BYD's potential when the company was primarily known for mobile phone batteries.

The company achieved critical milestones through systematic vertical integration. BYD's first vehicle, the F3 sedan, sold over one million units and established the foundation for today's comprehensive automotive ecosystem. **By 2022, BYD made the strategic decision to eliminate internal combustion engines entirely**, focusing exclusively on battery electric vehicles (BEVs) and plug-in hybrid electric vehicles (PHEVs). This bold move preceded most competitors and positioned BYD to capture the accelerating EV transition.

BYD's transformation accelerated dramatically after 2020 with the launch of breakthrough Blade Battery technology. The company achieved the historic milestone of 10 mil new energy vehicles produced faster than any automaker in history, reaching this benchmark in 2024. Today, BYD's business portfolio spans automotive (79.5% of revenue), electronics,

energy storage, and rail transit systems, creating diversified revenue streams while maintaining focus on electrification leadership.

Vertical integration drives competitive differentiation

BYD's business model fundamentally differs from Tesla and European automakers through unprecedented vertical integration that delivers cost advantages and supply chain control.

The company produces 75% of vehicle components in-house compared to Tesla's 46% and traditional automakers' typical 35-40% integration levels. This strategic approach eliminates supplier margins, reduces component costs 15-20% & enables rapid product iteration cycles.

BYD's FinDreams subsidiary structure, established in 2020, exemplifies this integration strategy across five core areas: battery production, electric motors and powertrains, automotive electronics, vehicle lighting systems and precision mould manufacturing. This comprehensive capability allows BYD to optimize the entire value chain from raw materials to finished vehicles, creating switching costs/barriers for competitors.

Tesla's approach prioritizes software, artificial intelligence and autonomous driving capabilities while maintaining premium market positioning with average profit per vehicle of \$9,547 versus BYD's \$1,550. **Tesla focuses exclusively on battery electric vehicles, while BYD's dual powertrain strategy includes both Battery Electric Vehicle (BEV) and PHEV options**, capturing broader market segments and consumer preferences. European automakers like Volkswagen Group face structural disadvantages with lower vertical integration, legacy ICE infrastructure, and partnership dependencies for critical EV components.

BYD's cost leadership enables aggressive pricing strategies that traditional automakers cannot match. The company can produce EVs for approximately one-third the cost of North American competitors while maintaining quality standards. This advantage proves particularly powerful in price-sensitive markets and enables BYD to offer premium features like autonomous driving capabilities at no additional charge.

Massive R&D investments fuel technological leadership

BYD's innovation engine operates at unprecedented scale with \$7.5 bn in R&D spending for 2024, representing 7% of revenue (+97% increase from 2022). **The company employs 110,000 engineers, comprising the world's largest automotive R&D workforce**, with 60% of staff under age 30 and 70% of new hires focused on research and development activities.

This massive human capital investment, supported by cumulative R&D spending exceeding \$22 bn, positions BYD to maintain technological leadership across multiple domains.

BYD's R&D priorities focus on core technologies including battery chemistry, power electronics, autonomous driving systems, and semiconductor development. The company committed an additional **\$13.7 bn specifically for artificial intelligence and autonomous driving technologies**, expanding AI development teams from 5,000 to 8,000+ personnel.

BYD's 35.6 mil square foot global R&D center in Shenzhen houses over 50 specialized laboratories, enabling comprehensive testing and validation of new technologies.

The company's innovation approach emphasizes practical application and manufacturing scalability rather than pure research. **BYD files an average of 32 patents per working day**, demonstrating rapid translation of research into intellectual property protection. This focus on applied innovation enables BYD to complete product development cycles in 1-2 years versus competitors' typical 5-year timelines, creating significant time-to-market advantages.

BYD's research capabilities extend beyond automotive applications. The company develops critical components including semiconductors through BYD Semiconductor, advanced materials for battery production, and integrated vehicle intelligence systems. This breadth of expertise creates synergies across business units and reduces dependency on external suppliers for critical technologies.

Strategic talent acquisition and retention excellence

BYD's human capital strategy centers on massive scale recruitment and retention of technical talent to support rapid global expansion. **The company added 200,000 employees in just 3 months during peak expansion periods**, demonstrating extraordinary organizational scaling capabilities. With over 900,000 total employees, BYD represents China's largest private employer and maintains the world's largest automotive R&D workforce. Over the past two years BYD hired 50,000+ college graduates, ~70% holding master's or doctoral degrees. BYD's recruitment strategy targets younger talent demographics with engineering focus comprising 80% of recent hires. **Average R&D compensation of ~\$30,000 annually remains competitive within Chinese markets** while offering career advancement opportunities in a rapidly growing technology company. BYD positions itself as combining "startup energy with multinational stability," appealing to technical professionals seeking dynamic career environments with resource support. The company's vertical integration strategy creates diverse career paths across battery technology, automotive engineering, semiconductor development, and manufacturing excellence. This breadth of opportunities supports retention by enabling internal mobility and skill development across multiple technology domains.

Extensive patent portfolio creates technological moats

BYD's intellectual property strategy has generated 48,000+ patent applications globally with 30,000+ granted patents, significantly exceeding Tesla's 863 EV-related patents. **The company files 2,000-3,000 new patents annually and maintains 18,968 active patents representing 65% of its total portfolio**. This extensive IP protection spans critical EV technologies including battery systems, electric powertrains, vehicle integration and manufacturing processes.

BYD achieved the #1 global ranking in "Battery unit" technology cluster patents, demonstrating leadership in the most critical EV component category. The company's patent portfolio includes 13,000+ EV-related patents filed between 2003-2023, establishing comprehensive protection across key technological domains. **Geographic distribution includes 23,346 Chinese patents (80% of portfolio), 1,300 European patents, and 1,009 US patents**, providing protection in major automotive markets.

The patent portfolio extends beyond traditional automotive applications, including 104 patent families in unexpected areas like tobacco and e-cigarette atomizers, demonstrating BYD's electrochemical expertise across multiple industries. This breadth creates opportunities for technology licensing and cross-industry applications that generate additional revenue streams beyond automotive sales. BYD's Patent Asset Index shows rapid advancement from rank 5 to rank 1 in battery unit technologies, indicating accelerating innovation pace relative to competitors. The company's focus on practical, manufacturing-oriented patents rather than conceptual research creates immediate commercial value and establishes barriers to competitive replication of BYD's technological advantages.

Blade Battery technology revolutionizes EV safety and performance

BYD's Blade Battery represents a fundamental breakthrough in lithium iron phosphate (LFP) technology that addresses critical safety and cost challenges in electric vehicle applications.

The current generation delivers 150 Wh/kg energy density with next-generation variants targeting 190-210 Wh/kg, while maintaining superior safety characteristics compared to higher-energy-density alternatives. The innovative cell-to-pack design eliminates traditional modules, reducing components by 40% and improving space utilization by 50%.

Safety innovations distinguish Blade Battery from competitive offerings through unprecedented thermal stability. **The technology passes nail penetration tests with surface temperatures of only 30-60°C versus 500°C for ternary battery chemistries**, eliminating thermal runaway fire risks that concern consumers and regulators. The LFP chemistry inherently prevents oxygen release during failure modes, providing structural safety advantages that cannot be replicated through software or cooling system improvements.

Manufacturing advantages enable BYD to achieve cost leadership in battery production. The company's 117.54 GWh installed capacity supports both internal vehicle production and external OEM supply agreements with Toyota, Tesla, Ford, Kia, and other major automakers. **BYD's battery costs run 18% lower in China compared to European production**, creating pricing flexibility for global market expansion while maintaining profitability.

The Blade Battery's structural integration capabilities allow the battery pack to serve as a load-bearing chassis component, reducing overall vehicle weight and improving structural integrity. Current generation batteries support 8C charging rates with next-generation variants targeting 10C capability, enabling rapid charging that addresses consumer range anxiety concerns.

Comprehensive technological edge through integration and scale

BYD maintains technological leadership through systematic vertical integration that creates cost, quality, and innovation advantages. **The company controls supply chains from mining raw materials to finished vehicle delivery**, eliminating supplier dependencies that constrain other automakers during supply chain disruptions. This integration enabled BYD to maintain production during COVID-19 lockdowns while competitors faced component shortages.

Manufacturing scale provides economies that reduce unit costs across all components. BYD's ability to add 200,000 units of production capacity within three months demonstrates operational flexibility that supports rapid market response and capacity scaling. **The**

company's 5.82 mil annual domestic capacity, combined with expanding international facilities totaling 820,000 units, creates volume advantages that reduce per-unit fixed costs and enable aggressive pricing strategies.

Technology partnerships enhance BYD's capabilities while maintaining strategic control. The Toyota joint venture (BYD Toyota EV Technology Co.) provides access to quality management expertise while BYD contributes battery and powertrain technologies. Supply agreements with external OEMs including Tesla validate BYD's technological leadership while generating additional revenue streams beyond internal vehicle production. Innovation culture emphasizes rapid iteration and practical application rather than theoretical research. BYD's heritage of reverse engineering competitor products and improving upon existing designs creates a systematic approach to technology development that delivers measurable competitive advantages. **The company's labor-intensive manufacturing approach, combined with advanced automation, creates cost structures that capital-intensive competitors cannot match.**

Competitive landscape reveals BYD's strategic advantages

BYD faces distinct competitive challenges from Tesla, Chinese EV startups, and traditional European automakers, each requiring different strategic responses. **Tesla maintains premium market positioning with superior software capabilities and established brand recognition in developed markets** but faces cost disadvantages due to lower vertical integration and premium-only product strategy. Tesla's exclusive focus on battery electric vehicles limits market coverage compared to BYD's dual BEV/PHEV approach.

Chinese competitors including NIO and XPeng target specific market segments with differentiated approaches. NIO emphasizes premium lifestyle branding and innovative battery-swapping technology but operates at significantly smaller scale with approximately 50,000 employees versus BYD's 900,000. XPeng focuses on autonomous driving capabilities and technology differentiation but lacks BYD's manufacturing scale and vertical integration advantages. **BYD's 4.27 mil annual vehicle sales dwarf Chinese competitors' hundreds of thousands of units**, providing economies of scale that create insurmountable cost advantages.

European automakers face structural disadvantages in EV competition due to legacy ICE infrastructure, lower vertical integration and higher cost structures. Volkswagen Group's vertical integration reaches only 35% versus BYD's 75%, requiring partnerships for critical EV components including batteries and electric powertrains. **Volkswagen's China market share declined to 11% from 14.2% previously** as Chinese consumers increasingly prefer domestic EV brands with superior technology and value propositions.

BYD's competitive positioning benefits from comprehensive segment coverage spanning entry-level models like the \$10,000 Seagull to luxury Yangwang vehicles exceeding \$100,000. This breadth enables market share capture across economic segments while competitors focus on narrower price ranges. **The company's manufacturing footprint expansion across**

Thailand, Hungary, Turkey, Brazil, and Indonesia creates cost and tariff advantages that pure-export strategies cannot match.

Global expansion accelerates despite trade barriers

BYD's international market strategy emphasizes localization and manufacturing presence to circumvent trade barriers while maintaining cost competitiveness. **The company targets doubling overseas sales to 800,000 units in 2025**, representing 15% of total volume and establishing foundation for the strategic goal of 50% international sales by 2030. Current geographic revenue split of 90% China, 10% international provides substantial growth opportunity as global markets mature.

European expansion demonstrates BYD's strategic execution capabilities despite regulatory headwinds. **BYD achieved 4.1% EU EV market share in Q1 2025, surpassing Tesla in European BEV sales for the first time.** The company's Hungary plant opening in October 2025 with 150,000 units annual capacity, combined with Turkey's 150,000 units starting March 2026, creates 500,000 units of European production capacity by 2027. This localization strategy enables tariff avoidance while maintaining cost advantages through knock-down kit assembly.

Southeast Asia represents BYD's strongest international market with 35% regional EV market share and 70,000 units sold in 2024. **Thailand operations serve as regional manufacturing hub with 150,000 units annual capacity**, while Indonesia's \$1 bn Subang facility targets the 285 mil consumer market with projected 2 mil EV sales by 2030. Strategic facilities in Cambodia, Vietnam and Pakistan expand regional coverage and market access.

Brazil demonstrates BYD's ability to achieve market leadership in competitive international markets. **The company captured 60% of Brazilian EV market share in 2024** with sales increasing 1,800% yoy in the first half. The Camaçari facility's 150,000 units annual capacity positions BYD to serve broader South American markets while reducing import tariff exposure through local assembly.

Trump tariff impact creates strategic challenges and opportunities

The Trump administration's April 2, 2025 tariff implementation significantly impacts the global EV industry and BYD's international expansion strategy. **Universal 10% import tariffs, escalating to 25% on automotive products and 145% total rates for Chinese vehicles, effectively eliminate US and Canadian market opportunities** for BYD while creating industry-wide cost pressures estimated at \$108 bn for US automakers in 2025.

Industry responses demonstrate the severity of tariff impacts across the automotive supply chain. GM suspended 2025 guidance, Ford projected \$1.5 bn negative impact, and Stellantis temporarily closed Canada/Mexico factories with 900 US employee layoffs. **Cox Automotive projects 20,000 cars per day production cuts representing 30% of North American output**, while transformer prices for EV charging infrastructure increased 20% with 6-9 month backlogs developing.

BYD's strategic response emphasizes localization acceleration and geographic diversification away from tariff-exposed markets. **The company's "knock-down kit" strategy imports key components from China for local assembly**, reducing tariff exposure while maintaining cost advantages through vertical integration. This approach enables BYD to achieve 92-112% markup in European markets versus China pricing while remaining competitive against local production.

Competitive implications favor BYD's integrated business model over import-dependent competitors. Traditional automakers face higher tariff exposure due to global supply chain dependencies, while BYD's vertical integration provides flexibility to relocate production and minimize tariff impacts. **Trade retaliation including China's 10% duty on US vehicles and Canada's 25% tariffs on \$20 bn in US goods** creates opportunities for BYD to gain market share in protected Chinese domestic markets while competitors face margin pressure.

Strategic outlook

BYD represents a compelling institutional investment opportunity driven by technological leadership, manufacturing scale, and strategic positioning in the global EV transition. **The company trades at 20x P/E versus Tesla's 83x while delivering superior revenue growth of 29% and expanding margins from 12.5% in 2021 to 14.7% in 2024**

Financial strength supports aggressive international expansion with RMB 154.9 bn (\$21.4 bn) cash reserves and strong free cash flow generation. **R&D investment of 7% of revenue significantly exceeds industry averages** while patent portfolio and vertical integration create sustainable competitive moats that protect market share and margins. The company's manufacturing footprint expansion across multiple continents reduces geographic concentration risk while maintaining cost advantages.

Risk factors include geopolitical tensions limiting addressable markets, execution challenges from rapid international expansion, and intensifying competition from Tesla and traditional automakers. **Quality control and brand perception challenges in international markets require continued management attention**, while currency exposure from global operations creates financial volatility. However, BYD's proven execution track record, technological advantages, and strategic positioning in the world's largest EV market provide strong foundations for long-term value creation.

Current Strategy & Technology:

BYD announced it is "going all in on driver assistance" with the help of DeepSeek, releasing a "DiPilot" assisted driving system across its range, making BYD likely the first automaker in China to offer advanced driver-assistance capabilities for a vehicle below RMB70,000 (US\$10k). BYD's latest proprietary driver assistance system is named "God's Eye," categorized as "Level 2+" automation (except Level 3 God's Eye A), claiming "over 1,000 kilometers of autonomous driving without intervention and has a 99% success rate for automated valet parking".

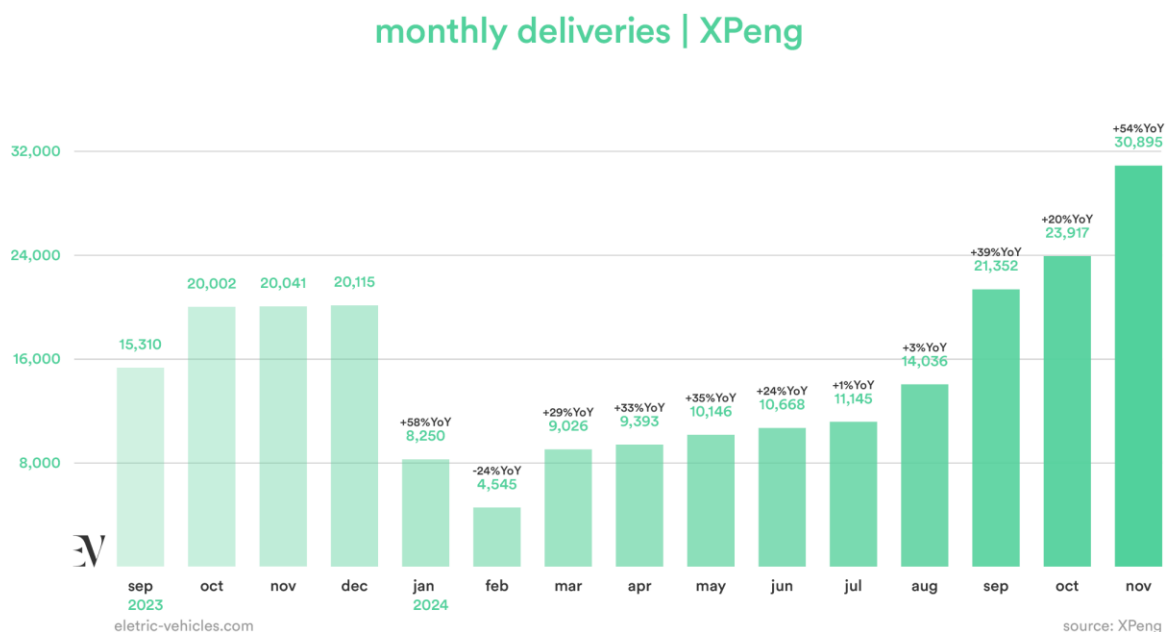
B. Xpeng

AI Technology Leadership:

Xpeng has developed China's first mass-produced end-to-end model for smart driving including neural network XNet, planning and control large model XPlanner, and large language model XBrain, with capabilities expected to improve by 30 times in the next 18 months.

Founded in August 2014 by automotive tech veterans and supported by backers like Alibaba, Xiaomi, and Volkswagen, Xpeng Motors (Guangzhou Xiaopeng Motors) has grown from a two-model startup into a vertically integrated EV innovator. Publicly listed in Hong Kong and New York (2020 IPO), Xpeng recorded **2024 production** of 190,068 vehicles with **revenue of RMB 40.9 bn (US\$ 5.7 bn)**. Xpeng expects to deliver up to 108,000 electric cars in Q2 2025, more than double from a year earlier, with revenue anticipated at RMB 17.5-18.7 bn (US\$2.4-2.6bn) or annualized revenue of \$10bn.

Figure 2-17: Xpeng surpassing 30k monthly deliveries in Nov-2024



Xpeng’s business model focused on **China-first strategy**, leveraging deep understanding of domestic consumer behavior, robust charging infrastructure and understanding local supply chains. Thereafter it was able to grow its export footprint significantly, shipping over 10,000 units to Europe (first Chinese EV startup to hit this milestone) 4 years after exporting its first unit (Dec-2024). Notably, the 10,000th EV sold by XPeng in Europe was a G6 SUV, equipped with 800V high-voltage charging technology, enabling it to gain a 300 km range with just 10 minutes of charging. In Germany, the starting price of XPeng’s entry level SUV model is €43,600, equivalent to US\$45,300. The company plans to expand deliveries to overseas markets with a goal of operating in 60 markets by the end of 2025.

Xpeng aims to achieve L4-level (see fig 2-15: ADAS levels) autonomous driving experience in China in 2025, with plans to invest RMB 3.5 bn (US\$0.5bn) in R&D.

Product & Innovation Distinguishers

New generation modular Smart Electric Platform Architecture (SEPA) 2.0 platform uses a 800-volt electrical architecture and utilizes silicon carbide (SiC) semiconductors in its power electronics (similar to Tesla Model 3 MOSFET chips, which provided Tesla significant size & weight advantage over silicon chips.

- **Platform efficiency:** SEPA 2.0 enables fast 800 V charging (~10 min for 300 km) and rapid model launches
- **ADAS/Autonomy Edge:** In-house XPILLOT system combining lidar, radar, and Nvidia Orin processing; new "vision-only" AI Hawk featured in P7+, while G7 utilises proprietary Turing AI chips developed with Huawei
- **Battery partnerships:** CATL LFP & Eve Energy LFP/NMC packs with 5C fast-charge capability, cobalt-free, safe, long-lived

R&D & Talent Ecosystem

- **Leadership team** includes former GAC, BMW, BYD, Huawei, Samsung engineers: led by Henry Xia (Tsinghua PhD, multiple patents)
- **Patent strength:** Hundreds filed in ADAS, powertrain, battery tech: propelling design-to-market agility up to 30% faster than legacy OEMs.
- **Robotics investment:** ‘Iron’ humanoid robot launched Nov 2024 for automation; also markers of ambition in cross-domain technology.

Figure 2-18: Competitive EV landscape

Company	Strengths	Challenges	Xpeng’s Strategy
BYD	Largest EV + hybrid sales; fully vertical integration; superior margins (22.3% vs Tesla’s 13.6%) (ft.com)	Brand recognition still China/EM focused; limited US presence	Focus on premium segment, autonomous features; aggressive Europe/MXE expansion
Tesla	Brand halo, EV tech leader, strong autonomy	Facing margin pressure, lack of localized China strategy, US policy uncertainty	Counter with local-first R&D, tailor-made features (lidar, fast charge, Turing chips)
Legacy Europe/Japan OEMs	Quality, safety, global footprint	Slower EV rollouts (~30% model cycle latency)	Xpeng’s speed-to-market edge in China & Europe, plans rapid mid-size SUV launches in newer markets
Chinese startups (Nio, Li Auto)	Tech focus, local momentum	Consolidation pressure; weaker scale	Continue growing independently—recent R&D recruitments, strategic VW/BP ties, no mergers yet.

Source: Company data, FT, 6Σ

Patent & Technology Portfolio

- **ADAS:** XPiLOT and Turing AI with in-house silicon—capturing sensor-to-compute IP.
- **Powertrains/Battery:** 800 V, silicon carbide electronics, LFP & NMC pack innovations, proprietary fast-charge cell packaging.
- **Robotics:** “Iron” provides internal automation IP and cross-tech R&D synergies.

Talent Recruitment & Retention

- **Global engineer funnel:** Recruits from leading OEMs and tech firms; fosters a startup culture with equity incentives.
- **Academic collaboration:** Projects with Tsinghua, internal research publications.
- **Tech partnerships:** Hungarian JV with Volkswagen and BP Pulse expands infrastructure access and global visibility

Policy & Tariff Impact

- **US Auto Tariffs (from April 2, 2025):** 25% tariff on Chinese-assembled vehicles plus existing duties (up to ~247%) weight demand/pricing in the US.
- **Opportunity:** While BYD & Tesla lose margin, Xpeng can leverage expansion in tariff-friendlier regions (Europe, Mexico, Brazil, Southeast Asia)

Key Competitors & Differentiators

- **BYD:** Massive scale, ingrained cost control, fast-charging tech; Xpeng differentiates via autonomy and brand premiumisation.
- **Tesla:** Technology inertia and US-exposure create window for Xpeng to capture China/Europe autonomy-minded buyers.
- **Legacy & other Chinese EV startups:** Xpeng pulls ahead through tech IP, strategic strategic alliances (VW, Huawei, BP), and pricing flexibility.

Growth Strategy & Risk Mitigation

- **Geographies:** Scale deeper into Europe and SE Asia; strengthen charging networks via alliances.
- **Tech scalability:** Expand Turing AI autonomous solutions across all models; develop next-gen battery platform to support flying car division.
- **Factory network:** Three plants in Guangdong and Wuhan targeting >300k annual capacity.
- **Consolidation readiness:** Preempt consolidation trend by forging JV and strategic tech partnerships rather than merging.

Full Self-Driving (FSD) is Tesla’s premium advanced driver-assistance package. While FSD suggests full autonomy, it still requires hands-on driver supervision (“Full Self-Driving (Supervised)” is Tesla’s current terminology). It includes:

- Autosteer on city streets
- Traffic-aware cruise control
- Traffic light and stop sign recognition/navigation
- Automatic lane changes, on- and off-ramp navigation

FSD relies on:

- A **vision-only sensor suite** (cameras, no lidar)
- Tesla's custom **FSD computer chips**
- A massive neural-network training pipeline via **Tesla Dojo**, processing petabytes from millions of Tesla vehicles

While Xpeng President **Brian Gu** stated that, despite having fewer computing resources than Tesla, **Xpeng's self-driving systems outperformed Tesla's FSD in China**. Jury is still out.

Figure 2-19: Tesla FSD vs Xpeng XPILOT

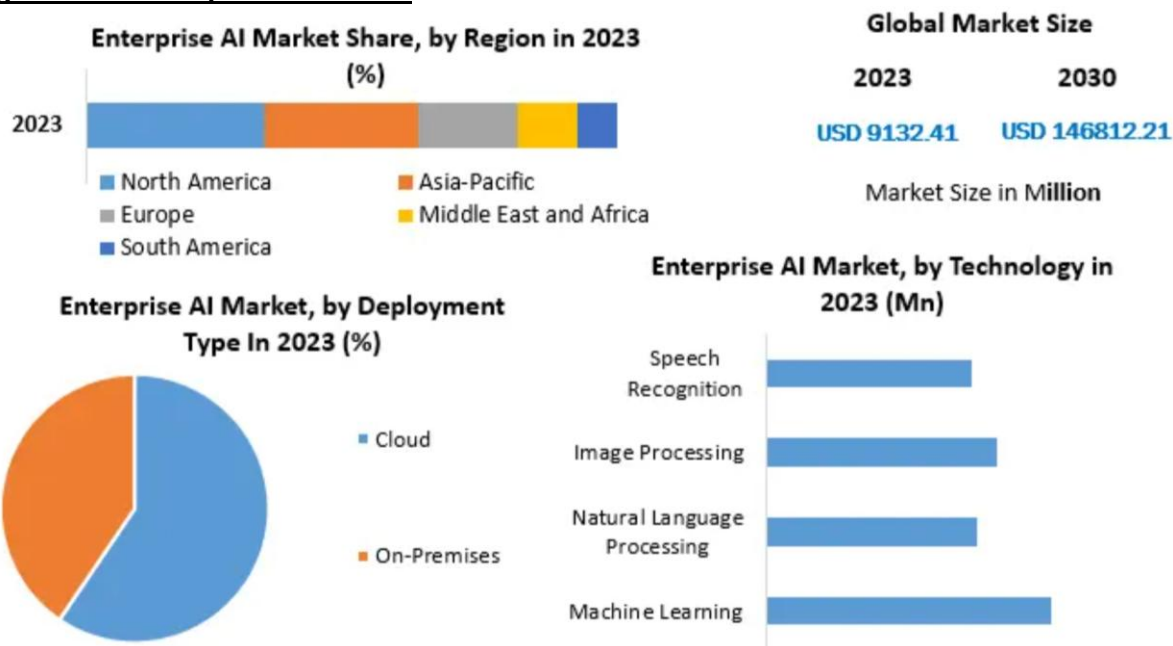
<i>Feature</i>	Tesla FSD	Xpeng XPILOT (China)
<i>Computing power</i>	FSD HW4, Dojo backend but heavier compute usage	Turing chip + radar/camera/lidar fusion; optimized compute-per-TOPS
<i>Sensors</i>	Vision-only (8 cameras)	Cameras + radar (+ lidar optionally)
<i>Training data</i>	Millions of U.S./global miles	Focused on Chinese road data
<i>Regional fit</i>	Generalist; may struggle with local traffic patterns	Highly tuned to Chinese driving habits
<i>Reported outcome</i>	Mixed performance; still sees interventions	Brian Gu claims better real-world performance in China

Source: Company data.

2-3-3 Enterprise AI Software

- AI software market: \$174.1 bn in 2025 to \$467 bn by 2030 at 25% CAGR
- Enterprise AI specific: \$31.5 bn in 2025 to \$155.2 bn by 2030 at 37.6% CAGR
- Overall AI market: Expected to reach \$826 bn by 2030

Figure 2-20: Enterprise AI Market



Source: Mckinsey

Geographic Trends: North America accounts for 54% of AI software investment in 2025, but Asia-Pacific expected to reach 47% by 2030 as China ramps up AI initiatives

Nvidia is positioned at the intersection of multiple high-growth markets, with its dominant position in AI infrastructure providing a foundation for expansion into software and services. The company's ability to capture even a fraction of these expanding TAMs represents significant revenue growth potential through 2030.

Ecosystem: Developer Tools, SDKs, Partnerships

TAM Estimate:

The value of Nvidia's ecosystem is embedded within the broader AI hardware, software, and services TAMs. The developer ecosystem is a force multiplier, driving adoption across all segments. The total economic impact of AI (including ecosystem effects) is estimated by McKinsey to reach \$15.5–22.9 trn by 2040.

3. INDUSTRY LANDSCAPE

NVIDIA holds an estimated 80-90% share of the AI accelerator market but faces intensifying competition from AMD, Intel, hyperscaler ASICs (Google, AWS) and a growing field of startups. However, we believe that Nvidia's full stack value chain as defined by depth of CUDA's software libraries will ensure medium term domination continues.

Figure 3-1: GPU & AI Accelerator Market Share Overview (2025)

Company	Discrete GPU Market Share	AI Accelerator Mkt Share	Key Segments	Key Products
NVIDIA	~80%+ (Gaming/ProViz)	80–90%	Data Center, Gaming, ProViz	H100, H200, Blackwell, CUDA
AMD	~15–18%	~10%	Gaming, Data Center	MI300, EPYC, ROCm
Intel	<5%	<5%	Entry-level, Data Center (Gaudi)	Gaudi2/3, Xeon, oneAPI
Others*	Negligible	<5% (combined)	Niche/Cloud ASICs	Trainium, Inferentia, Cerebras, Groq

Source: Company data. *Includes custom chips from Google (TPU), AWS (Trainium), and startup players.

Fig 3-1 provides a quick snapshot of current key segments and corresponding competitor products. The market shares of both discrete GPU and subset AI Accelerator shows Nvidia still dominating almost like a monopoly and unless competitors come up with a superior product in the near term, the dynamics of current market composition is unlikely to change.

Figure 3-2: Overall Total Addressable Market (TAM)

	TAM (Figure)	\$ bn	2024	2025F	2026F	25/24	26/25
A	Global AI Market (2-1)		640	890	1,230	39.1%	38.2%
B	Accelerator (2-1)		65	89	125	36.9%	40.4%
C	Top 4 (2-3)		188	220	405	17.0%	84.1%
D	Total Cloud (2-3)		240	285	521	18.8%	82.8%
E	R&D spend (2-12)		279	295	310	5.7%	5.0%
F	Industry TAM (2-13, 2-13a)		225	310	372	37.9%	19.9%
G	Average (A,D,F)		368	495	707	34.4%	42.9%

Source: 6Σ estimates

Based on the above various estimates (section 2), the average TAM of \$495bn (2025F) and \$707bn (2026F) suggest growth momentum likely to remain strong between 34-43% over the next 2 years.

Downstream demand for AI

Alternative downstream view of Total Addressable Market (TAM) and projected growth to 2030 for Large Language Models (LLMs) and selected new AI-driven market segments.

Figure 3-3: AI-Driven Market TAM & Growth Outlook by Market Segments to 2030

Market Segment	2024 \$bn	2030F \$bn	CAGR 2024-2030	Key Players / Examples	Source:
Large Language Models (LLMs)	20–25	130–180	~35–40%	OpenAI, Anthropic, Google, Microsoft, Cohere, Grok	McKinsey, 2024 , Statista, 2024
Autonomous Driving	50	300–400	~35%	Tesla, BYD, Waymo, Mobileye	Fortune Business Insights, 2024 , MarketsandMarkets, 2024
Cybersecurity (AI-driven)	22	80–100	~24–26%	Fortinet, CloudGuard, CrowdStrike, Palo Alto	Grand View Research, 2024 , Statista, 2024
AI Defence Systems	14	38–50	~18–20%	Palantir, Anduril, Lockheed Martin	MarketsandMarkets, 2024 , Allied Market Research, 2024
Advanced Medical AI Applications	12–15	60–80	~27–30%	Intuitive Surgical, Tempus, IBM Watson Health	Statista, 2024 , Precedence Research, 2024

Source: Company data, 6Σ

Figure 3-3 shows high expectations that Autonomous Driving industry may significantly dominate AI market by 2030, leading the likes of LLMs and Cybersecurity. All of these requires full stack architecture, high-speed interconnection, huge software ecosystem support, easy cloud accessibility and high developer adoption.

3.1 COMPETITORS & TECHNOLOGY COMPARISON

NVIDIA remains the dominant force in GPU technology and market share, especially in AI and data center acceleration. Its competitors, primarily AMD, Intel, and several hyperscalers with custom silicon, have made notable advances but still lag in ecosystem, developer adoption and performance for cutting-edge AI workloads.

Figure 3-4: Nvidia's competitive landscape

Architecture	NVIDIA (H200/B100)	AMD (MI300X)	Intel (Gaudi3)	Google TPU/AWS Trainium
Feature/Capability				
AI Training Perf.	Industry-leading full-stack leading tensor cores	Competitive in memory	Cost-effective inference	Internal/cloud only
AI Inference Perf.	Best-in-class (FP8/FP4), NVLink for high-speed interconnect	Good, but less flexible	Strong in select tasks	Specialized workloads
Software Ecosystem	CUDA, NGC,	ROCm (improving) but lags CUDA in developer adoption	oneAPI (limited), lags CUDA, ROCm	Proprietary
Developer Adoption	Highest	Moderate	Low	Niche
Cloud Availability	Universal	Growing	Limited	AWS/Google only

Source: Company data.

Ecosystem and Developer Lock-In

- NVIDIA's CUDA platform remains the gold standard for AI and HPC development, with a vast library of optimized frameworks and tools, making it very difficult for competitors to dislodge existing customers or attract new developers at scale¹.
- AMD's ROCm is open and improving, but lacks the breadth and maturity of CUDA. Software compatibility and developer mindshare are still key hurdles.
- Intel's oneAPI is designed for cross-vendor support but is less widely adopted, especially in the AI/ML community.

NVIDIA's competitive moat is built on unmatched hardware performance, a sticky software ecosystem and deep integration with every major cloud provider and OEM. The key differentiator remains NVIDIA's full-stack approach and developer ecosystem (see CUDA section 2-1-1) which makes its GPUs the default choice for AI research, enterprise, and cloud deployment.

- AMD is the clear #2, gaining ground in memory-bound AI and select cloud/data center wins, but still trails in ecosystem and developer lock-in.
- Intel is a challenger, with some success in cost-sensitive inference but not a major force in high-end AI or gaming GPUs.
- Cloud/hyperscaler chips (Google TPU, AWS Trainium) are important for internal workloads but have not significantly disrupted NVIDIA's market share due to ecosystem and flexibility limitations.

3.2 Paradigm Shift

Historically, each major technological paradigm shift has been defined by a dominant infrastructure leader, companies that not only enabled the new era but also generated outsized returns for early investors.

Figure 3-5: Historical Parallel: Once in a Lifetime Infrastructure Investments

Technology Shift	Infrastructure Leader	Peak P/E Ratio	Duration of Advantage	Total Return (Peak)
Electrical Infrastructure (1880s-1920s)	General Electric	45-60x	40+ years	10,000%+
PC Revolution (1980s-2000s)	Microsoft	80x	25+ years	50,000%+
Internet Infrastructure (1990s-2010s)	Cisco Systems	150x	15+ years	75,000%+
Mobile Revolution (2007-2015)	Apple	45x	10+ years	5,000%+
AI Infrastructure (2020s-2040s)	NVIDIA	46x (Current)	20+ years (Est.)	TBD

Sources: Historical market data, Macrotrends, Investment research reports

Figure 3-5 benchmarks Nvidia's current role in the AI infrastructure build-out against past leaders in electrical, PC, internet, and mobile revolutions.

1. Technology Shifts and Infrastructure Leaders

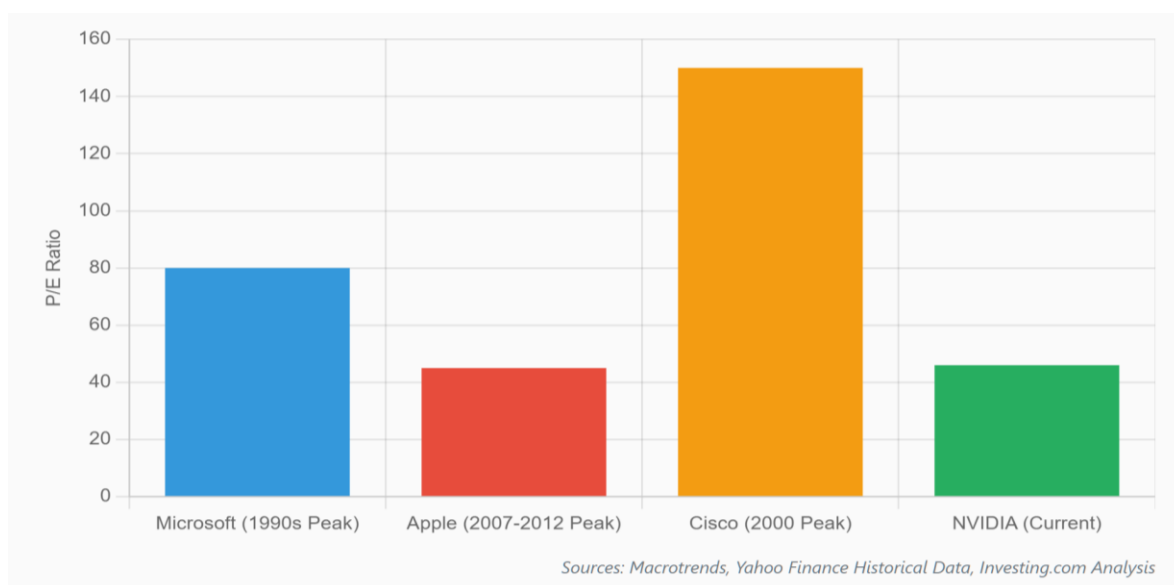
- **Electrical Infrastructure (1880s–1920s):** General Electric dominated for over 40 years, generating 10,000%+ returns.
- **PC Revolution (1980s–2000s):** Microsoft led with a 25+ year advantage and 50,000%+ returns at a peak P/E of 80x.
- **Internet Infrastructure (1990s–2010s):** Cisco Systems reached a 150x peak P/E, offering 75,000%+ returns over 15+ years.
- **Mobile Revolution (2007–2015):** Apple's dominance lasted over a decade, with a 45x P/E and 5,000%+ returns.

2. Nvidia's Position in the AI Infrastructure Era

- **Current Role:** Nvidia is emerging as the foundational infrastructure provider for the AI revolution, much like Microsoft for PCs and Cisco for the internet.
- **Valuation:** Nvidia's current peak P/E ratio stands at 46x, which is moderate compared to historical peaks for prior leaders, suggesting potential room for further expansion as AI adoption accelerates.
- **Duration of Advantage:** The table estimates Nvidia's leadership could persist for 20+ years, aligning with the longevity seen in previous paradigm shifts.

- **Return Potential:** While the total return (peak) is still to be determined, historical precedent suggests that infrastructure leaders in new technology waves have delivered extraordinary returns for early investors.
3. What each infrastructure leader displayed:
- **Sustained Advantage:** Each infrastructure leader maintained a significant competitive advantage for at least a decade, often much longer, due to technological leadership, ecosystem lock-in, and first-mover scale.
 - **Valuation Context:** Nvidia's current valuation is not unprecedented when compared to the historical P/E ratios of past technology leaders at their peaks.
 - **Return Profile:** If history is a guide, Nvidia's position at the heart of the AI infrastructure build-out could translate into substantial long-term returns, provided it maintains its technological edge and ecosystem dominance.

Figure 3-6: PE ratios during Technology Paradigm shifts



Nvidia's current trajectory mirrors that of past infrastructure giants (fig 3-6) at the dawn of new technology eras. Its centrality to AI compute and infrastructure, combined with a still reasonable valuation relative to historical leaders, positions it as a potential generational winner for investors assuming it can sustain its innovation and market leadership over the coming decades. For investors seeking exposure to the AI transformation, Nvidia offers the optimal combination of market leadership, defensive competitive positioning, and meaningful upside potential from current levels. **The once-in-a-lifetime investment thesis rests on being the foundational infrastructure provider for humanity's transition to AI-augmented capabilities:** a role that justifies premium valuations and offers substantial long-term value creation potential.

4. KEY OUTSOURCED SUPPLIER - TSMC

TSMC is the exclusive manufacturer for Nvidia's most advanced AI chips (H200, B200), leveraging its 4nm and 3nm nodes and advanced packaging. This partnership is critical for Nvidia's dominance in AI accelerators and underpins TSMC's leadership in the high-performance computing segment.

Technology Leadership

TSMC's technological supremacy in advanced semiconductor manufacturing represents its most significant competitive advantage, with industry-leading 3nm production and groundbreaking innovations positioning the company for continued market leadership. Its position as the "foundry of the world" is underpinned by unmatched process technology, scale, and customer trust. TSMC's unique business model, technological prowess, and global reach make it indispensable to the modern digital economy, with Foxconn as a critical downstream partner in the electronics value chain. Together, they anchor Asia's dominance in global semiconductor manufacturing, while adapting rapidly to geopolitical and technological shifts

Company Histories & Strategic Foundations

TSMC (Taiwan Semiconductor Manufacturing Company)

Founded in 1987 by Morris Chang, TSMC pioneered the pure-play foundry model, focusing exclusively on manufacturing chips designed by other companies. This approach, backed by early government and Philips investment, allowed TSMC to scale rapidly and become the **backbone of the global fabless semiconductor ecosystem**. The company's growth was driven by relentless R&D investment, early adoption of advanced nodes, and a culture of operational excellence.

TSMC served about 522 customers, manufactured 11,878 different products using 288 different process technologies with annual capacity exceeding 16 mil 12-inch equivalent wafers in 2024. The company maintains a policy of not designing, manufacturing, or marketing semiconductor products under its own name

Figure 4-1: Business Model & Differentiation

Company	Model	Core Focus	Key Differentiators
TSMC	Pure-play foundry	Advanced chipmaking	Leading-edge process nodes, scale, customer neutrality
Foxconn	EMS/ODM, packaging	Assembly, packaging	Scale, automation, cost efficiency
Samsung	IDM + foundry	Chips + design	Vertically integrated, memory leader
Qualcomm	Fabless design + licensing	Wireless tech, mobile SoCs	Wireless IP dominance, Snapdragon platform, dual revenue streams
SMIC	Foundry (China)	Mature nodes	Domestic China focus, tech lag
Intel	IDM + foundry (new)	CPUs, foundry push	Design + manufacturing, x86 CPUs
Texas Instruments	IDM	Analog, embedded	Focus on analog, less advanced nodes

Source: Company data, 6Σ

TSMC's Model:

TSMC manufactures chips for fabless designers (e.g., Nvidia, AMD, Apple) and IDMs (e.g., Intel increasingly), without competing with its customers. This neutrality, combined with technological leadership, makes it the foundry of choice for the most advanced designs.

R&D Focus & Technological Edge

- First foundry to commercialize ASML's extreme ultraviolet (EUV) lithography technology in high volume
- **R&D Investment:** TSMC consistently invests heavily in R&D, with a focus on shrinking process nodes (e.g., 3nm, 2nm, and sub-2nm by 2028), advanced packaging (CoWoS, SoIC), and new materials
- **Patent Portfolio:** TSMC holds thousands of patents in chip manufacturing, architecture, and packaging, maintaining a significant IP moat.
- **Talent Recruitment & Retention:** TSMC recruits globally, offering competitive salaries (20% increase in 2021), rigorous training (often up to 18 months in Taiwan for US hires), and a culture of operational discipline. However, it faces fierce competition for talent, especially in the US, where cultural adaptation and compensation gaps remain challenges.

Manufacturing & R&D Footprint

- **Taiwan:** Core R&D and most advanced fabs (Hsinchu, Taichung, Kaohsiung), including upcoming sub-2nm facilities
- **US:** Arizona fabs (advanced nodes), new R&D center planned
- **Europe:** Dresden fab (joint venture with Bosch, Infineon, NXP), new R&D center in Munich focused on automotive, AI, and IoT
- **Japan:** Ongoing expansion to support local customers and diversify supply chain risk

Competitive Landscape & Customer Segmentation

- **Samsung:** Vertically integrated IDM and foundry, strong in memory and advanced logic, but sometimes competes with its own foundry customers.
- **SMIC:** Largest Chinese foundry, limited to older nodes due to US export controls.
- **Intel:** Transitioning to a foundry model, but still lags TSMC in process technology and scale.
- **GlobalFoundries, UMC:** Focused on mature nodes, automotive, and specialty processes.

Figure 4-2: Customer Segments & Chip Requirements

Segment	Requirements	Main Competitors	TSMC’s Edge
Mobile	Power efficiency, integration	Qualcomm, MediaTek, Samsung	TSMC: Fastest node adoption (3nm/4nm Qualcomm Snapdragon) Fastest time-to-market, reliability
AI/HPC (Nvidia)	Leading-edge nodes, performance	Nvidia, AMD, Qualcomm (AI edge)	2nm/3nm, advanced packaging, scale TSMC: Advanced packaging (CoWoS for H100)
Automotive	Reliability, mixed nodes	Global Foundries, SMIC	Broad node offering, local fabs

Source: Company data, 6Σ

Technology Node Leadership

- **3nm (N3E, N3P, N3X):** Mass production since 2022, serving mobile, AI, and HPC. 3nm. Representing 18% of total wafer revenue in 2024. Performance advantages:
 - 10-15% increase in performance compared to N5 process, or 25-35% decrease in power consumption,
 - 1.7× increase in logic density with 20% increase in SRAM cell density
 - 15-18% increase in performance compared to 5nm node with up to 30% reduction in power consumption
- **2nm:** Mass production starts 2H 2025 (Fab 20 Hsinchu, Fab 22 Kaohsiung), offers improved performance and energy efficiency for next-gen AI and mobile devices³.

- **Sub-2nm:** Fab 25 in Taichung (operational by 2028), targeting future AI and quantum computing applications
- **Advanced Packaging (CoWoS, SoIC):** Enables chiplet integration: CoWoS (Chip-on-Wafer-on-Substrate) advanced packaging technology, System On Integrated Chips (SoIC) 3D-IC concept with very short interconnects, critical for AI accelerators (e.g., Nvidia's H100/B100).

The above productivity & cost benefits are significant by enabling higher speed, lower resistance, and lower production costs compared to alternatives. More die per wafer with better yields leads to cost-per-transistor improvements and enhanced power efficiency critical for mobile and data center applications.

Resulting new markets enhancement:

- **AI Acceleration:** Critical for AI accelerators, GPUs, and custom AI chips for best performance and power efficiency
- **Automotive:** 3nm chips crucial for powering autonomous driving systems and advanced in-car features
- **High-Performance Computing:** Enabling faster scientific discoveries and more efficient data processing

Impact of US-China Trade Tensions & Tariffs

- **April 2025 Trump Administration Tariffs:** New tariffs on Chinese electronics and semiconductor equipment increase costs for Chinese foundries and downstream assemblers, but TSMC's diversified global footprint and advanced technology insulate it from direct impact.
- **High-Tech Chip Ban to China:** US export controls restrict TSMC from supplying advanced chips (e.g., 7nm and below) to Chinese firms (notably Huawei). This limits TSMC's China revenue but increases demand from US, European, and Japanese customers seeking secure supply chains.
- **Global Supply Chain:** TSMC's expansion in the US, Japan, and Europe is a direct response to geopolitical risk, ensuring continued access to key markets and government incentives.

5. MANAGEMENT TEAM

NVIDIA's founder-led culture is a competitive advantage, emphasizing speed, transparency and purposeful innovation. Succession planning is a medium term risk as it must ensure continuity of vision, technical depth, and operational rigor. However, its internal bench features several long-tenured executives with deep technical and business expertise.

Nvidia's executive team demonstrates exceptional depth and continuity, with **eight key leaders averaging 13+ years of tenure** and diverse expertise spanning AI computing, operations, and strategic markets. Beyond CEO Jensen Huang, the company has cultivated a strong succession-ready leadership bench with proven track records at major technology companies and deep domain expertise across Nvidia's core business functions.

The leadership team combines **three co-founders/long-term executives** (Huang, Malachowsky, Dally) with five seasoned external hires who joined between 2005-2020, creating a blend of institutional knowledge and fresh perspectives. Most executives hold advanced degrees from prestigious institutions and bring 15-30 years of pre-Nvidia experience from companies like Microsoft, Intel, Sun Microsystems and Cisco.

Critical succession planning strength: The team features multiple potential CEO successors with complementary skill sets: Colette Kress brings public company finance leadership, Michael Kagan offers deep technical architecture expertise and Ajay Puri provides global operations experience. This represents one of Silicon Valley's most experienced and stable leadership teams in the technology sector.

Figure 5-1: Nvidia's management team

Name	Title & Role	Age (years)	NVIDIA Tenure (yrs)	Expertise / Background / Education
Jensen Huang	Founder, President, Chairman & CEO	62	Since Apr 1993 (32)	Co-founded NVIDIA; electrical engineer (BS Oregon State, MS Stanford); visionary AI and business leader.
*Colette Kress	EVP & Chief Financial Officer	56	Sep 2013 (11.8)	Finance leadership at Cisco; deep financial, strategic, and operational acumen. BS Finance Arizona, MBA SMU
Debora Shoquist	EVP, Operations	70	Sep 2007 (17.8)	Oversees global supply chain and manufacturing operations. BS Biology Santa Clara, BS EE Kansas State
*Jay Puri	EVP, Worldwide Field Operations	65	2007 (17)	Leads global sales, customer success, and go-to-market execution. BS EE Minnesota, MS EE Caltech, MBA Harvard
Timothy Teter	EVP, General Counsel & Secretary	58	Jan 2017 (8.5)	Legal strategy, compliance, corporate governance. BS ME UC Davis, JD Stanford Law
* Michael Kagan	Chief Technology Officer	60	Acq. 2020 (21+4)	Technical leadership in networking, co-founded Mellanox (\$7bn M&A, ppx) BS EE Technion, Israel

Name	Title & Role	Age (years)	NVIDIA Tenure (yrs)	Expertise / Background / Education
Bill Dally	Chief Scientist & SVP Research	64	2009 (16)	Renowned computer scientist; parallel computing and interconnect. BS EE Virginia Tech, MS EE Stanford, PhD CS Caltech
Chris Malachowsky	Co-founder & Fellow	66	31	Co-founded NVIDIA, BS EE Florida, MS CS Santa Clara
Ian Buck	VP, Hyperscale & HPC; CUDA lead	–	-	Architect of CUDA; key in maintaining software-hardware moat.
Stephen Keckler	VP, Architecture Research	–	2009 (16)	Expert in chip architecture, parallelism (Stanford/MIT).
Rama Akkiraju	VP, AI/ML for IT	–	(Recent hire)	Former IBM Fellow; grounds AI operations and enterprise AI.
Sanja Fidler	Director of AI, Associate Prof.	–	(Recent hire)	Academic champion in computer vision and AI innovation.

Source: Company

Succession Planning | CEO Succession Readiness: Strong / above average

Nvidia demonstrates exceptional succession planning depth with **three potential CEO candidates (total of 34yrs or average 11yrs @ Nvidia)** possessing complementary leadership profiles:

- Colette Kress emerges as the strongest internal successor, bringing 11 years of CFO experience during Nvidia's transformation from \$9bn to \$3trn+ valuation. Her extensive public company finance background at Microsoft and Cisco combined with deep AI market knowledge, positions her to maintain Nvidia's financial discipline while executing strategic initiatives. Her \$761M net worth reflects significant equity alignment.
- Michael Kagan offers technical leadership continuity as a proven entrepreneur who co-founded and scaled Mellanox to a \$7bn acquisition. His deep expertise in data center architecture and accelerated computing aligns with Nvidia's core growth drivers. However, his recent Nvidia tenure (4 years but 21yrs at Mellanox) may limit immediate CEO readiness.
- Jay Puri provides global operational expertise with 19 years at Nvidia and extensive international experience from Sun Microsystems. His leadership of worldwide field operations during Nvidia's AI market expansion demonstrates scalable growth management capabilities.

Operational continuity across critical functions

The leadership team ensures zero single points of failure across essential business functions: Manufacturing and supply chain leadership under Debora Shoquist proved critical during global semiconductor shortages, with her 17year tenure providing deep institutional knowledge of Nvidia's complex foundry relationships and quality systems.

Legal and IP protection under Timothy Teter becomes increasingly vital as Nvidia faces regulatory scrutiny and competitive patent challenges. His 20+ years of patent litigation experience at Cooley LLP provides specialized expertise for defending Nvidia's AI computing moat.

Research and innovation pipeline under Bill Dally ensures continued technical leadership through his management of 300+ PhD researchers across five AI-focused groups globally. His academic credentials and research impact sustain Nvidia's technology differentiation.

Leadership bench strengths for investor confidence

Tenure stability creates institutional knowledge: The 3 potential candidates' average executive tenure of 11+ years (fig 5-1) provides deep understanding of Nvidia's technology evolution, customer relationships, and market dynamics. This continuity proved essential during the company's pivot from graphics to AI computing.

How 6Σ rate the potential candidates

Diverse industry expertise reduces execution risk: Leaders bring proven success from Microsoft, Intel, Sun Microsystems, Cisco and other technology giants importing best practices and avoiding common scaling pitfalls. Each executive experienced multiple technology cycles and market transitions.

Educational excellence supports strategic and common sense thinking: The team combines technical depth (multiple engineering PhDs/MS degrees) with business acumen (Harvard MBA, Stanford Law), enabling both technical innovation and commercial execution.

Significant equity alignment: All executives hold substantial Nvidia equity positions with compensation heavily weighted toward stock-based incentives, ensuring leadership interests align with long-term shareholder value creation.

The leadership bench represents one of the technology industry's most experienced and succession-ready executive teams, providing investors with confidence in Nvidia's ability to maintain market leadership across multiple business cycles and potential CEO transitions.

5.1 Maximizing shareholder value

NVIDIA's total shareholder return (TSR)

Incorporating share price performance, dividends paid and share buybacks since its IPO on January 22, 1999, against the S&P 500 index.

- IPO Date: January 22, 1999, at a split-adjusted price of \$0.04 per share
- Share Price (June 2025): \$144.12
- Dividends: Initiated in 2012, dividends have been modest, with a current annual payout of \$0.04 per share and a cumulative yield under 1% over the period.
- Share Buybacks: Significant buybacks began in the mid-2010s, accelerating sharply from 2022 onward, with over \$30 bn repurchased in 2024–2025 alone.
- Total Shareholder Return: Driven overwhelmingly by share price appreciation, with buybacks providing incremental benefit in recent years and dividends a minimal contributor.

Since 2020, Nvidia has returned \$68.5bn combined dividends and sharebuy-backs to investors (~circa 2% current mkt cap)

Fig 5-2: NVIDIA Total Shareholder Return (1999–2025)

Period	Start Price	End Price	\$ Div paid bn	ShrBuyback \$bn	TSR (%)
1999–2004	0.04	0.18	Nil	1.46 [2004 to 2013]	~350%
2005–2009	0.18	0.43	60mil ^a		~139%
2010–2014	0.43	0.48	1.335 ^b		~12%
2015–2019	0.48	5.86	2.8 ^b	nm	~1,125%
2020–2024	5.86	134.27	0.834 ^c	30.326	~2,200%
2025 YTD	134.2	144.12	1 ^c	36.23 ^d	~7.5%

Source: Company data, NYSE (a) Dividends suspended 2007–3Q2012, (b) dividends start late 2012 \$0.004 quarterly (c) 0.004 div quarterly, increasing to **0.01** quarterly in FY2024/25, (d) Share buybacks: 7.76bn (Jan), 11.08 (Oct), 6.99 (Jul), 7.99 (Apr)

S&P 500: TSR Components and Historical Context

- Total Return: Includes price appreciation and reinvested dividends.
- Annualized Total Return (since 1999): Approximately 10.4%
- 5-Year Block Returns: Varying by market cycle, with strong gains in the 2010s and early 2020s, but weaker or negative returns in the early 2000s

Figure 5-3: S&P 500 Total Return (1999–2025) vs Nvidia TSR

Period	S&P Return	Nvidia TSR	NVIDIA's TSR since IPO dwarfs the S&P 500: Over 350,000% cumulative return, compared to the S&P 500's approximate 450% over the same period.
1999–2004	-10%	350%	
2005–2009	0%	139%	
2010–2014	80%	12%	
2015–2019	70%	1,125%	
2020–2024	90%	2,200%	
2025 YTD	10%	7.5%	
Cum returns	450%	350,000%	

Source: S&P 500 total return includes dividends reinvested

6. ACQUISITION GROWTH

Nvidia's Acquisition Strategy a deliberate trajectory toward innovation and market expansion. NVIDIA has completed 26 acquisitions (of which 5 are AI Infrastructure and 3 in Enterprise Storage) with an average acquisition amount of \$6.31bn. Its most active year was 2024, with 7 acquisitions, and it has averaged 3 acquisitions annually over the past three years, including 1 in 2025 so far.

How the Acquisitions Benefited NVIDIA

The strategic acquisitions undertaken by NVIDIA have played a pivotal role in bolstering the company's position and impact across multiple sectors.

- Diversification into Mobile Technologies:** Acquisitions like MediaQ, Icera, PortalPlayer, and ULi Electronics have propelled NVIDIA into the mobile technology arena. NVIDIA solidified its foothold in mobile computing by leveraging MediaQ's expertise in wireless multimedia and Icera's baseband processors. Similarly, the acquisition of PortalPlayer equipped NVIDIA to fuse its GPUs with microprocessors for personal media players, PDAs, and cell phones. In contrast, the acquisition of ULi Electronics strengthened its presence in Asian markets.
- Advancements in AI and Machine Learning:** NVIDIA's strategic acquisitions, including OmniML, Excelero, Parabricks, and Oski Technology, significantly enhanced its capabilities in AI and machine learning. These acquisitions introduced software solutions for more accessible model training, software-defined storage solutions, AI-powered security analytics, and robotics technology, augmenting NVIDIA's AI enterprise platform.
- Data Center and High-Performance Computing (HPC) Solutions:** NVIDIA's Mellanox, Cumulus Networks, and Bright Computing acquisitions underscore its commitment to data center advancements. Mellanox's interconnect solutions, Cumulus Networks' networking software expertise, and Bright Computing's HPC management tools have amplified NVIDIA's HPC and data center solutions capabilities.
- Gaming and Graphics Innovation:** NVIDIA's acquisitions of AGEIA Technologies and Mental Images enriched its gaming prowess. AGEIA's PhysX software for gaming physics technology and Mental Images' 3D graphics capabilities bolstered NVIDIA's offerings across gaming consoles and 3D modeling industries.

Nvidia's 17 Acquisitions: A Comprehensive List

1. MediaQ for Mobile Visual Prowess [Graphics | Multimedia]

MediaQ, Inc., renowned for its pioneering graphics and multimedia technology tailored for wireless mobile devices, on February 01, 2023. The acquisition not only grants NVIDIA access to MediaQ's esteemed clientele, which includes significant handset and PDA manufacturers like Mitsubishi, Siemens, Dell, HP, Sony, and more, but also signifies a strategic amalgamation of expertise. By combining proficiency in 3D, video, ultra-low power, and wireless mobile architectures, NVIDIA now propels itself into a prime position to offer an extensive lineup of products for the burgeoning mobile and handheld market segments.

2. SwiftStack for Data Storage Dominance [Data Storage Mgt]

SwiftStack (18-Dec-19), a software-centric data storage and management platform with versatile support for public cloud, on-premises, and edge deployments. This acquisition underscores its focus on enhancing support for AI, high-performance computing, and accelerated computing workloads. While the acquisition price remains undisclosed, SwiftStack's prior funding rounds amounted to approximately \$23.6 mil, led by investors like Mayfield Fund and OpenView Venture Partners.

3. Cumulus to Strengthen Networking Software [Networking stack]

Cumulus Network to enable the accelerated, software-defined data center. By integrating Cumulus' networking expertise, particularly its operating system, Cumulus Linux, supporting over 100 hardware platforms, NVIDIA aims to optimize the networking stack, from chips to software.

4. Arm Limited for AI Dominance – Failed \$40bn acquisition

In a \$40 bn deal, NVIDIA acquires Arm Limited from SoftBank Group Corp. to merge NVIDIA's leading AI computing platform with Arm's expansive ecosystem, poised to redefine computing in the AI era and penetrate lucrative, high-growth markets. The acquisition is targeted to reinforce NVIDIA's commitment to preserve Arm's open-licensing model and customer neutrality, pivotal to Arm's historical success, boasting a staggering 180 bn chips shipped by its licensees.

5. Mellanox for Next-Gen Computing Power [Networking solutions]

In a significant move, NVIDIA has sealed a deal to acquire Mellanox, a leading name in high-performance computing (HPC), for approximately \$6.9 bn. This acquisition marks the convergence of two HPC giants, propelling over 250 TOP500 supercomputers worldwide with NVIDIA's computing platform and Mellanox's interconnects, servicing major cloud providers and computer manufacturers. The intensifying demands of AI, scientific computing, and data analytics have spurred a

surge in computing and performance requirements within hyperscale and enterprise data centers. As CPU advancements slow down post-Moore's Law, the amalgamation of NVIDIA's accelerated computing GPUs and Mellanox's intelligent networking solutions emerges as a solution.

6. Mobile Dominance with Icera [mobile technology]

Icera, a trailblazer in high-performing wireless modems for 3G and 4G cellular devices, in a \$367 mil cash deal. As Icera becomes a wholly owned subsidiary operating under its existing trade name, NVIDIA fortifies its foothold in mobile technology. This strategic move enables NVIDIA to offer both the applications processor via the Tegra superchip and the baseband processor, leveraging Icera's cutting-edge technology. This combined offering promises OEM customers accelerated time to market and equips them to meet the demands of the next-gen mobile computing landscape. The acquisition is poised to potentially double NVIDIA's revenue opportunities within each mobile device, marking a significant step toward mobile market dominance and innovation in smartphones and tablets.

7. Gaming Prowess with AGEIA Technologies Acquisition [Gaming]

AGEIA Technologies, Inc., a trailblazer in gaming physics technology. This strategic move cements NVIDIA's position in the gaming realm, leveraging AGEIA's widely adopted PhysX(R) software, present in over 140 PhysX-based games across gaming consoles like Sony PlayStation 3, Microsoft XBOX 360, Nintendo Wii, and gaming PCs. The pervasive nature of AGEIA's physics software is underscored by its extensive user base, boasting over 10,000 registered and active users of the PhysX SDK. This acquisition represents NVIDIA's commitment to enhancing gaming experiences by integrating cutting-edge physics technologies, reinforcing its leadership in delivering immersive and realistic gaming environments across diverse gaming platforms.

8. PortalPlayer [Enhance GPUs]

PortalPlayer, which specializes in producing chips for SanDisk Corp.'s Sansa c200 and e280 MP3 players, with plans to extend support to secondary displays in upcoming Acer Inc. notebook PCs. Although the company previously supplied chips for Apple Computer Inc.'s iPod, that association reportedly concluded in April. The plan is to fuse Nvidia's GPUs (graphics processing units) with PortalPlayer's microprocessors, targeting an expanded user base spanning PMPs (personal media players), PDAs (personal digital assistants), portable gaming devices, and cell phones. Jensen Huang, CEO of Nvidia, highlighted these strategic intentions in a recent statement.

9. ULI Electronics to Strengthen Asian Market Presence

Acquiring ULI Electronics, a core logic developer and partner of ATI, for USD 52 mil significantly bolsters NVIDIA's foothold in Asian markets. The graphics processor giant had initially unveiled the definitive acquisition agreement in December, emphasizing its continuous investment in platform solution technology. Specifically, the focus lies on enhancing the nForce media and communications processors (MCP), a sector that has continually contributed to the company's revenue growth.

10. OmniML for Enhanced AI and ML Software Offerings

OmniML to expand its software offerings for AI and machine learning. OmniML's software makes it easier for businesses to train and deploy machine learning models. Nvidia's GPUs accelerate the training and inference of machine learning models. The acquisition of OmniML is a significant step forward for Nvidia in its efforts to expand its software offerings for AI and machine learning.

11. Excelero to Improve Data Centers

Excelero, a software-defined storage (SDS) solutions provider, to enhance its data center offerings for AI and machine learning workloads. Excelero's NVMesh software enables businesses to manage NVMe SSDs from various vendors, simplifying storage infrastructure & boosting AI and machine learning performance, strengthening Nvidia's position as a leading data center solutions provider.

12. Parabricks for AI-Powered Security Analytics [cybersecurity]

Parabricks (11-Mar-19) strengthen AI security capabilities & provide a comprehensive solution for enterprise data protection. Parabricks' AI-powered security analytics software enables organizations to detect and respond to threats more effectively. Nvidia integrated Parabricks' technology into its AI enterprise platform to streamline AI workflows, enhance security posture & accelerate AI adoption.

13. Enhances AI Robotics with Oski Technology [AI Robotics]

Oski Technology to bolster its AI robotics capabilities and expand its presence in the robotics market. Oski Technology's Omniverse Robotics software provides AI-powered motion planning, real-time simulation, and fleet management tools. Nvidia integrated Oski Technology's software into its AI enterprise platform to streamline robotics workflows, enhance robot performance & accelerate AI adoption.

14. Bright Computing to Enhance Data Center Management

Bright Computing marked a significant step in its efforts to establish itself as a leading provider of end-to-end HPC solutions. This acquisition aimed to strengthen Nvidia's data center management capabilities and expand its presence in the HPC market.

Bright Computing's flagship product, Bright Cluster Manager, provides a comprehensive suite of tools for managing and optimizing HPC clusters. The software simplifies cluster deployment, automates resource provisioning, and optimizes workload scheduling, enabling organizations to maximize the performance and utilization of their HPC resources. By integrating Bright Computing's software into its AI enterprise platform, Nvidia aimed to streamline HPC workflows, enhance cluster performance, and accelerate AI adoption in various industries.

15. PortPlayer to Elevate Mobile Device Technology

PortalPlayer to enhance its mobile device capabilities. PortalPlayer's SoC technology was integrated into Nvidia's GPUs, creating a more robust and versatile platform for mobile devices.

16. Mental Image Strengthens Nvidia's 3D Graphics Capabilities

Nvidia strategically moved to solidify its position in the burgeoning 3D graphics market by acquiring Mental Images for approximately \$200 mil. Mental Images, a highly regarded company in the industry, was renowned for its flagship product, Maya, a widely used 3D modeling and animation software package employed across the film, television, and video game industries. This acquisition marked a significant milestone for Nvidia, as it gained access to Mental Images' cutting-edge technology, including Maya's advanced rendering capabilities and extensive feature set.

17. Icera (see # 6) divestment to Fortify Mobile Presence

Icera 2011 to enhance its mobile computing capabilities by gaining access to Icera's baseband processor technology. This move aimed to strengthen Nvidia's position in the burgeoning mobile market. However, challenges faced in the years following the acquisition led to Icera's sale to MediaTek in 2015. Despite this setback, Nvidia's mobile endeavors paved the way for its subsequent success in AI and ML.

NVIDIA's strategic acquisitions have proven instrumental in broadening its technological portfolio, enhancing its capabilities across AI, mobile computing, data centers, gaming, and graphics. These acquisitions strategically position NVIDIA as a multi-faceted technology leader, fostering innovation and diversification in an ever-evolving technological landscape.

References:

- *Brev.dev (Jul 17, 2024)*
- *Run (April 24, 2024): \$700 mil AI and machine learning optimization.*
- *Deci AI (April 25, 2024): \$300mil AI model deployment.*
- *Shoreline.io (June 19, 2024): \$100milloud management.*
- *SwiftStack (March 6, 2020): Multi-cloud data management.*
- *DeepMap (June 10, 2021): Mapping for autonomous vehicles.*

7. INTELLECTUAL PROPERTY

Nvidia's intellectual property portfolio represents a strategic cornerstone supporting the company's \$3+ trillion market capitalization and dominance in AI infrastructure markets. With over 15,500 global patents concentrated in high-growth technology areas, the portfolio creates sustainable competitive moats while enabling revenue diversification through licensing opportunities worth billions annually.

Strategic Patent Portfolio Assessment

Nvidia's patent concentration directly aligns with its business transformation from gaming focused GPU manufacturer to AI infrastructure leader. The **415 AI/ML patents** and **336 networking patents** directly support the company's dominant \$39.1 bn quarterly Data Center revenue (88% of total) while comprehensive coverage across emerging technologies positions the company for sustained growth in markets projected to reach \$375 bn by 2030.

Patent quality metrics demonstrate exceptional strategic value: despite ranking 9th globally in AI chip patent volume, Nvidia holds the #1 position in forward citations, indicating its patents represent **foundational technologies that competitors must reference or license**. This "quality over quantity" approach has generated significant licensing revenue, including a \$1.5 bn payment from Intel^{pa1} while creating switching costs that support **72% gross margins** and sustained competitive advantages.

Figure 7-1: NVIDIA Patent Portfolio at a Glance

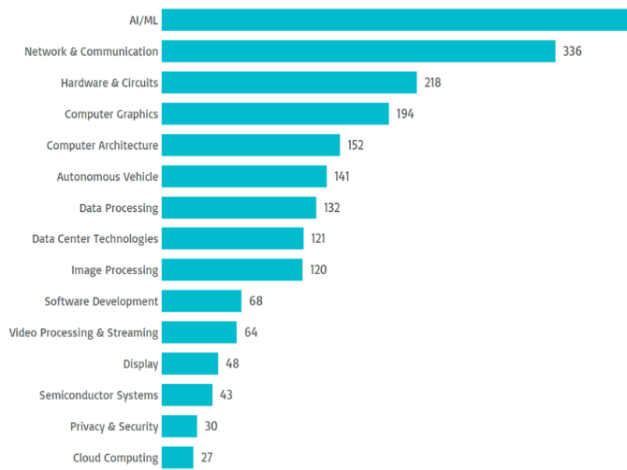
Metric	Value/Estimate (2024)	Notes/Assumptions
Total Patents (Global)	15,553	8,003 granted, 76% active
Main Geographies	US, China, Germany, Taiwan	8,242 US patents ^{pa2}
Key Technology Areas	AI/ML, Networking, Hardware	10% "A" or above quality ^{pa3}
Blended Royalty Rate	5 - 7%	Industry benchmark ^{pa4}
Implied Annual Royalty Value	\$7.2B	Based on \$120bn protected revenue
Implied Portfolio Value (PV)	\$44 - 60bn	10-year DCF, 10% discount rate
Strategic Value	High	Defensive moat, market leadership

The portfolio's geographic coverage across 18+ jurisdictions ^{pa5} and strategic acquisitions (notably Mellanox's \$6.9 bn acquisition adding high-quality networking patents) provide comprehensive protection for international expansion and sovereign AI initiatives generating multi-billion dollar contracts.

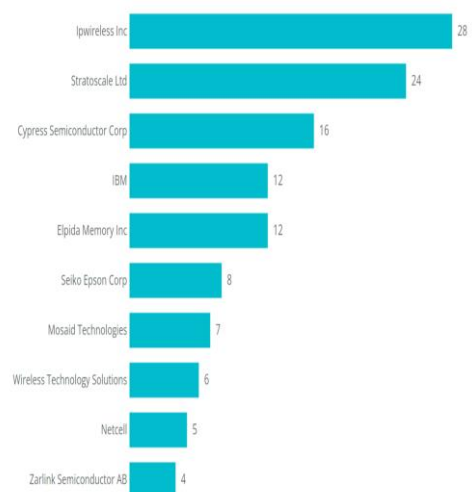
7-1 Patent Portfolio Size and Composition

- **Total Patents:** Over 15,500 globally, with more than 8,000 granted and 76% active as of 20241 (figure 7-1).
- **Geographic Coverage:** Largest filings in the U.S. (8,242), followed by China, Germany, and Taiwan.
- **Technology Focus:** Dominant areas include AI/ML, networking, hardware/circuits, computer graphics, autonomous vehicles, and data center technologies (figure 7-2)
- **Patent Quality:** Approximately 10% of patents in key fields (e.g., electronic digital data processing) are ranked “A” or above, indicating high value and technological impact

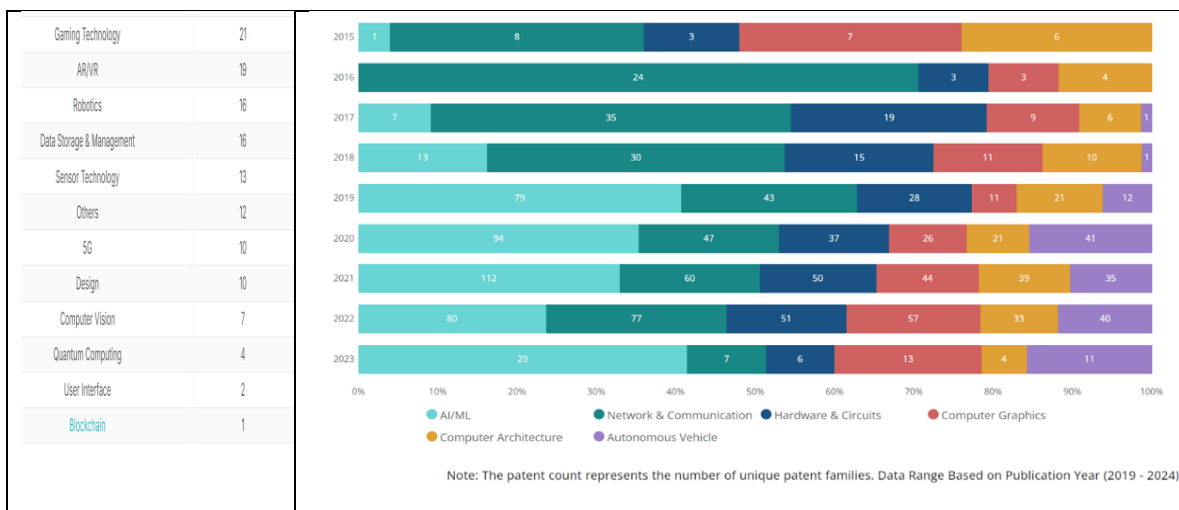
Figure 7-2: Nvidia’s patent portfolio



Patents from acquisitions



Note: The patent count represents the number of unique patent families. Data Range Based on Pu



Note: The patent count represents the number of unique patent families. Data Range Based on Publication Year (2019 - 2024)

Source: Company

Competitive Moat Strength: Nvidia's patent portfolio (fig 7-2) creates multiple layers of competitive protection: from foundational GPU architecture patents to software ecosystem lock-in through CUDA platform protection. The **#1 position in forward citations** ^{pag6} indicates

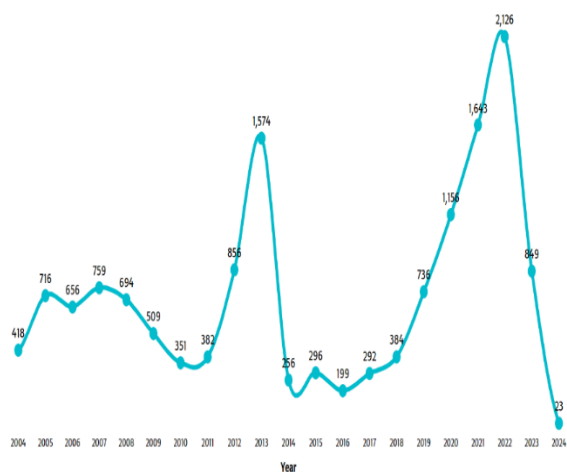
these patents represent fundamental technologies that competitors must reference ^{pa7}, creating significant barriers to entry and supporting premium pricing power.

Revenue Protection and Growth: The direct alignment between patent concentration (415 AI/ML patents) and revenue concentration (\$39.1bn quarterly Data Center revenue) provides strong protection for Nvidia's most valuable business segment ^{pa8}. Additionally, proven licensing capabilities demonstrated through the \$1.5 bn Intel agreement indicate substantial monetization potential as AI adoption accelerates globally.

Emerging Technologies and Future-Proofing

NVIDIA’s portfolio includes patents in **quantum computing, AR/VR, robotics, computer vision and 5G**: fields that may not be core revenue drivers today but are likely to be critical in the future.

Figure 7-3: Nvidia’s patent filing trend



Note: Patent filing year and all the patents in the portfolio are considered to plot the filing trend. Data Range Based on Publication Year (2004 - 2024)

Source: Company data, WSJ

Company	Number of Patent Applications that faced Rejection Citing Nvidia Patents	Number of Rejection (102 & 103)
Intel Corporation	849	2245
Samsung	431	1026
IBM	330	616
Qualcomm	273	609
Microsoft	239	625
Advanced Micro Devices	230	618
Apple	226	515
Arm Limited	114	276
Google	116	207
Huawei	94	178

NVIDIA’s recent patent filings (last 5 years) show a **clear focus on Artificial Intelligence/ Machine Learning (AI/ML), Networking & Communication, and Core Hardware**. NVIDIA’s patent portfolio is a direct outcome of its high R&D intensity (over \$12B in FY2025).

This focus aligns precisely with the fastest-growing and highest-margin segments of the tech industry: AI accelerators, data center networking and autonomous systems. This gives NVIDIA a first-mover advantage and the ability to shape industry standards (e.g., CUDA for AI, NVLink for high-speed GPU interconnects).

High Patent Quality and Blocking Power

NVIDIA's patents are not only prolific but also **highly cited and influential**. For example, its most popular patent (US8738860B1) has received 485 citations, and several others have been cited by major tech companies like Intel, Samsung, IBM, Qualcomm, Apple, and AMD.

Blocking Power: USPTO examiners have used 3,278 NVIDIA patents in 16,365 rejections of patent applications from other companies (notably Intel, Samsung, IBM, AMD, Apple, Arm, Google, Huawei). Implying NVIDIA's inventions have directly prevented competitors from patenting similar innovations, forcing them to license, design around, or risk litigation, raising their costs and time-to-market.

7-1-1 Patent Valuation: Methodologies and Assumptions

Key Assumptions

a. Patent Duration

- **Legal Life:** Most patents have a 20-year term from filing, but effective commercial life is often shorter due to technological obsolescence ^{pa9}.
- **Portfolio Age:** NVIDIA's portfolio is actively refreshed, with peak filings in recent years, ensuring a high proportion of patents with significant remaining life.

b. Total Addressable Market (TAM)

- **Relevant TAM:** The value of NVIDIA's patents is linked to the size of the markets they protect: AI chips, data center hardware, automotive AI, and edge computing: estimated at over \$300B by 2030 ^{pa9}.
- **Market Penetration:** NVIDIA's patents cover technologies that command dominant market share in AI accelerators and GPUs, amplifying their economic impact.

c. Patent License Fees

- **Industry Benchmarks:** Semiconductor and electronics patent royalty rates typically range from 4.8% to 5.5% of net sales, with software-related patents sometimes commanding higher rates (8-12%) ^{pa4}.
- **NVIDIA-Specific Factors:** Given the high quality and centrality of NVIDIA's patents, a blended royalty rate of 5-7% is a reasonable assumption for core technologies, with higher rates possible for unique, foundational patents ^{pa4}.
- **Licensing Models:** Revenue can be generated via upfront fees, ongoing royalties, or lump-sum payments, depending on exclusivity and market reach ^{pa9}.

7-1-2 Implied Valuation of NVIDIA's Patent Portfolio

6Σ estimates Nvidia's patent portfolio value in the range of \$41-58bn or circa 1.4% current market cap. We view this as a free implied optionality value for Nvidia against near term market share erosion.

- i. **FY2025 Revenue Attributable to Patented Technologies:** Assume \$110.5bn (85% of \$130bn total) is directly protected by patents. 6Σ 85% is at 95% confidence level.
- ii. **Blended Royalty Rate:** 6%.
- iii. **Annual Implied Patent Value (Royalty Basis):** $\$110.5\text{bn} \times 6\% = \6.63bn per year.
- iv. **Present Value (10-year horizon, 10% discount rate):**
 $PV = 6.63 \times (1 - (1 + 0.10)^{-10}) / 0.10 \approx \41.34bn
- v. Premium Portfolio Quality implies **valuation range \$41-58bn** (see figure 7-4)

Figure 7-4: Adjustments for Premium patents

Portfolio premium	NPV impact \$ bn
10%	+ 4.1
25%	+ 10.3
40%	+ 16.5

Source: 6Σ estimates

Nvidia's patent portfolio represents a **high-quality strategic asset** offering significant entry barriers, licensing leverage and implied patent/competition protection. The combination of proven revenue alignment, superior patent quality metrics, expert validation and positioning for future growth markets creates a compelling intellectual property foundation supporting sustained competitive advantages in the rapidly expanding AI ecosystem^{pa6}. While litigation risks and regulatory challenges require monitoring^{pa7}, portfolio's defensive strength and licensing potential provide both downside protection and upside opportunity for investors.

8. FINANCIALS, TOTAL SHAREHOLDER RETURN & INTRINSIC VALUATION

NVIDIA's 2025 financials hyper-growth, expanding margins and robust cash flow underpins a dominant monopolistic profile amidst early stages of high growth industry. Management team through its long sighted strategies has maximized shareholder value creation (section 5-1) with its execution and near term financials outlook strongly reinforced continuation of this growth trajectory. 6Σ intrinsic valuation of \$223 (+50% upside potential) has significant upside risks for FY27F given the expected release of newer Blackwell and Grace versions.

8-1 Nvidia Financials

Figure 8-1: Income statement

\$ mil	1/24	1/25	1/26F	1/27F	%	24/16 ^a	25/24	26F/25	27F/26F
Revenue	60,920	130,500	212,500	279,262		139	114	63	31
Cost of goods sold	(16,621)	(32,639)	(47,833)	(56,575)		95	96	47	18
SG&A	(2,654)	(3,491)	(4,531)	(5,880)		43	32	30	30
R&D	(8,675)	(12,914)	(25,500)	(33,511)		69	49	97	31
EBITDA	5,720	34,720	80,963	102,210		na	507	133	26
Depn & amortization	(1,508)	(1,864)	(2,423)	(2,908)		83	24	30	20
EBIT	33,210	82,490	134,636	183,296		552	148	63	36
Net int income/(expense)	609	1,539	2,462	3,201		nm	153	60	30
Pre-tax profit	33,818	84,026	137,099	186,497		556	148	63	36
tax rate (%)	12.0	13.3	16.5	16.5					
Taxes	(4,058)	(11,146)	(22,621)	(30,772)		381	175	103	36
Net Profit	29,760	72,880	114,477	155,725		593	145	57	36
EPS (basic) \$	1.21	2.97	4.74	6.57		nm	145	60	39
EPS (FD) \$	1.19	2.94	4.69	6.50		nm	147	60	39
Consensus EPS			4.29	5.74		6Σ / Consensus		9.3	13.2
DPS \$	0.02	0.03	0.04	0.05		nm	50	33	25
payout ratio (%)	1.68	1.02	0.85	0.77					
Wt avg sh o/s (basic) mil	24,690	24,555	24,170	23,709					
Wt avg sh o/s (FD) mil	24,940	24,804	24,420	23,959					
Share Buy-back \$mil	25,000	50,000	60,000	70,000		NA	100	20	17
# staff year-end	29,600	36,000	43,200	51,840		28 ^b	22	20	20

Source: Company, 6Σ estimates. ^a: 8 year average, ^b: staff strength 9,227 in FY2016

6Σ revenue estimates based on GPU-AI accelerator market for FY26F and FY27F are 6.4% & 12% above consensus respectively, largely on the back of differences in market share growth assumptions. Consensus EPS appears to price in operating margin compression as well.

Figure 8-2: NVIDIA Revenue by Geography

Region	Revenue (US\$B)	% of Total
United States	61.26	47%
Singapore	23.68	18%
Taiwan	20.57	16%
China	17.11	13%
Other	7.88	6%

Source: Company

Segment Revenue (FY2025)

Segment	Revenue \$ bn	% of Total
Compute & Networking	116.2	89%
Graphics	14.3	11%

Fig 8-2 shows circa 38% international export revenues for Nvidia with Compute & Networking account for ~90% of FY25 earnings, largely Data Centre customers which are expected to continue driving Nvidia's revenue for the medium term.

Figure 8-3: Balance Sheet

\$ mil	1/24	1/25	1/26F	1/27F	%	25/24	26F/25	27F/26F
Cash & ST invest	25,984	43,210	136,986	271,726		66.3	217.0	98.4
Accounts receivable	9,999	23,065	28,831	40,364		130.7	25.0	40.0
Inventory	5,282	10,080	15,120	19,656		90.8	50.0	30.0
Other current assets	3,080	3,771	4,525	4,751		22.4	20.0	5.0
Total current assets	44,345	80,126	185,463	336,497		80.7	131.5	81.4
Net PP&E	5,260	8,076	10,499	11,024		53.5	30.0	5.0
Net intangibles	5,542	5,995	6,345	6,695		8.2	5.8	5.5
Trademarks/Patents	449	449	471	495		-	5.0	5.0
Total investments	1,546	3,387	6,097	7,316		119.1	80.0	20.0
Other long-term assets	9,037	14,016	14,717	16,924		55.1	5.0	15.0
Total assets	65,730	111,600	223,592	378,951		69.8	100.4	69.5
Accounts payable	7,775	15,321	18,385	21,143		97.1	20.0	15.0
Short-term debt	1,478	288	1,000	200		80.5	247.2	80.0
Current lease liabilities	228	288	330	355		26.3	14.6	7.6
Other current liabilities	1,150	2,150	1,290	1,061		87.0	- 40.0	- 17.8
Total current liabilities	10,631	18,047	21,005	22,759		69.8	16.4	8.3
Long-term debt	9,578	9,982	8,982	8,782		4.2	- 10.0	- 2.2
Non-current lease liabilities	1,119	1,519	1,174	919		35.7	- 22.7	- 21.7
Total long-term liabilities	12,119	14,227	10,156	9,701		17.4	- 28.6	- 4.5
Total liabilities	22,750	32,270	31,161	32,460		41.8	- 3.4	4.2
Total Debt	11,060	10,270	9,982	8,982		- 7.1	- 2.8	- 10.0
Equity	42,980	79,330	192,431	346,491		84.6	142.6	80.1
Retained Earnings	29,817	68,038	181,539	336,066		128.2	166.8	85.1
Total liabilities & equity	65,730	111,600	223,592	378,951		69.8	100.4	69.5
BVPS (\$)	1.74	3.24	8.0	14.6		86.2	145.7	83.6

Source: Company, 6Σ estimates

Nvidia has been essentially been in nett cash position for more than 10 years.

Figure 8-4: CashFlow Statement

\$ mil	1/24	1/25	1/26F	1/27F	%	25/24	26F/25	27F/26F
CF operating	29,760	72,880	80,963	102,210		144.9	11.1	26.2
Net change working capital	(4,236)	(10,604)	(7,742)	(13,311)		150.3	- 27.0	71.9
Others	2,566	1,813	4,200	5,000		- 29.3	131.7	19.0
CF from Operations	28,090	64,089	77,420	93,899		128.2	20.8	21.3
Capital Expenditure	(10,359)	(19,436)	(11,833)	(7,952)		87.6	- 39.1	- 32.8
Acquisitions / (Divestitures)	(83)	(1,007)	(1,200)	(1,200)		1,113.3	19.2	-
Others	(124)	22				- 117.7	- 100	
CF from Investing	(10,566)	(20,421)	(13,033)	(9,152)		93.3	- 36.2	- 29.8
Dividends paid	(395)	(834)	(967)	(1,185)		111.1	15.9	22.6
Share issue /(repurchased)	(11,913)	(40,146)	(48,000)	(56,000)		237.0	19.6	16.7
Debt issuance	(1,250)	(1,250)	(1,000)	(200)		-	- 20.0	- 80.0
Others	(75)	(129)				72.0	- 100	
CF from Financing	(13,633)	(42,359)	(49,967)	(57,385)		210.7	18.0	14.8
Net CF	3,891	1,309	14,420	27,362		- 66.4	1,001.6	89.7
Free CF	25,984	43,210	151,407	299,088		66.3	250.4	97.5
FCF per shr (basic) \$	1.0	1.7	6.2	12.5		67.2	255.9	101.3
Beg Cash	3,389	7,280	8,589	23,009		114.8	18.0	167.9
Ending Cash	7,280	8,589	23,009	50,372		18.0	167.9	118.9

Source: Company, 6Σ estimates

Capex + R&D is a key feature of Technology sector survivability and in this regard, we have factored in potential grants that would offset projected Nvidia capex/investment CF, which will explain the disconnect between R&D expenses increasing significantly \$25.5bn (FY26F) to \$33.5 (FY27F).

FCF of \$299bn (FY27F) implies significant war-chest should Nvidia continue to pursue its M&A growth strategy. While it also suggests tremendous capital return opportunity, our preference is for Nvidia management to retain bulk of its liquidity for potential strategic/operational deployment rather than increase its capital return to shareholders.

8-2 INTRINSIC VALUATION

Assessing Nvidia's sustainability by applying Rule of 95% (Revenue growth + Operating margin), strong FCF yield, high ROAE & Rev/staff, financial strength with high debt coverage. We are able to formulate high confidence intrinsic value of 223 (target PEG of 0.8).

Figure 8-5: Ratios, Valuations

Ratios & Valuation	1/24	1/25	1/26F	1/27F
PE (x)	120.9	49.0	30.7	22.1
PE/G		0.34	0.52	0.61
Target PE/G			0.80	1.00
Intrinsic Value			223	251
Mkt Cap/Sales (x)	59	27	17	12
Rule 95 (%)	180	177	126	97
Div Yield (%)	0.01	0.02	0.03	0.03
Capital Return (%)	0.72	1.44	1.75	2.09
FCF yield (%)	0.72	1.21	4.31	8.68
P/BVPS (x)	83	44	18	10
ROAE (%)	91	119	84	58
Revenue/staff (\$mil)	2.1	3.6	4.9	5.4
Debt/EBIT (x)	0.33	0.12	0.07	0.05
Interest cover (x)	128	330	562	868
Debt/Equity (%)	25.7	12.9	5.2	2.6
Growth & Margins (%)	1/24	1/25	1/26F	1/27F
Total revenue growth	126	114	63	31
Operating Profit growth	681	147	63	36
EPS growth	600	147	60	39
DPS growth	1	50	33	25
Gross margin	73	75	77	80
EBIT margin	54	62	63	66

Source: Company, 6Σ estimates

Figure 8-6: Industry Comparative analyses

	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H = G/B)	(I = B/C)	(J=B/D)	(K = I/E)	(L = J/F)
Industry Valuation	20/6/2025		EPS		Consensus Growth		Consensus		PE		PEG	
	Mkt Cap \$bn	Price	2025F	2026F	2025F	2026F	FV	% upside	2025F	2026F	2025F	2026F
Nvidia	3540	143.85	4.69	6.50	59.5%	38.7%	172.02	19.6%	30.7	22.1	0.52	0.57
AMD	231.82	128.24	3.99	5.72	20.6%	43.3%	128.29	0.0%	32.1	22.4	1.56	0.52
Intel	97.64	21.08	0.3	0.81	332.6%	168.7%	21.29	1.0%	70.3	26.0	0.21	0.15
ARM Holdings	168.5	145.04	1.78	2.4	9.3%	34.4%	131.81	-9.1%	81.5	60.4	8.76	1.76
Qualcomm	169.8	151.32	11.77	11.92	15.2%	1.2%	173.03	14.3%	12.9	12.7	0.85	10.24
Broadcom	1161	249.99	6.59	8.08	35.3%	22.6%	277.22	10.9%	37.9	30.9	1.07	1.37
Infineon (EUR)	50.9	34.22	1.42	1.95	-24.0%	37.1%	40.35	17.9%	24.1	17.5	-1.00	0.47
S&P					7.6%	14.0%			21.7		2.87	
Avg ex Nvidia ex S&P					64.8%	51.2%			43.1	28.3	1.91	2.42
excl Intel					20.1%	25.4%						

Source: Factset, 6Σ estimates

Nvidia's valuation metrics (fig 8-6) compares favourably against industry peers, with PE at 30.7x vs 43.1x (average), PEG at 0.52 amongst the lowest.

6Σ investment thesis centers on Nvidia's **impenetrable competitive moat** built through **18 years and \$60+ bn** (bn) in CUDA ecosystem development, creating switching costs comparable to Microsoft Office's dominance in productivity software. Unlike previous technology cycles, AI represents fundamental infrastructure: an "AI exoskeleton" for the global economy, driving sustained capital expenditure across enterprises, cloud providers, and sovereign nations.

Exit Strategy

With conservative assumptions suggesting intrinsic value of \$218 per share (52% upside from current \$144), NVDA offers investors exposure to a \$3.7 trn AI infrastructure buildout while trading at reasonable valuations relative to historical technology leaders during paradigm shifts. Upcoming 2H26F earnings is key to our revision of FY2027F intrinsic value of \$251.

APPENDICES: TABLES AND CHARTS

A1. Nvidia Employee count, Revenue per staff (2016-2025)

Fiscal Year	Employee Count	Year-over-Year Change	Percentage Growth	Revenue (USD)	Revenue per Employee
FY 2025	36,000	+6,400	+21.62%	\$130.5B	\$3.63M
FY 2024	29,600	+3,404	+12.99%	\$60.9B	\$2.06M
FY 2023	26,196	+3,723	+16.57%	\$27.0B	\$1.03M
FY 2022	22,473	+3,498	+18.43%	\$26.9B	\$1.20M
FY 2021	18,975	+5,200	+37.75%	\$16.7B	\$0.88M
FY 2020	13,775	+498	+3.75%	\$10.9B	\$0.79M
FY 2019	13,277	+1,749	+15.17%	\$11.7B	\$0.88M
FY 2018	11,528	+1,229	+11.93%	\$9.7B	\$0.84M
FY 2017	10,299	+1,072	+11.62%	\$6.9B	\$0.67M
FY 2016	9,227	-1	-0.01%	\$5.0B	\$0.54M

Sources: Nvidia Annual Reports, MacroTrends, Statista, Bullfincher, SEC Filings company data. Note: Nvidia's fiscal year ends in January (e.g., FY 2025 ended January 2025)

- **Total Employee Growth:** 290.3% (from 9,227 to 36,000)
- **Average Annual Growth Rate:** 16.4%
- **Compound Annual Growth Rate (CAGR):** 16.3%

Phase 1: Steady Growth (FY 2016-2020)

- Average annual growth: 10.5%
- Total employees added: 4,548
- Focus: Traditional GPU markets and early AI development

Phase 2: Acceleration (FY 2021)

- Record growth rate: 37.75%
- Employees added: 5,200
- Driver: AI market opportunity recognition

Phase 3: AI Boom (FY 2022-2025)

- Average annual growth: 17.3%
- Total employees added: 17,025
- Focus: Scaling to meet unprecedented AI demand

Productivity Metrics

- **Revenue per Employee Growth:** From \$0.54mil (2016) to \$3.63mil (2025)
- **Productivity Improvement:** 572% increase in revenue per employee
- **Current Industry Position:** \$5.02M revenue per employee (trailing twelve months)

Investment Areas (Based on hiring patterns and company disclosures):

1. **AI/ML Engineering:** Primary growth driver
2. **Data Center Operations:** Supporting infrastructure expansion
3. **Software Development:** CUDA ecosystem and AI frameworks
4. **Customer Support:** Scaling to support enterprise clients
5. **Research & Development:** \$3B+ annual investment

Notable Milestones

- **2020:** Minimal growth (3.75%) during pandemic uncertainty
- **2021:** Explosive 37.75% growth anticipating AI market
- **2023-2025:** Sustained 15-20% annual growth during AI boom
- **2024:** Forbes recognition as "hot employer" in Silicon Valley
- **2025:** Reached 36,000 employees with continued expansion

Competitive Advantages

- **Compensation:** 50% of employees earned over \$228,000 in 2023
- **Culture:** 96% employee endorsement as great workplace (vs 59% US average)
- **Benefits:** Comprehensive health, stock purchase, and wellness programs

Workforce Efficiency

Nvidia's remarkable revenue per employee growth demonstrates exceptional operational leverage, with each employee now generating 6.7x more revenue than in 2016, significantly outperforming industry averages and supporting premium market valuation.

A2 Superscript references

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