PRE-IPO RISK ANALYSIS · MARCH 2026

SPACEX / xAI

Five Layers of Public Data Nobody Is Cross-Referencing Before the SpaceX IPO

The depreciation question hiding inside a $1.5 trillion valuation

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$1.5T	$176B	6 yr	Unknown	Zero
TARGET IPO VALUATION	EST. INDUSTRY DEPRECIATION UNDERSTATEMENT 2026–28	HYPERSCALER USEFUL LIFE (TERRESTRIAL)	USEFUL LIFE FOR ORBITAL ASSETS	ACTUARIAL HISTORY FOR SPACE-BASED COMPUTE

Everything in this analysis uses publicly available data. The hyperscaler depreciation schedules are in SEC filings. The xAI financials are in reported disclosures. The physical degradation constraints for orbital hardware are documented in engineering literature and NASA publications. The SpaceX IPO narrative is in press filings and FCC dockets.

None of this is hidden. The analysis below cross-references five categories of data and places them on the same page. Individually, each data point has a reasonable explanation. Together, they form a disclosure profile that institutional investors, D&O underwriters, and risk officers should evaluate before the S-1 is filed.

> *"I spent time at Oracle selling enterprise hardware, where a three-year refresh cycle wasn't an accounting assumption — it was a sales cycle. Customers expected to replace iron on that cadence, and we planned around it. AWS quietly*

> *changed that convention. SpaceX is about to be asked to do the same for hardware that operates 400 kilometers above the planet.*"

The question is not whether SpaceX's vision is achievable. The question is whether the IPO prospectus will give investors the transparency to evaluate the assumptions embedded in the valuation — or whether those assumptions will be borrowed from earthbound accounting convention and left unexamined.

THE FIVE LAYERS

LAYER	DATA SOURCE	WHAT IT SHOWS
1. The Terrestrial Precedent	Hyperscaler SEC 10-K filings	Industry-wide depreciation extension from 3 to 6 years — the convention SpaceX will borrow from
2. The Orbital Asset Problem	Engineering literature / NASA / ISS operational data	Physical degradation vectors in space that have no analog in terrestrial depreciation models
3. The xAI Integration	Disclosed financials / FCC dockets / press filings	xAI's burn rate consolidated into combined entity — $2.5B loss on $250M revenue obscured by merger structure
4. The Cascade Model Failure	Hyperscaler earnings calls / neocloud disclosures	The justification for 6-year schedules requires hardware repurposing — impossible for fixed orbital assets
5. Multi-Signal Convergence	All of the above + merger structure + FCC filings	Five signals from five data sources — each with a reasonable explanation — together forming a disclosure gap

LAYER 1 Data Source: Hyperscaler 10-K filings (AWS, Google, Microsoft, Meta)

The Terrestrial Precedent: 3 Years to 6 Years

Any single depreciation schedule change is unremarkable. The question is what the aggregate pattern looks like when you compile every major hyperscaler's accounting change over eight years — and then ask whether that pattern justifies extending the same convention to hardware that operates in a vacuum.

Between 2020 and 2023, every major hyperscaler extended their server useful life assumptions from roughly three years to six. AWS moved first in 2020, triggering a fast-follow across the industry. By 2023 all three had normalized on six years. Meta extended to five and a half years in early 2025, booking a $2.9 billion depreciation reduction in the same quarter Amazon shortened its AI subset schedule and took a $700 million hit.

HYPERSCALER DEPRECIATION SCHEDULE CHANGES — 2017 TO 2026

COMPANY	2017–2019	2020–2022	2023–2026	DIRECTION
AWS (Amazon)	3 years	4 → 5 years	6 → 5 yrs (AI subset, 2025)	Extended, then shortened AI subset
Google Cloud	3–4 years	5 years	6 years	Extended
Microsoft Azure	3–4 years	5–6 years	6 years	Extended
Meta	3 years	4–5 years	5.5 years (Jan 2025)	Extended 3x in 3 years
CoreWeave (AI-native)	–	–	6 years from launch	Aggressive — AI-only workloads

The pattern is notable for three characteristics: **direction** (exclusively extended until AWS reversed for AI-specific hardware), **coordination** (all three major hyperscalers converged on the same number), and **timing** (the extension occurred precisely as CapEx accelerated, mechanically flattering earnings during the most scrutinized investment cycle in tech history).

This analysis does not allege earnings manipulation. It identifies the accounting convention that SpaceX will inherit. When SpaceX discloses a useful life for orbital compute assets, the six-year hyperscaler precedent is the most likely anchor. The question is whether that anchor is appropriate for hardware operating in a categorically different physical environment.

LAYER 2

Data Source: NASA technical publications / ISS operational data / Engineering literature

The Orbital Asset Problem: Physics Does Not Negotiate With Accounting

Layer 2 requires cross-referencing two categories of data almost never placed side by side: the accounting assumptions used to justify six-year terrestrial useful life schedules, and the physical degradation environment that orbital hardware actually operates in.

TERRESTRIAL DATA CENTER — DEGRADATION MODEL	ORBITAL DATA CENTER — DEGRADATION MODEL
Primary risk is **technological obsolescence.** Hardware can be replaced by technicians within hours. Failed components are swapped, not written off. Secondary market exists. Climate-controlled environment. Air and water cooling via convection.	Primary risk is **physical degradation from day one.** Radiation degrades semiconductors continuously and irreversibly. 5,800 thermal cycles per year. No maintenance crew. No secondary market. No convection cooling. Micrometeorite damage is permanent.

The ISS is the most instructive reference point. Its ammonia loop and eight billboard-sized radiator wings shed roughly 70kW of heat continuously and weigh several tons. That system requires scheduled spacewalks for maintenance. A commercial orbital data center has no equivalent maintenance pathway.

- **Radiation degradation.** Semiconductors in LEO experience continuous particle bombardment that measurably increases error rates over time — slow, cumulative, irreversible, and without maintenance remedy.
- **Thermal cycling fatigue.** A satellite in LEO transitions between temperature extremes approximately every 90 minutes — roughly 5,800 cycles annually — accelerating material fatigue at rates no terrestrial depreciation model accounts for.
- **Zero maintenance capacity.** Every terrestrial useful life model implicitly assumes human intervention. There is no commercial EVA equivalent for a data center in orbit or on the lunar surface.
- **No secondary market.** Hardware repurposed at year three on Earth generates revenue through year six. Hardware fixed in orbit cannot be repurposed, sold, or cascaded to less demanding workloads.

LAYER 3 Data Source: Disclosed financials / FCC dockets / Bloomberg / CNBC / Reuters

The xAI Integration: What Gets Consolidated and What Gets Obscured

Layer 3 connects two financial profiles that will be consolidated into a single S-1 — SpaceX's profitable launch and Starlink business, and xAI's cash-burning AI infrastructure build.

PRE-MERGER FINANCIAL PROFILES — SPACEX VS. XAI (2025)

ENTITY	EST. REVENUE (2025)	EST. PROFIT / LOSS	DEPRECIATION EXPOSURE
SpaceX (standalone)	~$15B	~$8B profit	Established — satellite useful life well-modeled
xAI (standalone)	~$250M (6 mo)	~$2.5B loss	Unestablished — orbital compute has no precedent
Combined (IPO)	~$16B est.	~$3B est.	Mixed — terrestrial GPU + orbital compute combined

The merger consolidates xAI's $2.5 billion annual burn into SpaceX's profitable balance sheet ahead of listing. The orbital data center narrative — cited by Musk as the primary rationale for the xAI acquisition — brings compute infrastructure whose useful life assumptions are unestablished. A combined entity targeting a $1.5 trillion valuation at approximately 94x trailing sales and 500x trailing earnings embeds the assumption that xAI's orbital compute narrative contributes meaningfully to that multiple. The depreciation schedule assigned to those assets directly affects the denominator in every earnings-based valuation metric.

LAYER 4

Data Source: Hyperscaler earnings calls / Neocloud disclosures (CoreWeave, Nebius, Lambda Labs)

The Cascade Model Failure: The Bull Defense Does Not Apply in Orbit

Layer 4 establishes the central justification for the six-year terrestrial schedule — and why it fails as a precedent for orbital assets.

THE CASCADE MODEL — TERRESTRIAL DEFENSE	THE CASCADE MODEL — ORBITAL REALITY
Years 1–2: GPU used for intensive model training. Years 3–4: GPU repurposed for real-time inference. Years 5–6: GPU handles batch processing. Hardware stays productive across all six years, just at different price points. Secondary market and repurposing keep assets economic.	Years 1–2: GPU performs training workloads in orbit. Years 3–4: **Repurposing requires physical access to the hardware. There is none.** Years 5–6: Hardware fixed in orbit cannot be redeployed. No secondary market exists. Cascade assumes optionality. Orbit eliminates it.

Satya Nadella's comment cuts directly to this: ***"I didn't want to go get stuck with four or five years of depreciation on one generation."*** He was speaking about terrestrial hardware. For orbital hardware — where there is no ability to swap generations, no maintenance path, and no secondary market — the same concern applies with materially higher consequence.

LAYER 5 Data Source: All of the above + FCC dockets + merger structure + Kalshi prediction markets

Multi-Signal Convergence: Five Sources, One Disclosure Profile

Any single signal in isolation has a reasonable explanation. Layer 5 places data from five source categories on the same page. The right column matters. Each signal individually has a defensible explanation. The analytical question is whether five signals pointing in the same direction — toward a disclosure gap between accounting convention and physical reality — constitute a pattern that institutional investors, D&O underwriters, and risk officers should examine before the S-1 is filed.

SIGNAL	SOURCE	DATA POINT	INNOCENT EXPLANATION
Depreciation precedent	Hyperscaler 10-Ks	6-year convention established for terrestrial hardware under very different physical conditions	*Common industry standard, defensible for CPU/GPU workloads*
No actuarial history	Engineering literature	Zero multi-year orbital GPU deployments exist to base useful life assumptions on	*Emerging asset class — estimates inherently speculative*
xAI burn rate	Disclosed financials	$2.5B annual loss on $250M revenue, consolidated into profitable SpaceX balance sheet	*Early-stage infrastructure investment with long-term payoff*
Merger structure	Bloomberg / CNBC / FCC	Deal structured to avoid triggering debt repayment provisions; X platform included indirectly	*Standard merger mechanics, legally sound*
Valuation multiple	Reported / Kalshi	$1.5T target = ~94x trailing sales, ~500x trailing earnings; 76% IPO probability before Sept 2026	*Growth company multiple reflecting future optionality*

WHAT THIS DOCUMENT IS AND IS NOT

THIS DOCUMENT IS	THIS DOCUMENT IS NOT
A structured cross-reference of public data sources typically reviewed in isolation	An allegation of wrongdoing, accounting fraud, or any legal violation
A demonstration that accounting conventions, when tested against physical reality, reveal disclosure gaps	A trading signal, investment recommendation, or price prediction
A pre-IPO risk framework for institutional stewardship teams, D&O underwriters, and risk professionals	A comprehensive assessment of SpaceX's business fundamentals or mission execution
An input to engagement prioritization ahead of a historic listing	A substitute for professional judgment, legal counsel, or independent due diligence
A signal about what questions the S-1 should answer — and what to do if it doesn't	A claim that orbital data centers cannot work — only that their accounting requires scrutiny

The data is always there. When the S-1 is filed, look past the Starlink growth charts and the xAI narrative. Find the line that says **"useful life of orbital compute assets."** *Find the footnote that explains what physical model supports it. If that footnote does not exist, you have found the disclosure gap. The question is whether anyone is connecting it.*

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March 2026