Darren Chen, Mohamad Elaarag,

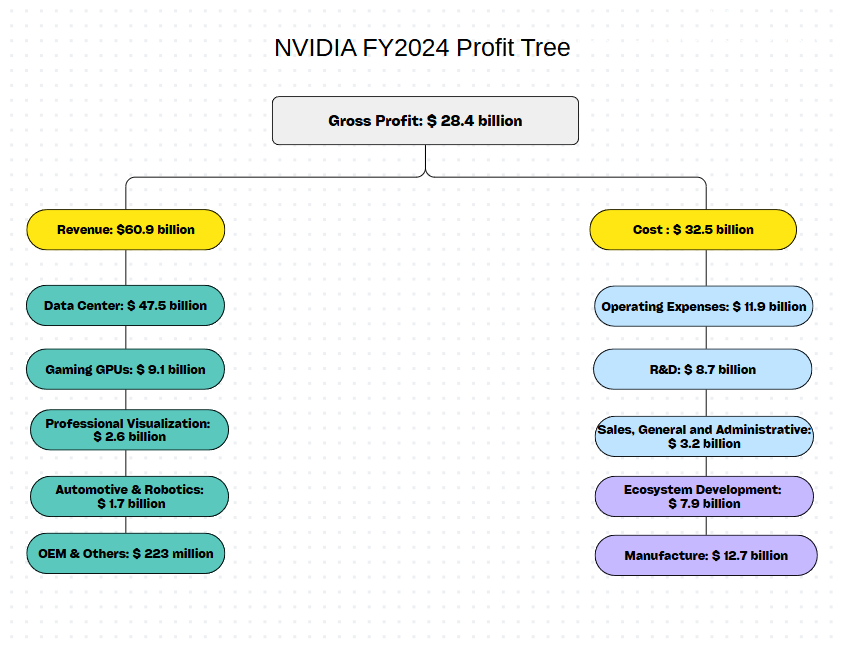
**1. Industry Economics and Firm Positioning – NVIDIA**NVIDIA operates in the semiconductor industry, specifically focused on GPUs (graphics processing units), AI chips, and high-performance computing. This industry is capital-intensive, driven by innovation, R&D, and global supply chains. Profitability depends heavily on scale, brand strength, and the ability to lead in cutting-edge tech.  
Key players in this space include:

* NVIDIA – market leader in GPUs and AI chips.
* AMD – competitor in gaming and data center GPUs.
* Intel – dominant in CPUs but pushing into GPUs and AI.
* Qualcomm, Broadcom, and Apple – also play in different segments of semiconductors.

NVIDIA’s positioning is unique because it's not just a chipmaker—it’s a platform company. Its GPUs power everything from gaming to AI research, autonomous vehicles, and data centers. On top of the hardware, NVIDIA has built a strong software ecosystem (like CUDA and AI frameworks), making it hard for others to catch up.  
 Firms in this industry differ in profitability because of their market focus, product differentiation, and innovation speed. NVIDIA leads because it dominates the fastest-growing and most profitable segments—AI and data centers—and it controls a critical part of the AI development stack.

NVIDIA is at a crossroads. While it leads the GPU and AI chip market today, its largest customers—Amazon, Meta, Microsoft—are building their own chips. If NVIDIA doesn’t adapt, it risks losing its most valuable clients and its edge in AI.  
That’s why our team believes NVIDIA must evolve from a chip company into a full-stack AI platform. Think hardware + software + services—like CUDA and Omniverse becoming the backbone of AI development. This approach isn’t just defensive—it’s a growth strategy. In FY2024, $47.5 billion of revenue came from data centers alone, and ecosystem development already accounts for nearly $8 billion in cost. That tells us the platform shift is already underway—it just needs to be accelerated and monetized. (FY2023 was 27 million, $15 billion data center, $9 gaming)

**2. A profit tree**



3. **A description of your company’s strategy, including its goal, scope, and source of advantage. Focus on the sustainable competitive advantages your company has and how it can maintain their edge.**

Goal: As a giant tech company specializing in high-performance chip manufacture, the long-term goal of Nvidia is to be able to dominate the fields of AI, advanced computing, and graphics by designing the most powerful chips available on the market. The technology race are more intense than ever as many companies are entering the semiconductor industry like META and Amazon are developing their own AI chips to reduce dependency from Nvidia which potentially pose a threat to their market position. Therefore, as the short-term goal, Nividia must invest heavily into R&D for AI chips to up hold their position in the industry.

Scope: Nvidia is a global platform company that designs and develops advanced computing technologies, especially GPUs and AI systems, to serve industries ranging from gaming to data centers to autonomous vehicles. Their GPU is the most powerful graphic card currently in the market for gaming and professional visualization. Nvidia work with many large tech firms like Amazon, Microsoft by supplying them with chips and data centers to provide fast data. Nvidia also play a big role in building chips for autonomous machines and vehicles.

Source of advantage: Nvidia got their reputation by created the most powerful chip than any tech firm around the globe. Their well built infrastructure like CUDA platform was designed to lets developers write code that runs extremely well on Nvidia chips and has become the industry standard in AI research. The strong brand recognition has made Nvidia to become the name in AI hardware.

How Nvidia maintains their edge: Nvidia invest heavily in R&D for AI chipsto stay ahead of rivals as the technology race are more tense than ever. In 2024, Nvida spent $8.68 billion on R&D, a significant increase from $2.38 billion in 2019. Nvidia is also diversifying its business portfolio by moving into software, cloud AI services, and automotive tech. Nvidia cooperate strategy with other tech giants like Google, Amazon, to up scale their business and also getting first hands industry news to strengthen their position.

**4. Identification of PARC (people, architecture, routines, culture) and how this impacts innovation.**

People: Nvidia recruits top talent in engineering, AI research, and chip design from around the world. Employees are encouraged to be both deep specialists in chip architecture, AI, etc., and be able to work across hardware, software, and business teams. The recruits' standard at Nvidia impact innovation by expanding to more horizon by encouraging employees to connect ideas across different departments or areas to expand their horizon to different areas within the tech industry and create values.

Architecture: As one of the leader in the tech industry, Nvidia’s structure revolve around promote rapid innovation, efficient product development, and market responsiveness by dividing their resources and talents according to the state of the market. This structure allows Nvidia to scale and innovate quickly compare to the rest of the market.

Routines: Nvidia maintains innovation on a strict, predictable timeline by implementing a new product cycle every two years. It is important for their chips to serve its purpose, which is why It has embedded feedback loops from major customers to adjust chip and software to perfectly fit their needs. Omniverse is part of their routine at impacting innovation. Omniverse allows Nvidia developers to simulate real-world systems virtually to test and improve designs quickly, without needing to build physical prototypes every time, therefore saving them cost and time for innovation.

Culture: The culture of Nvidia is very intense and mission-driven in order to help them achieve their goals and keep their seat as the dominant position in the tech industry. Their "fail fast, learn fast" mindset encourages engineers to experiment boldly and beyond their comfort zones, fostering rapid innovation and continuous improvement. Nvidia focuses on predicting the future of the tech industry by aiming for a long-term vision of the tech industry, which is why this culture helped them to build AI chips long before the market demanded them.

5. **Then go into more detail on the PARC framework to evaluate the company you'd love to work for's organization.**

**People**

Description:

NVIDIA recruits elite talent in engineering, AI research, and system architecture. Employees are encouraged to think across disciplines—hardware, software, and business—to create integrated solutions.

Alignment with Strategy:

Strongly aligned.

NVIDIA’s strategy is to dominate AI and high-performance computing through innovation and superior technology. To achieve this, it needs the best minds in AI and chip design. The people it hires are exactly the type who can build industry-leading products and push boundaries in tech, which supports its logic of staying ahead through deep technical expertise and bold R&D investments.

**Architecture**

Description:

The company is structured for agility and speed, with teams that can pivot toward emerging markets like AI, autonomous vehicles, and enterprise software. Resources are allocated based on market opportunity and innovation potential.

Alignment with Strategy:

Strongly aligned.

NVIDIA’s logic is to scale fast in growth markets and to win by innovating faster than the competition. Its organizational architecture allows for rapid iteration, fast decision-making, and product launches, which enables it to seize new opportunities ahead of others. This supports its goal of dominating future tech spaces before others catch up.

**Routines**

Description:

NVIDIA operates on predictable innovation cycles, typically releasing new GPUs every two years. It also incorporates direct customer feedback to improve both chips and software. Tools like Omniverse allow for fast, virtual testing and refinement.

Alignment with Strategy:

Highly aligned.

The logic of NVIDIA’s strategy is continuous improvement and customer-focused development. Its routines reinforce this by ensuring consistent innovation, timely upgrades, and responsiveness to user needs. These routines are essential for maintaining its technological edge and market leadership in fast-moving industries.

**Culture**

Description:

NVIDIA’s culture is high-performance, future-oriented, and built on experimentation. The “fail fast, learn fast” mentality is encouraged, and the company takes bold bets, such as investing in AI long before it became mainstream.

Alignment with Strategy:

Perfectly aligned.

The culture directly supports the company’s strategy to lead through bold innovation and long-term vision. Employees are empowered to pursue ambitious goals and adapt quickly to change, which reinforces NVIDIA’s identity as a proactive, visionary tech leader. This mindset helps the company act on future trends before they fully materialize—one of its key sources of competitive advantage.

**6. Competency Traps and Corrections**Trap: Over-Reliance on GPUs  
NVIDIA’s dominance in GPUs could become a weakness if the industry shifts toward new computing models like custom AI chips, quantum, or edge computing. To stay ahead, NVIDIA must keep diversifying into other hardware and software solutions beyond GPUs.

Trap: Overconfidence in AI Leadership  
Being the top AI chipmaker may lead NVIDIA to underestimate rising competitors or in-house chip development by tech giants. Staying competitive means maintaining urgency, investing in new areas, and avoiding complacency.

NVIDIA has general chips, versatile is a strength but if hyperscalers don’t need that flexibility then in-house chips are better.  
Other companies, Amazon (Trainium, Graviton and Inferentia), Google TPU, Meta MITA chip—are all examples of in-house silicon to reduce dependency and cost.  
Export restrictions to China are also affecting high-end chip sales.  
NVIDIA’s acquisition strategy favors AI infrastructure startups—because they want to control more of the AI workflow.

**7. A description of how your company encourages innovation, and how those activities logically support the company’s strategy.**

NVIDIA encourages innovation through a mix of aggressive R&D investment, cross-functional collaboration, internal experimentation, and long-term vision. These activities are tightly aligned with its strategy to lead the future of AI, high-performance computing, and advanced graphics.

How NVIDIA Encourages Innovation:

* Massive R&D Spending:  
   In 2024, NVIDIA spent over $8.6 billion on research and development (R&D). This ongoing investment ensures the company stays ahead in developing cutting-edge chips and AI platforms.
* Cross-Disciplinary Teams:  
  Engineers and researchers work across hardware, software, and AI frameworks, allowing for innovation that’s integrated, not siloed.
* Developer Ecosystem (CUDA, Omniverse):  
  By building platforms like CUDA and Omniverse, NVIDIA empowers third-party developers to innovate on top of its hardware, turning the ecosystem into a source of constant innovation.
* Fail Fast Culture:  
  NVIDIA promotes experimentation and quick learning. This means teams are encouraged to take risks, test early, and move fast—ideal for a fast-changing tech landscape.
* Strategic Partnerships:  
  NVIDIA collaborates with companies like Microsoft, Google, and Amazon to co-develop solutions and stay ahead of market trends.

How This Supports NVIDIA’s Strategy:

* Staying Technologically Ahead:  
  Innovation ensures NVIDIA leads in AI chips, keeping its advantage over rivals and newer entrants.
* Creating Lock-In Through Ecosystems:  
  Platforms like CUDA and Omniverse make it harder for customers and developers to switch, reinforcing NVIDIA’s position as the backbone of AI and advanced computing.
* Speed to Market:  
  A fast, agile innovation model helps NVIDIA bring new products to market quickly—essential in a rapidly evolving industry.
* Long-Term Vision Execution:  
  Betting early on AI, autonomous systems, and simulation technologies aligns with NVIDIA’s strategy of predicting and building for the future, not just reacting to current demand.

Let’s assume NVIDIA converts just 10% of existing enterprise developers (~250K users) into Omniverse/CUDA SaaS customers.  
Charging $2,000/year per seat (a conservative enterprise SaaS rate):  
250K users × $2,000/year = $500M in recurring revenue

Yes, NVIDIA is already a platform company but it’s undermonetized. CUDA and Omniverse have traction, but they’re not SaaS-modeled (we should be like AWS with cloud computing).Gross margins are 70%, abnormally high.  
CUDA is closed-sourced – GPU has thousands of processing units and CUDA lets you write code and run it on GPU.  
Omniverse is built on open standards like USD (Universal Scene Description).  
NVIDIA GTC conference (like Apple’s WWDC) is not just to launch products, but to lock in developers into the NVIDIA ecosystem.

**8. Several concrete suggestions that will help your company improve its strategy. These suggestions should draw on the material from this course.**

Strengthen Competitive Moats in Software & Services

Proven Track Record in the Industry:

* Apple, Amazon, and Microsoft all started as hardware or product companies but built their strongest long-term advantages through software and services:  
  + Apple: Hardware + iOS + App Store → high switching costs, massive ecosystem.
  + Amazon: AWS became the profit engine, giving Amazon massive cash flow to reinvest.
  + Microsoft: Transitioned from boxed software to cloud services (Azure, Office 365) and regained dominance.

NVIDIA’s Own Early Successes:

* CUDA is a key example—NVIDIA's proprietary software framework is why developers stick with NVIDIA GPUs.
* Omniverse, their real-time simulation and collaboration platform, is already gaining traction in industries like automotive, architecture, and robotics.
* AI cloud services are a logical next step. In fact, NVIDIA has already partnered with AWS, Google Cloud, and Microsoft Azure to power cloud AI infrastructure—growing that into a full software + service model would multiply margins and deepen customer lock-in.

Supporting Data:

* Recurring Revenue from software is more scalable and less volatile than hardware.
* Margins for services (75–85%) are much higher than for hardware (30–50%).
* In 2024, NVIDIA’s Data Center revenue surpassed Gaming for the first time—a strong signal that enterprise services, not consumer GPUs, are becoming the future.
* Companies with a strong software/service moat are more resilient to competition and pricing pressure (e.g., compare Microsoft to Dell).

Strategic Fit:

* This directly supports NVIDIA’s goal to lead in AI and advanced computing, not just through chips, but through complete platforms.
* By expanding into software + services, NVIDIA can turn one-time chip buyers into long-term customers who depend on its ecosystem for cloud compute, simulation, ML tools, and more.

**Strategy/goal**: Should NVIDIA continue to compete through GPU and chip innovation alone—or should it evolve into a full-stack AI platform company that integrates software, services, and ecosystems to sustain long-term leadership?

Abstract: Nvidia's long-term vision with their mission-driven culture has made them who they are today as the world's leading tech company. This strategy led them to build a strong infrastructure revolving around AI before the market demand was even there. Hence the reason why we think Nvidia should evolve into a full-stack AI platform company that integrates software, services, and ecosystems to sustain long-term leadership, as many companies are starting to invest heavily in AI development.

Vertical integration strategy: We think adopting a vertical integration strategy would be a highly effective approach for Nvidia to achieve this goal. The current position of Nvidia is chip manufacturing along with AI development, and with this strategy, Nvidia could easily shift their focus to building their own AI platform with their current infrastructure as their long-term goal.

Value proposition:

Customers:

1. The demand for AI platforms mostly comes from enterprise AI, cloud providers, startups, research labs, and governments in order to optimize their operations. Investing in building an AI platform as an enterprise tool to help customers scale their AI technology and “get jobs done.”

Products:

1. Nvidia's AI platform allows Nvidia to capture more value beyond selling chips and designing the system. Nvidia’s AI platform integrates chip manufacturing, system design, AI frameworks, cloud services, and AI applications to help position the company as a trusted, one-stop shop for end-to-end AI solutions.
2. MOAT framework: One of the reasons why Nvidia could maintain their competitive advantage is by deeply integrating hardware and software, which makes it hard for rivals to replicate the design of CUDA applications to only work with Nvidia chips (similar to Apple’s iOS system). Another advantage of deep integration between hardware and software is that Nvidia controls both components, which gives them the ability to enable performance and energy efficiency gains to give the most optimal result.
3. Cloud-based AI services: Cloud-based AI services democratize AI, making its power accessible to organizations of all sizes. This allows businesses to leverage AI's potential to improve efficiency and innovation.

Capabilities:

Partners: Amazon

1. Amazon would be the best partner for Nvidia's cooperation strategy since they are currently the largest cloud provider globally. Partnering with AWS allows Nvidia to scale its training, inference, and deployment infrastructure globally without building its own cloud from scratch.
2. AWS has a large customer base with millions of enterprises and AI startups, many of whom use Nvidia GPUs. Nvidia and AWS's joint platform integration can offer end-to-end AI solutions to shared customers.
3. Partnership with AWS will immediately grant Nvidia access to global data centers, enterprise-level security and compliance, and scalable cloud computer storage. The cooperation strategy will shorten Nvidia’s time building its own AI platform with valuable industry information.

Operations:

1. Nvidia's current operations lay a strong foundation for evolving into a full-stack AI platform company by the design of AI-powered chips like H100 and Blackwell B100 as a base compute layer every AI platform needs.
2. Software advantage ecosystems of CUDA, TensorRT, and cuDNN, which have been utilized for GPU programming and optimizing AI inference and training. Owning the software layer lets Nvidia build and control the AI development workflow more easily.
3. Nvidia should narrow the gap between infrastructure and service platform by focusing on the development of their DGX Cloud AI platform by partnering with AWS to create a well-built AI service.

External component:

Competitor:

1. Entering the AI industry contains risks of competing against well-known firms like OpenAI, Anthropic, and Hugging Face. Nvidia should build an end-to-end AI stack to ensure performance optimization across the entire platform and create a closed ecosystem that competitors can't easily replicate.
2. Develop an exclusive, powerful chip for their own AI platform to outperform the competitors.

Internal component:

Finance:

1. Invest heavily in the development of 30% of revenue for the AI platform to gain competitive edge and market share.
2. Use chip sales as a sustainable revenue stream to subsidize full-stack AI investments.
3. Shift investor expectations from short-term EPS to a platform-based revenue growth story to gain capital for the investment.

In conclusion, Nvidia already has all the necessary components to build a cutting-edge AI platform. Partnership with a well-trusted partner in cloud services like AWS and developing their own AI platform are the crucial steps for Nvidia to evolve into a full-stack AI platform company that integrates software, services, and ecosystems to sustain long-term leadership. The market expenditure for AI is estimated at $300–350 billion in 2025 with a rapid CAGR of 30% annually as everyone and every firm is incorporating AI into their daily routine, showing a promising potential for Nvidia's AI platform to thrive. The AI platforms create many revenue streams for Nvidia. First, the partnership with AWS will connect them with a large enterprise customer base that is in need of AI adoption, like finance, healthcare, automation, etc. Secondly, generative AI is being used daily by individuals for personal usage. Last but not least, AI infrastructure buildout, like data centers and cloud services for companies in need of AI development, guarantees a steady stream of revenue. Despite the intense competition and significant capital injection of 30% of revenue to enter the AI platform industry, we still consider Nvidia to have a high chance of success through our PARC analysis. Creating their own AI platform will set the long-term goal for Nvidia’s success and also align their chip design with a deeper insight into how to improve their own platform before offering it to the market.

Questions:

### **1. Are there switching costs for manufacturers?**

**Answer:**Yes—around 34%. That’s why NVIDIA’s SaaS model is valuable. It keeps customers in their ecosystem by integrating hardware and software (e.g., CUDA) to create reliance.

**2. What’s the benefit of using a pay-as-you-go SaaS model for enterprise customers?**

**Answer:**It reduces upfront cost burdens and makes it easier for customers to commit long-term. NVIDIA could also offer discounts or bundle deals with chip purchases to increase value.

**3. Would expanding into robotics or vehicles affect NVIDIA’s current partnerships?**

**Answer:**Yes, it could—so NVIDIA must evaluate whether partner values still align. It may be necessary to end some partnerships to focus on better-aligned or more strategic ones.

**4. Is it wise to invest in another subscription model if previous efforts (like GeForce Now) weren’t profitable?**

**Answer:**Possibly. CUDA targets a different market (enterprise, developers) than GeForce Now (gamers), so it wouldn’t cannibalize the same segment.

**5. What is NVIDIA doing to de-risk its supply chain, especially its reliance on TSMC?**

**Answer:**NVIDIA is aware of the risk but heavily reliant on TSMC (~85%). While there are efforts to diversify, TSMC’s dominance makes that difficult.

**6. Would expanding into new markets hurt NVIDIA’s innovation by spreading resources too thin?**

**Answer:**Potentially. NVIDIA must avoid a **competency trap**—assuming their current chips are good enough forever. They need to keep innovating or risk being replaced by companies with more specialized chips.

**7. How can NVIDIA prevent complacency with their current chip dominance?**

**Answer:**By forming niche partnerships and possibly designing custom chips for specific company needs—this keeps them ahead without overextending their resources.

