

GA-Courtenay Special Situations Fund

GA-Courtenay Special Situations Fund has been built to deliver rewarding absolute returns through leveraged investment in dominant, future-facing businesses concurrent with market de-correlation by deploying a positive-carry hedging structure

A message from the fund manager, Adrian Courtenay

“Exceptional performance is ultimately a function of calibrated courage.

Learning must be pushed to its limits. But beyond that point the fund manager must accept that they are equipped for independent judgment — and stand alone, not in interpreting the past, but in anticipating the future.

From that foundation follows the only rational outcome: the willingness to allocate with conviction and remain steadfast through volatility.”



*Adrian Courtenay, Managing Director
and Head of Special Situations Strategy*

Fund manager bio

Fund manager bio

- 2023 – present: Green Ash Partners, GA-Courtenay Special Situations Fund
- 2016 – 2023: Odey Asset Management (Special Situations Fund launches 2019)
- 2014 – 2016: D.E. Shaw & Co, Vice President, Special Situations Group
- 2000 – 2012: Tisbury Capital, Fortelus Capital (both special situations hedge funds)
- 1998 – 2000: Oxford University (Scholar, 1st class MA, Oriel College)



Key strengths

- Wide-ranging experience in situation assessment and relationship building across global developed markets
- Advanced search and history proprietary systems accelerate situation discovery, analysis and risk management
- Extensive due diligence competency through deep dive research
- Demonstrated ability to accrete situation economics by activist engagement
- Published author, *The Super Organisation Secret (2025)*, industry-recognised¹

1. See, Orbis Investment Management, President's Letter 2025 [\[link\]](#)

Fund background

- *Mission: strong performance paired with strong protection against market dislocations*
- *Founded and seeded by fund manager Adrian Courtenay in October 2019 at Odey Asset Management*
- *Annualised net return since inception 11.7%*
- *Strong risk metrics: low equity correlation R^2 of 0.10, strong Sortino ratio, defensive in market stress*
- *AUM \$34m, positioned for growth*
- *GA-Courtenay is a daily dealing Irish domiciled UCITS fund with GBP, EUR, CHF and USD share classes*
- *Administrator: US Bank*
- *Auditor: Deloitte*
- *Custodian: European Deposit Bank*

Fund strategy

- *Research-intensive, deep dive approach to stock selection*
- *The fund targets dominant growth businesses, including both breakthrough companies and high-quality compounders*
- *Concentrated positioning (within UCITS limits)*
- *Long equity book modestly leveraged*
- *Market risk is significantly reduced by permanent maintenance of S&P500 put options holding*
- *Advantaged hedge structure designed to achieve positive carry – incorporating merger arbitrage yield funding S&P500 put option protection*
- *The outcome: the fund's leverage amplifies our unitholders' exposure to dominant growth businesses concurrently with the positive carry hedge maintaining strong and cost-efficient defences against market dislocation risk.*

Manager background

- *More than 20 years of hedge fund experience, including Special Situations Group at D. E. Shaw & Co, with strategy refined through multiple market cycles*

Net performance since inception

Since inception the GA-Courtenay Special Situations (USD I class) has returned 11.7% net annualised at low correlation to the market at large

GA-COURTENAY SPECIAL SITUATIONS FUND (USD I) PERIOD NET RETURNS

Price at 25-Mar-26

\$203.28

Month to date

-10.1%

Year to date

1.0%

Annualised since inception (%)

11.7%

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTD
2026	4.0	8.0	-10.1										1.0
2025	0.5	-1.6	-0.2	0.9	6.5	2.4	-3.5	-1.7	-0.2	0.1	-2.6	6.3	6.5
2024	1.5	1.5	0.7	-2.6	1.6	2.2	0.6	-0.7	0.1	0.6	-0.6	0.2	5.0
2023	7.6	-3.2	-5.4	0.6	-6.6	-4.1	1.0	-2.5	-2.4	-2.0	23.2	3.0	6.4
2022	-1.2	2.0	2.3	-3.1	-6.7	-6.1	1.5	7.7	1.0	-9.0	-0.2	-0.5	-12.8
2021	7.7	4.2	-3.2	-0.3	0.5	-4.7	-1.9	2.5	3.0	17.6	-2.1	1.6	24.4
2020	8.4	-2.5	-13.2	6.1	8.7	20.5	5.6	-5.1	5.7	-4.0	-2.7	13.2	42.8
2019										0.6	4.0	4.4	9.1

Note: Inception 17-Oct-2019; Performance figures are for share class USD I = the fund's base currency.

From July 2023 to June 2025 the fund's financing agreements and derivative protection were withdrawn following disruption to its prior house Odey Asset Management; in this interim period low gross exposure limited the fund's deployments whilst remaining consistent to its absolute return mandate. From July 2025 all financing agreements and derivative protection were re-gained.

Source: GA-Courtenay USD I class. Fund performance statistics are updated daily on www.greenash-partners-courtenay.com

Performance is presented net of 0.75% management fee and 20% performance fee

Portfolio design: performance orientated with high embedded protections

Breakthrough companies ~ 48% of NAV

Esoteric holdings	Value \$m	47.5% of NAV
Echostar (core asset: SpaceX equity)	3.27	9.90%
Filtronic plc	2.99	9.07%
Kraken Robotics Inc.	2.59	7.85%
ImmunityBio, Inc.	2.48	7.51%
Tesla, Inc.	1.52	4.60%
Bloom Energy Corporation	1.51	4.58%
Haivision Systems Inc.	1.33	4.03%

Breakthrough companies: opportunities are selected for higher return potential, acceptable asymmetry, whilst quality filters are maintained in relation to business dominance and conservative financing.

High quality compounders ~ 71% of NAV

High quality compounders	Value \$m	70.7% of NAV
ASML Holding N.V.	1.67	4.95%
Safran SA	1.62	4.92%
Aena S.M.E., S.A.	1.58	4.78%
Ferrovial SE	1.55	4.70%
Energy Transfer LP	1.52	4.60%
Enterprise Products Partners L.P.	1.50	4.54%
Formula One Group	1.43	4.32%
General Electric Company	1.37	4.14%
The St. Joe Company	1.36	4.11%
Clean Harbors, Inc.	1.27	3.85%
Jungfrau Holding AG	1.24	3.76%
Taiwan Semiconductor Manufacturing Compar	1.20	3.64%
Flughafen Zürich AG	1.16	3.50%
Fanuc Corporation	1.10	3.33%
Airbus SE	0.99	3.00%
Fraport AG	0.97	2.96%
Canadian Pacific Kansas City Limited	0.95	2.88%
NovaGold Resources Inc.	0.90	2.74%

High quality compounders: opportunities are selected for business model robustness, higher asymmetry, whilst still benefitting from industry growth tailwinds; the outcome is that the fund is underpinned by a solid equity compounding base.

Positive carry hedge ~ 30-60% of NAV (delta)

Positive carry hedge: systemic market dislocations are addressed through an always-on, positive-carry hedge (comprised of equity index put options funded by merger arbitrage yield), protecting the path to compounding through periods of volatility.

Equity book leverage: Long equity book operations possess the freedom to be operated at up to 1.3-1.4x leverage, leading to amplification in equity value progression.

A deterministic path requires three conditions: an initial orientation with momentum, absence of interference, and continuous reinforcement

Modelling the future as an engineering problem

We can align to guiderails by deploying a unified framework

The future is not a function of intuition. It is a calculation through the strict application of physical limits, empirical trendlines, and the alignment of Superorganisations.

1. Identifying high gradient, initial orientation with momentum

1a. High gradient initial orientation and momentum is concurrent with phase transition
Think, water into ice

1b. Achieve high resolution knowledge, initially by focusing on observation, thereon by trendline extrapolation and by tracking expert predictions

2b. Envision yet to be discovered laws of physics by reference to natural world adaptation

2c. Establish that the future prediction end point is economically viable

2d. Determine that the technology is of sufficient benefit to humanity to disincentivise regulatory interference
Technologies that benefit humanity eventually trigger regulatory stimulus rather than interference

2. Determining an absence of interference

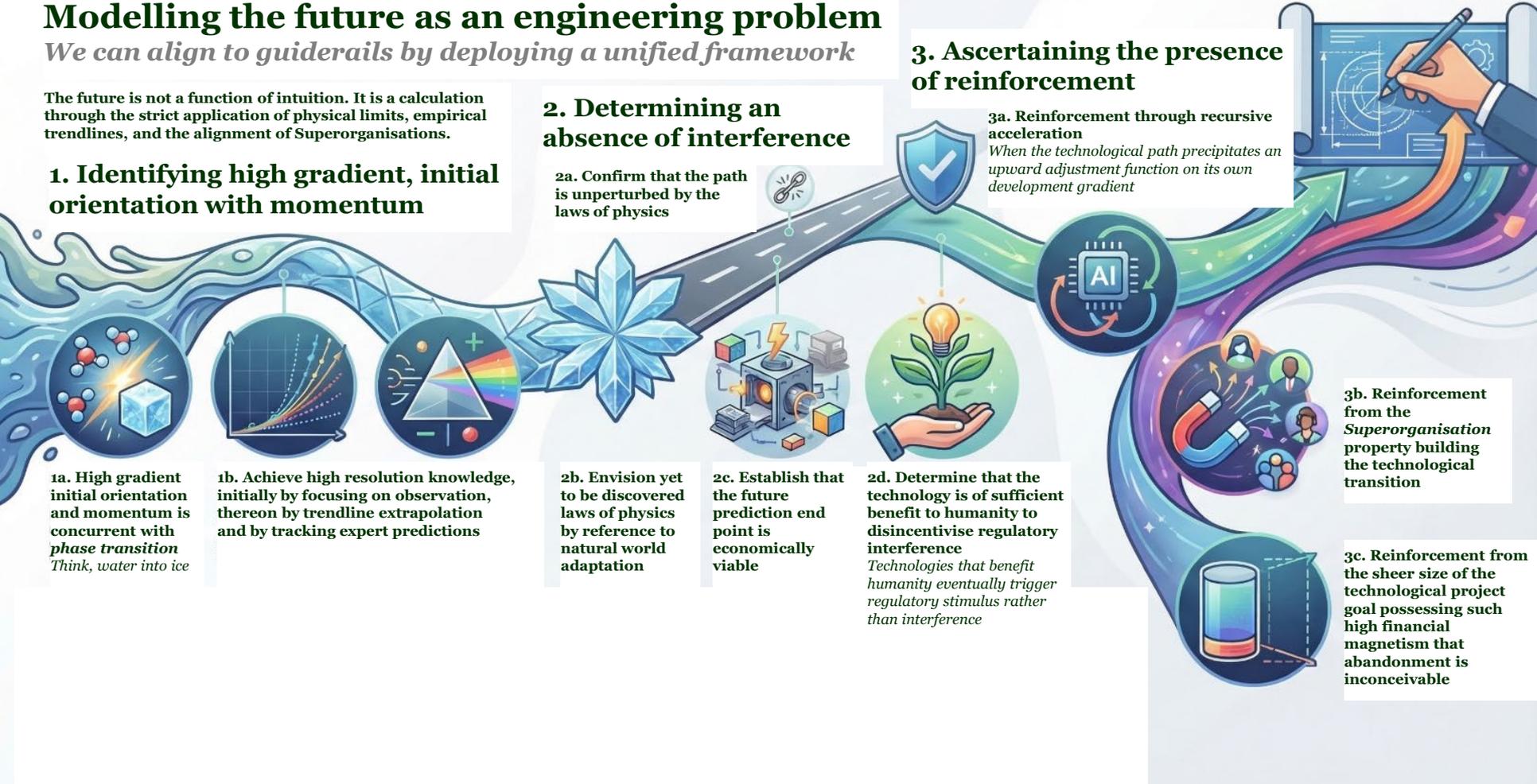
2a. Confirm that the path is unperturbed by the laws of physics

3. Ascertaining the presence of reinforcement

3a. Reinforcement through recursive acceleration
When the technological path precipitates an upward adjustment function on its own development gradient

3b. Reinforcement from the Superorganisation property building the technological transition

3c. Reinforcement from the sheer size of the technological project goal possessing such high financial magnetism that abandonment is inconceivable



Industries defining the fund's future-facing sector selections

SpaceX: 19% of NAV

Defence, aerospace, rebuild/build: 17% of NAV

AI shifts to robotics: 12% of NAV

Infrastructure, growth orientated: 36% of NAV

– SpaceX –

– SpaceX as an industry –

Rocket & satellite launches

SpaceX
(associated through EchoStar)
90% share

Market leading provider of reusable rocket launches, and low earth orbit satellites.

Dominant protagonist for more than 20 years.

Net cash / mcap: 20% (EchoStar, pro-forma), 3%

Core customer: SpaceX

Fibronic has been an RF specialist for more than 40 years and held the leadership position in SSPAs since 2002.

Net cash / mcap: 5%

Others 10% share

81-86 GHz band SSPAs

Fibronic
(core customer: SpaceX)
100% share

At the high end of E-band (81-86 GHz), Fibronic is the only supplier of high-frequency solid state power amplifier (SSPAs) modules and subsystems where huge bandwidth and very low latency is required.

The result is that Fibronic is by far the price / performance leader.

Core customer: SpaceX

Fibronic has been an RF specialist for more than 40 years and held the leadership position in SSPAs since 2002.

Net cash / mcap: 5%

– Military/Security, Aerospace –

– Seabed –

– Shipbuilding –

– Aerospace –

Aqueous batteries
(>6km depth)

Kraken Robotics
100% share

Kraken possesses a monopoly on large, 6,000m-depht-rated pressure-tolerant Li-ion battery packs that are suited to 200-400 kWh vehicle applications.

Kraken is also the only company in the world that sells a military-grade Synthetic Aperture Sonar as a standalone sensor product priced anywhere near the US\$0.5m level.

Core customer: Anduril

Monopoly positioning since ~2010.

Net cash / mcap: 10%

Huntington Ingalls
100% share

Huntington Ingalls Industries is the only entity capable of building and sustaining US nuclear aircraft carriers.

Entry barriers are absolute, protected by regulation, classified IP, and irreplaceable industrial infrastructure.

Demand is doctrine-driven, not cyclical, with no credible scaled entrant risk.

Increasing military budgets raise throughput, not displacement risk.

Net debt / mcap: 21%

Jet engines
(30% of earnings from defence)

GE Aerospace and Safran
(joint venture)
55% share

GE Aerospace: Dominant jet engine manufacturer since 1942.

Safran: Dominant jet engine manufacturer since 1965.

Net cash / mcap: 1%

Prest & Whitney 26% share

Rolls Royce 18% share

Airplane Manufacturer
(10% eps defence)

Airbus
60% share

Aircraft manufacture duopolist since 1972.

Net debt / mcap: 2%

Boeing 40% share

– AI shifts to robotics –

– From vision, factory floor, to highways –

DoW-approved low latency video

Hai-vision Systems
100% share

Hai-vision Systems possesses a monopoly on open standard Dept of War-approved video streaming.

Hai-vision Systems offers unmatched low latency video streams and uniquely empowers the "eyes of Shield".

AI's autonomous systems alongside other grunting peers.

Net cash / mcap: 5%

Industrial robots
(US market)

Fanuc
56% share

Founded in 1972, FANUC has held the global leadership position in industrial robotics since 2000.

Net cash / mcap: 15%

Yaskawa 9% share

ABB 9% share

Others 26% share

Robotaxis
(prospective)

Tesla
95% share

With manufacturing capacity >3m units per annum, Tesla is poised to dominate robotaxis.

Net cash / mcap: 1%

Waymo/others <5% share

– Infrastructure, growth orientated –

– Aerospace –

– Highways –

– Rail –

– Energy –

– Energy conv –

Airports

Aena
100% share

Monopoly owner of all Spanish airports, built from 1952.

Net debt / mcap: 15%

Fraport 100% (in region)

Monopoly owner of Frankfurt airport, built 1936, undergoing terminal expansion.

Net debt / mcap: 133%

Zurich Airport 100% (in region)

Monopoly owner and operator of Zurich Airport.

Net debt / mcap: 20%

Toll roads

Ferrovial
100% share (site specific)

Core asset the 407 ETR toll road is a 24 year concession across central Toronto; growth assets are multiple toll roads within Dallas.

In the scenario that autonomous vehicles are used for 64% of US vehicle miles travelled by 2040, this would increase by est. 38% total automotive urban miles travelled.

Autonomous frees parking land resulting in urban population increase, autonomous allows higher roadway volume per unit of road due to more precise driving, and autonomous through cheapening the cost of transit results in demand expansion.

Monopoly owner of transit facilities, and hospitality services across the delivering significant long-term tailwind to Ferrovial toll road vehicle volumes.

Net debt / mcap: 20%

Railroads

Canadian Pacific
100% share

Founded in 1850, the only both pan-US railroad and a monopoly on uninterrupted Canada-to-Mexico trans.

Net debt / mcap: 27%

Jungfraubahn 100% share (Swiss mountain railroad)

Jungfraubahn Holding AG, founded in 1896, operates monopolistic positioning in railroads, winter sports facilities, and hospitality services across the Jungfrau region in Switzerland, which is the highest altitude region in the country.

Net debt / mcap: 5%

Natural Gas Liquids (NGLs) US Pipelines

Enterprise Product Partners
28% share

Dominant US NGL pipeline and processing owner, in many regions a local monopolist.

Net debt / mcap: 46%

ONEOK 18% share

Energy Transfer 10% share

Targa Resources 10% share

Other 33% share

Solid oxide fuel cells

Bloom Energy
70% share

Bloom Energy the global leader in solid oxide fuel cells (SOFC), with global market share at ~70%.

SOFC fuel cells, by converting natural gas or hydrogen to electricity, have become the gating item on new datacentre construction when the limits of grid-based electricity supply have been reached.

Net debt / mcap: 1%

Mitsubishi 10% share

AISIN 10% share

Kyocera 10% share

8% of NAV

Computing picks and shovels: 9% of NAV

Inflation to offset declining real value of tax receipts: 8% of NAV

Land and gold: 15% of NAV

Breakthrough pharma

Immune system boosting to defeat cancer

ImmunizBio
100% share

ImmunizBio, a biotechnology company, founded by Patrick Scan-Shany, develops immunotherapies aimed at activating the body's natural immune system.

ImmunizBio's core drug ANKTLV, often combined with checkpoint inhibitors or other therapies, can produce durable complete responses in multiple cancer types beyond bladder cancer, including non-small cell lung cancer (NSCLC), indolent lymphomas like Waldenstrom's macroglobulinemia, and recurrent glioblastoma.

The company is currently engaged with an accelerated review process with the FDA.

Net debt / mcap: 10%

– Computing picks and shovels –

– Hardware, software –

– Semis manufacturing –

Cloud infrastructure

Amazon
30% share

Dominant cloud provider since 2002.

Net debt / mcap: 3%

Microsoft 20% share

Microsoft 20% share

Dominant cloud provider since 2008.

Net debt / mcap: 1%

Google 13% share

Others 37% share

Computing operating systems

Microsoft
71% share

PCOS monopolist since 1975.

Net debt / mcap: 1%

Apple 16% share

Extreme Ultraviolet Lithography

ASML
100% share

Monopoly provider of EUV lithography machines since 2010.

Net cash / mcap: 1%

ASML 100% share

Foundries (3nm)

TSMC
95% share

TSMC has held the number 1 market position in pure-play foundries for more than two decades, progressively consolidating market share.

Net cash / mcap: 4%

TSMC 95% share

– Royalty collectors through inflationary age –

– Media rights –

– Waste collection –

– Payment gatekeepers –

Open seat motor racing

Formula One
94% share

Monopoly provider of world racing championships since 1950.

Net cash / mcap: 1%

Formula One 94% share

Hazardous Waste Incineration

Clean Harbors
64% share

Leading US waste incinerator for more than 20 years.

Net debt / mcap: 25%

Clean Harbors 64% share

Credit and debit cards

Visa
50% share (credit cards)
73% share (debit cards)

Dominant payments exchange provider since 1958.

Net debt / mcap: 1%

Visa 50% share

Credit rating agencies

Moody's
40% share

Dominant provider of credit ratings services since 1909.

Net debt / mcap: 3%

Moody's 40% share

– Land and gold –

– Land –

– Gold mining & direct ownership –

Florida land development

St Joe
100% share

Unmatched in scale land developer in Florida, owns the entire Rep. Walton sector, west of Panama City in Florida. Developing more than 170,000 homes.

Net debt / mcap: 11%

St Joe 100% share

Gold mining (% prospective gold mined on US soil)

NovaGold
>22% share

The largest gold mine on US soil, forecast to go into production by 2021. The mine also has significant expansion potential.

Net debt / mcap: 1%

NovaGold >22% share

Gold (commodity)

Gold

Carlin 19% share

Cortez 12% share

Others <47% share

Carlin 19% share

Cortez 12% share

Others <47% share

Carlin 19% share

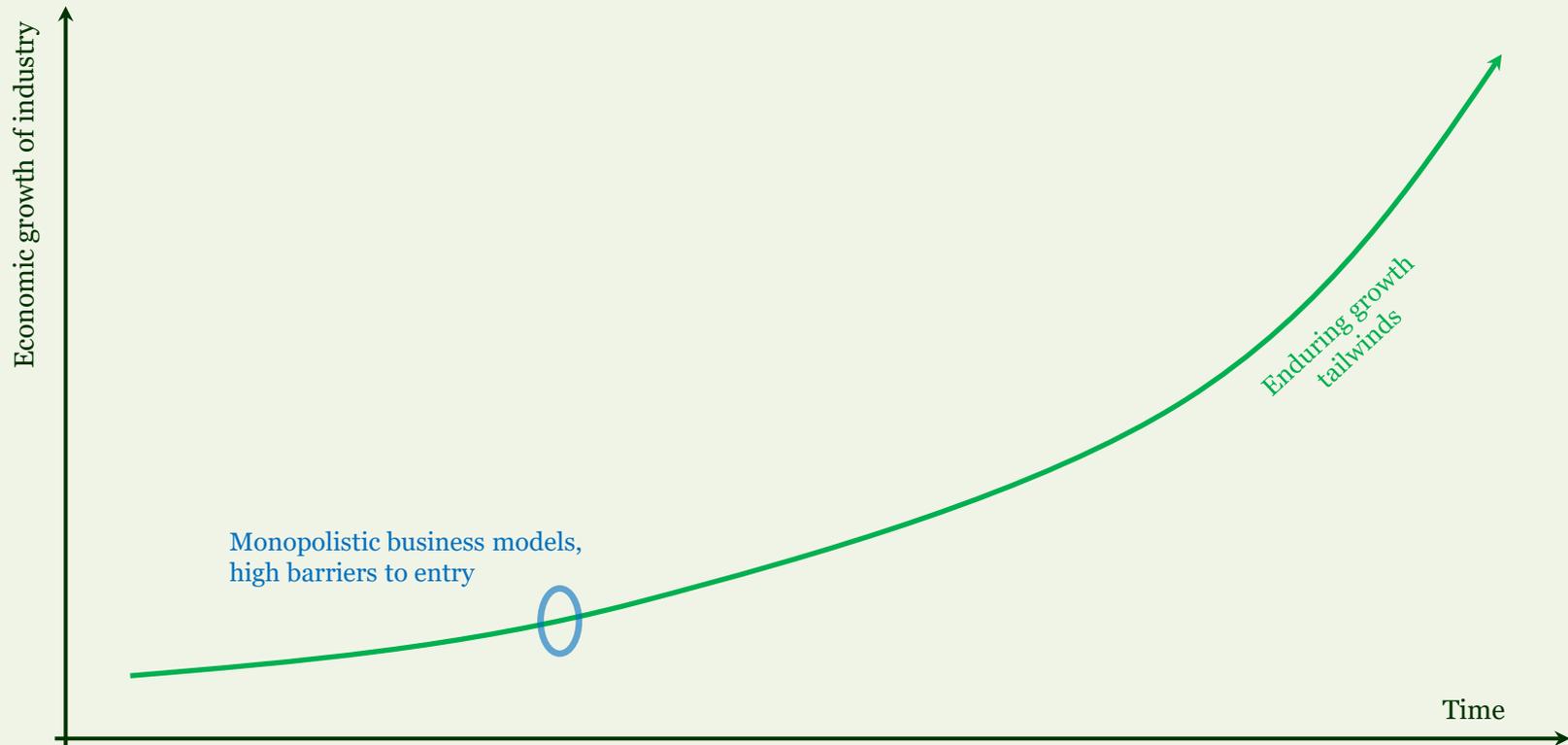
Cortez 12% share

Breakthrough businesses are built by high impact leadership and workforce

<u>Entity</u>	<u>Leader</u>	<u>Founded</u>	<u>Business model</u>	<u>Fund holdings</u>
Space / in-orbit economy				
	 Elon Musk	2002	Dominates reusable rocketry and low-cost high-cadence orbital launch with unmatched execution speed	 
<p>SpaceX is deeply discounted through EchoStar</p> <p>Direct investment through Filtronic equity; monopolist in high-power E-band SSPAs – the fulcrum technology for SpaceX Starlink backhaul</p>				
Robotics				
	 Elon Musk	2003	The car as a robotic platform for at-scale autonomy while developing humanoid robots that can translate AI into the physical economy	
Direct investment through Tesla equity				
	 Palmer Luckey	2017	Reinventing defence with autonomous systems, rapid iteration, and software-centric architectures	
Investment through Kraken Robotics equity, a monopolistic supplier of deep-sea batteries and sensors to Anduril				
	 Ryan Tseng	2015	Shield AI's strategy targets defence enhancement by empowering massive autonomous / AI swarms across air, land, sea, and space	
Investment through Haivision Systems, a monopoly on open standard Dept of War-approved video streaming; Haivision Systems uniquely empowers the "eyes" of Shield AI's autonomous systems				
	 Jeff Bezos	1994	Amazon is building the world's most advanced commercial automation ecosystem, running the world's largest deployed fleet of mobile and articulated warehouse robots	
Direct investment through Amazon equity				
Drug discovery				
	 Patrick Soon-Shiong	2014	Pursuing a unified immunotherapy platform targeting cancer and infectious diseases; driven by a founder with a history of breakthroughs	
Direct investment through ImmunityBio equity				
Value uplift through serial M&A in a fragmented, under-digitised industry				
	 Brad Jacobs	2023	QXO applies Brad Jacobs' playbook: acquire sub-scale incumbents, impose operational excellence through technology and scale, compound per-share value through synergies and re-rating.	
Direct investment through QXO equity				
Development stage gold mining				
	 Thomas Kaplan	1997	Controls one of the world's largest undeveloped gold deposits; a rare blend of visionary contrarianism and long-cycle resource expertise	
Direct investment through NovaGold equity				

When monopolistic businesses with high barriers to entry align to industry growth tailwinds, extraordinary value creation can occur

Business value as discounted cashflow: key uplift variables are – initial cash yield, consistent cash returning to shareholders, duration period of cash returns, growth in cash returns over time



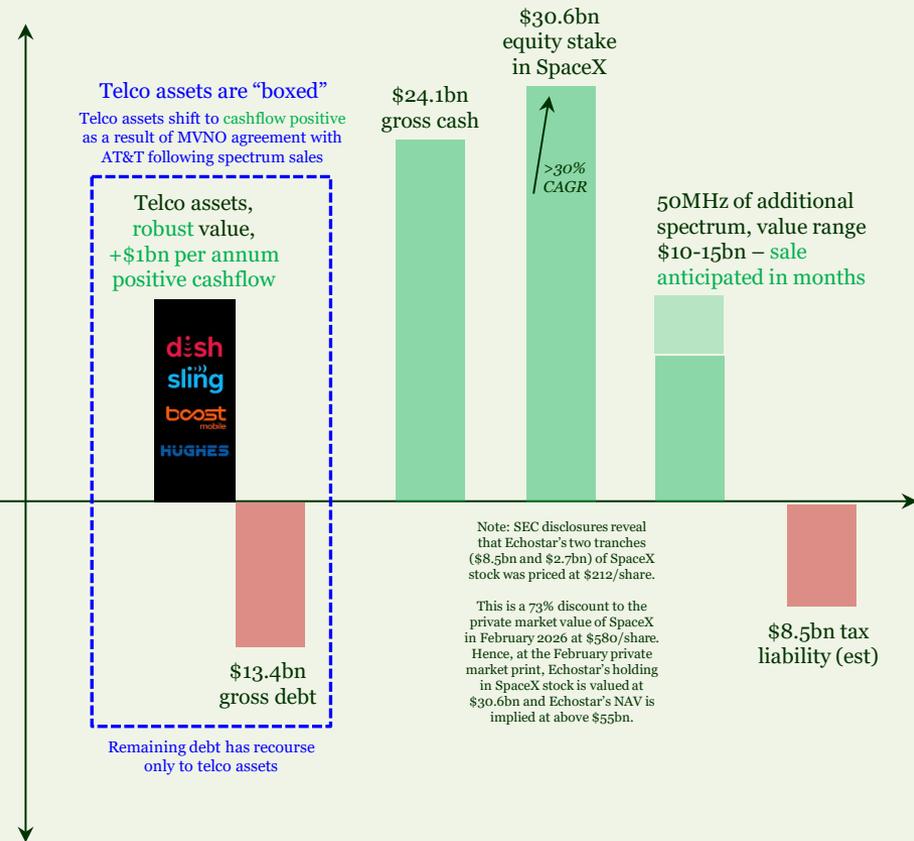
Case study: Echostar restructuring implies SpaceX at a deep discount

As SpaceX reduces the cost of reaching orbit by more than 10x, Starlink satellites possess a tailwind to dominate broadband and mobile bandwidth

Following restructuring, Echostar's net asset value is implied at above \$55bn based on SpaceX secondary share sales in December

In February 2026, the private market valuation of SpaceX reached \$1.4 trillion and press reports indicated the company is considering a 2026 IPO valuation of up to \$1.5 trillion

Post-restructuring \$23bn sale of spectrum to AT&T, \$19bn sale of spectrum to SpaceX (a portion of which paid to Echostar in SpaceX equity)



BARRON'S

SpaceX Is Worth \$800 Billion, Report Says. This Is Only the Beginning.

By [AI Root](#) [Follow](#)
Dec 13, 2025, 12:32 pm EST

Key Points

- SpaceX's valuation reached approximately \$800 billion in a secondary share sale, with shares priced at \$421, up from \$212 in July, Bloomberg reported.
- Starlink, SpaceX's broadband service, is a major value driver with over 8 million customers, an increase from 5 million a year ago.
- An IPO for SpaceX is anticipated in 2026, potentially valuing the company at up to \$1.5 trillion.

SpaceX could be a feast for investors in 2026.

Friday, Bloomberg reported that SpaceX had set a secondary share sale, which valued the startup at about \$800 billion, citing a company memo. The price in the secondary offering was \$421 a share, the report said, up from a July price of about \$212 from a private market transaction.

SpaceX didn't immediately respond to Barron's request for comment.

The \$800 billion figure would put SpaceX's valuation above that of OpenAI, as well as that of TikTok's parent ByteDance.

SpaceX is the dominant provider of space launch services, accounting for more than half of global orbital launches. Most of its value, however, is tied up in its profitable space-based broadband service Starlink, which currently has more than 8 million customers, up from about 5 million a year ago.

Beyond Starlink, investors are excited about the potential for artificial intelligence data centers in space after CEO [Elon Musk](#) recently tweeted about the idea. The data centers could be solar-powered and offer a lower-cost way to develop AI applications. SpaceX possesses launch capacity and the ability to scale the facilities rapidly via satellite manufacturing. Musk himself brings AI expertise from overseeing his startup, xAI.

AI data centers in space would also offer a way to link xAI, which owns the social media platform X, and the Musk-led [Tesla](#). Tesla is putting AI into machines, including robotaxis, and eventually will place the technology in humanoid robots. Musk's xAI is developing AI agents, such as Grok, that compete with OpenAI's ChatGPT.

Wedbush analyst [Dan Ives](#) believes Musk's companies will eventually invest in one another. One way that could happen is a SpaceX IPO, which is now expected in 2026—thanks to another Musk tweet—at a valuation of up to \$1.5 trillion. That number would make it one of the largest IPOs in history.

Before that happens, [Echostar](#) remains one of the best ways to get exposure to SpaceX stock, regardless of IPO timing. The satellite communications company has amassed about \$1.1 billion in SpaceX stock by selling Musk's rocket company wireless spectrum. That's some 32 million shares at the July price, which are now worth some \$22 billion.

Through Friday trading, Echostar stock has gained about 44%, adding \$0.6 billion in market value since initial reports about an \$800 billion valuation broke about a week ago. That is short of the \$1.1 billion value gain, and it looks as if Echostar stock hasn't reacted to the potential of a \$1.5 trillion IPO valuation.

However, values between Echostar stock and SpaceX don't have to line up one-to-one. There are factors to consider, among them tax efficiency, and investors holding Echostar have exposure to SpaceX, which is different from owning SpaceX. Still, tracking the value of Echostar is a good way to understand what the market is thinking about one of the most valuable and widely-followed private companies in the world.

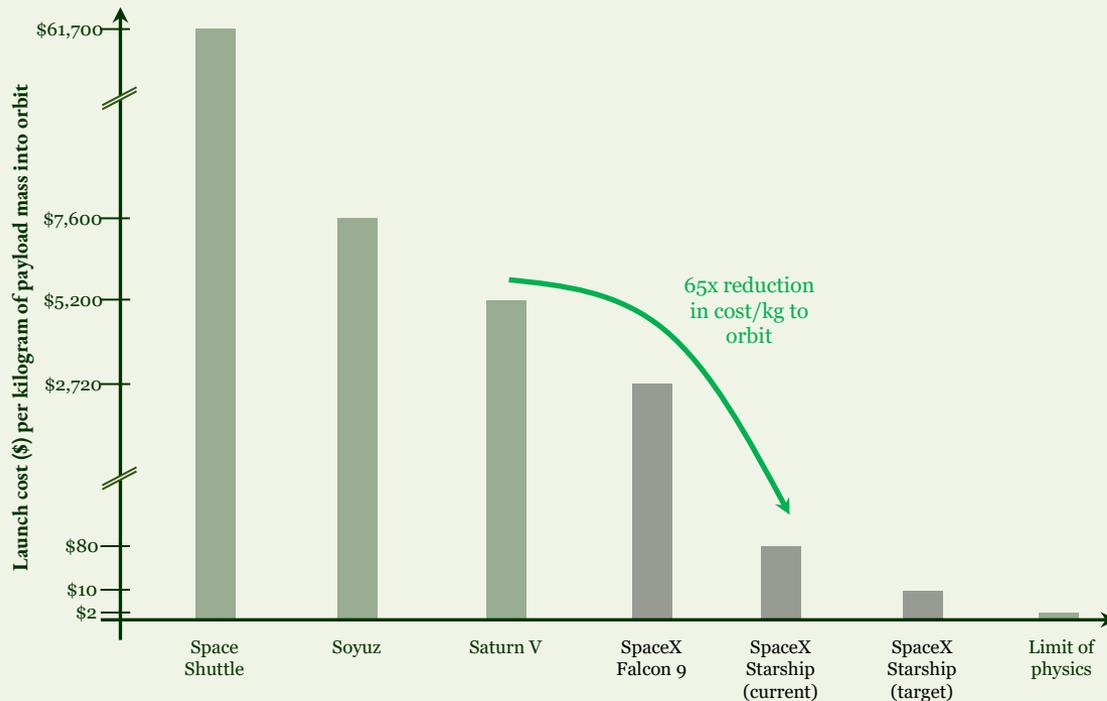
An \$800 billion valuation for SpaceX would increase Musk's wealth by roughly \$160 billion. He owns about 40% of the company, although the exact details aren't publicly available.

SpaceX is leading the emergence of a new space-based economy

At high launch costs (\$5,000+), space is limited to governments

At low launch costs (\$80), a new space-based industry has emerged

The cost collapse that created the space economy



SpaceX: an industry concentrated in a single firm

WHITE PAPER
JANUARY 2026

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GA-Courtenay Special Situations Fund is managed with Green Ash Partners Investment Management Ltd
11 Albemarle Street, London, W1S 4HH, UK. Green Ash Partners is regulated by the FCA.

SPACE X THE CENTRAL BANK OF THE SPACE ECONOMY — AND ITS PUBLIC-MARKET PROXIES

January 5th, 2026

Introduction: an industry concentrated in a single firm

Figure 1: The SpaceX private valuation in December 2025 rose to \$800bn concurrent with news relating to its potential IPO; concurrently, investors are also appraising public market securities such as Echostar and Filtron as potential routes to allow participation in the growth of SpaceX'

SpaceX Sets \$800 Billion Valuation, Confirms 2026 IPO Plans

By Loren Grubb and Edward Ludlow
December 15, 2025 at 12:02 AM GMT
Updated on December 15, 2025 at 10:46 AM GMT

SpaceX is moving forward with an insider share sale that values Elon Musk's rocket and satellite maker at about \$800 billion, setting up what could be the largest initial public offering of all time.

In a company message seen by Bloomberg on Friday, SpaceX said it's preparing for a possible public offering in 2026 that would be aimed at funding its "terrestrial flight center" for the developmental Starship rocket, artificial intelligence data centers in space and a base on the moon.

Occasionally, an industry emerges for which competitive analysis must be inverted. Instead of asking which firm will win amongst competitors, the question becomes whether the industry itself has almost entirely concentrated into a single dominant enterprise — and therefore an enterprise whose prospective economics are best understood through understanding the drivers of the industry itself.

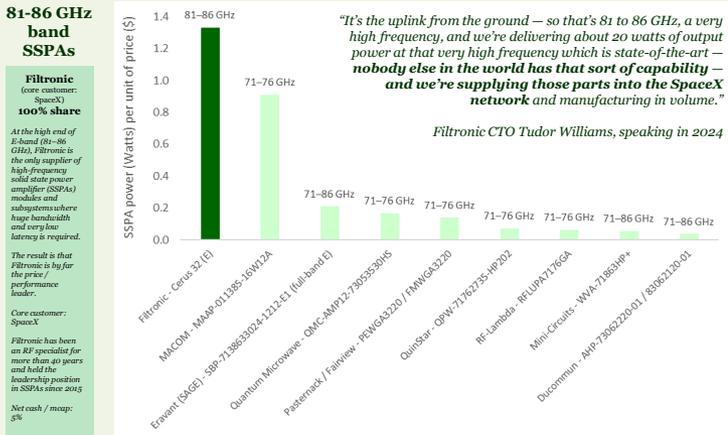
SpaceX increasingly appears to meet this description. It is not merely a launch provider, nor simply a vertically integrated space services platform. It is more usefully analysed as a systemic cost-setter for an entire economic domain: space/orbital access and its adjacencies. In that sense, SpaceX can be put forward as analogous to a central bank, not because it sets interest rates to expand economic growth, but by a different mechanism: SpaceX by lowering the cost of putting mass into orbit expands the frontier of the space economy.

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Case study: Filtronic, monopolistic supplier to SpaceX Starlink in solid state power amplifier (SSPAs), also stands to realise meaningful uplift

At the high end of E-band, Filtronic is the only available supplier of SSPAs – and by far the price/performance leader

In Filtronic's FY2025 annual report, the company discloses SpaceX accounted for 83% of group revenue



"Everything becomes critical – the packaging, the interconnects, the thermal, the yield – it is the ability to integrate 32 MMICs (Monolithic Microwave Integrated Circuits) repeatably that others cannot industrialise."

Filtronic CTO Tudor Williams, speaking in 2024

The required volume of Filtronic module orders can be backed out from SpaceX Starlink's capacity build

The model output (illustrative purposes only): Filtronic net income exceeds £40m by 2030, compared to its current market capitalisation of £280m (5x PE)

Starlink ground stations (YE2030)

Inputs	
56,184	Total active satellites
198	Avg effective user-link capacity per satellite (Gbps)
25%	Utilization factor (0-100%)
105	Throughput per E-band SSPA chain (Gbps)
16	Antennas per gateway site (count)
2	Chains per antenna (count)
1.50x	Availability/weather/maintenance diversity multiplier
150	Minimum sites for backbone access/latency/regulatory
4	# Filtronic modules per RF chain
3,173	Spares / field replacements of # Filtronic modules
Outputs	
32	Chains per gateway (site)
3,364	Per site throughput (Gbps)
2,779,970	Aggregate traffic to be backhauled (Gbps)
1,240	Required gateway sites
161,834	# Filtronic modules

Starlink ground stations (YE2040)

Inputs	
305,841	Total active satellites
365	Avg effective user-link capacity per satellite (Gbps)
25%	Utilization factor (0-100%)
194	Throughput per E-band SSPA chain (Gbps)
20	Antennas per gateway site (count)
2	Chains per antenna (count)
1.50x	Availability/weather/maintenance diversity multiplier
150	Minimum sites for backbone access/latency/regulatory
4	# Filtronic modules per RF chain
17,274	Spares / field replacements of # Filtronic modules
Outputs	
40	Chains per gateway (site)
7,754	Per site throughput (Gbps)
27,904,154	Aggregate traffic to be backhauled (Gbps)
5,398	Required gateway sites
880,952	# Filtronic modules

Confirmatory signalling: SpaceX takes 15% stake in Filtronic as part of a long-term strategic supply and co-development agreement

24 April 2024

Filtronic plc
("Filtronic" or the "Company")

Strategic Agreement with SpaceX for Starlink constellation

Filtronic secures a long-term partnership with SpaceX in the LEO space market

Filtronic plc (AIM: FTC), the designer and manufacturer of products for the aerospace, defence, space and telecom infrastructure markets, is delighted to announce that it has entered into a strategic partnership and commercial agreement (the "Strategic Partnership") with Space Exploration Technologies Corp. ("SpaceX"), which designs, manufactures, launches and operates the world's most advanced rockets and spacecraft. The Strategic Partnership includes the ongoing supply of E-band Solid State Power Amplifiers ("SSPA") in addition to the development and supply of similar products at other frequency bands within SpaceX's Starlink platform.

The Strategic Partnership contract was executed with an initial irrevocable purchase order of \$19.7m (£15.8m) to supply E-band SSPA modules, scheduled for delivery in FY2025, with further order flow expected to continue thereafter to support the ongoing deployment of SpaceX's Starlink constellation, which provides high-speed, low-latency high-speed internet to users all around the world.

As part of the Strategic Partnership, the Company has issued a total of 21,712,109 warrants to SpaceX across two tranches, to enable SpaceX to subscribe for up to a maximum of 10% of the Company's existing share capital, with such warrants expected to vest on a variable basis, with full vesting of the warrants once approximately \$60m (£48m) of orders have been placed by SpaceX. The two warrant tranches, which are split equally, are detailed below:

Tranche 1: a maximum of 5% vesting on a variable basis from order flow of the E-band SSPA platform; and

Tranche 2: a maximum of a further 5%, also vesting on a variable basis, for order flow of products developed at alternative frequency bands which would involve partnering with SpaceX on new product development.

SpaceX strategic partnership with Filtronic is for the ongoing supply of E-Band SSPAs and related products for SpaceX Starlink

SpaceX to be awarded 10% of Filtronic equity (a later award took this to 15%) upon \$60m of orders being placed. SpaceX order placement requirement for SSPAs and next generation products.

Forecast uplift scenario: SpaceX IPO to fund "an insane flight rate" for Starship rockets, and Starlink satellites and datacentres, all of which transmit data back to earth via Filtronic's ground station SSPAs

SpaceX Sets \$800 Billion Valuation, Confirms 2026 IPO Plans

By Loren Grush and Edward Ludlow
December 13, 2025 at 12:29 AM GMT
Updated on December 13, 2025 at 1:46 AM GMT

Save Translate Listen 2:34

- Takeaways by Bloomberg AI
- SpaceX is moving forward with an insider share sale that values the company at about \$800 billion.
 - The company is preparing for a possible public offering in 2026 to fund projects including its Starship rocket and a base on the moon.
 - SpaceX is targeting a valuation of about \$1.5 trillion for the entire company, a potential IPO, that would be the largest initial public offering of all time.

SpaceX is moving forward with an insider share sale that values Elon Musk's rocket and satellite maker at about \$800 billion, setting up what could be the largest initial public offering of all time.

In a company message seen by Bloomberg on Friday, SpaceX said it's preparing for a possible public offering in 2026 that would be aimed at funding an "insane flight rate" for its developmental Starship rocket, artificial intelligence data centers in space and a base on the moon.

Site visits confirm Filtronic's capacity expansion

From early 2026, Filtronic is more than doubling its footprint at NetPark, Durham following a 75% increase in manufacturing capacity in 2024. The additional facilities are custom-designed, also allowing the company to move up the value chain to higher product ASPs



New Filtronic footprint adding ~90,000 sq ft over three floors, operational from early 2026



Current Filtronic head office and manufacturing is ~40,000 sq ft over two floors



We estimate 4x volume increase every 5 years, entirely on SpaceX Starlink launch trajectory



Case Study: Anduril has begun US manufacturing of underwater autonomous vehicles at up to 200 per year; Kraken Robotics the batteries and sonar supplier



Clear signalling by US Navy to prioritise unmanned robotic and autonomous systems, combined with multiple additional regions transitioning to Anduril AUV standard

Chief of US Naval Operations: “Unmanned robotic and autonomous systems – that is where we are moving to as a Navy.”

“I don't think I've ever served in a time when I've seen the Navy, Congress, and Office of Secretary of War, everyone's on the same page. There is no daylight between any stakeholder, and I think the American people as well.

AI and unmanned fleets represent a whole new set of competencies. There are specific procurement rates that we that are going to be involved with unmanned robotic and autonomous systems. That is where we are moving to as a Navy.

What we have to do now is make sure we can work with the defense industrial base, the submarine industrial base and the ship building at large to take those monies and convert that into output improvements.”

Admiral Daryl Caudle, Chief of US Naval Operations, speaking in December 2025



“We will accelerate the adoption of artificial intelligence, unmanned systems, cyber tools, and advanced stealth technologies. And we'll integrate our capabilities seamlessly across all domains from seabed to space.”

“The Navy I want to field is one that can meet our demands globally to protect our sea lines of communication, our commerce, the choke points of the world, to be ready to execute prompt and sustain combat operations and our most stressing operational plans.

It is a Navy that is not only ready but sustainable and has the right mix of high-end combat ships, high-end aircraft and of course unmanned autonomous vehicles that can deliver the actual lethality required to win.

There needs to be a palpable sense of urgency, a desire to be offended if we are one day off the critical path, and not be satisfied with being late.”

Admiral Daryl Caudle, Chief of US Naval Operations, speaking in December 2025

US Navy AUV purchases already in place for Anduril Dive-LD; Anduril Ghost Shark completing active testing phase by US Navy

US Navy receives first Dive-LD drone submarine

By Dylan Malyssov | Apr 5, 2025

Defense tech company **Anduril** has delivered its first **Dive-LD autonomous underwater vehicle (AUV)** to the U.S. Navy, the company said Friday.

The Dive-LD was handed over to Unmanned Undersea Vehicle Squadron 1 (UUVRON-1), which is tasked with developing and operating undersea drones for intelligence, surveillance, reconnaissance, and other naval missions.



Aria Alamahodaei | 12:12 PM PDT · September 10, 2025

SVP Of Maritime, Shane Arnott, said Ghost Shark can be rapidly “missionized in country,” meaning that governments can plug in their own payload modules as needed. Anduril has already produced a U.S. payload that is being tested off the California coast, and it has stood up a 150,000-square-foot factory in Rhode Island to produce Ghost Sharks in the U.S. if a contract materializes.

Anduril highlights contractual path by which US Navy will purchase the larger Ghost Shark AUV

Anduril Pitches Ghost Shark XLUUV to U.S. Navy

BY MALLORY SHELBOURNE
SEPTEMBER 10, 2025 7:05 PM



Anduril wants the U.S. Navy to take advantage of its rapidly developed autonomous undersea vessel that Australia is purchasing, company officials said Wednesday.

After winning a \$1.7 billion AUD award this week from the Royal Australian Navy for the Extra Large Autonomous Underwater Vehicle known as Ghost Shark, executives with Anduril are publicly urging the Navy to contract with them for the program.

“I am highly confident that in the very near future there will be a contractual path by which the United States can purchase this XL AUV for their own uses,” Chris Brose, the chief strategy officer and president of Anduril, told reporters. “There’s no reason why we shouldn’t do that.”

Noting the troubled history of the Orca Extra-Large Unmanned Undersea Vehicle (XLUUV), Brose said the U.S. Navy has “spent [a] significantly greater amount of money on that program than the Australian government and Anduril have spent developing the ghost shark capability and it’s further behind. And we have spent more time in, on and under the water.”

“We are more ready to go. We are more ready to deliver at scale and we will do all of that at a lower price,” Brose added.

Anduril has already built a U.S. payload module made out of American steel and software that is currently undergoing testing off the coast of California should the U.S. decide to pursue Ghost Shark, which participated in last year’s biennial Rim of the Pacific exercise, Anduril senior vice president for maritime Shane Arnott told reporters.

Last month, the company opened a facility in Quonset Point, Rhode Island – where submarine builder General Dynamics Electric Boat also has a facility – to manufacture autonomous systems.

Anduril AUVs are also being piloted across European Navies, and in Taiwan

Anduril Expands Across Europe With Next-Gen Anti-Submarine and Infrastructure Defense Solutions

Published on 31/07/2025 | By Carter Johnston | In News



With successes mounting in the United States, Anduril is moving forward with several underwater domain products the company sees as prime candidates for Europe's diverse maritime environments, from the Arctic to the Mediterranean.

With a growing product line enabling undersea warfare, Anduril believes its maritime domain products fit the needs of several European navies—while meeting the urgency and scale required to quickly stand up a force capable of performing a wide range of defensive and offensive undersea missions.

The Seabed Sentry design went from napkin sketches to full-scale testing, entirely self-funded, in under one year—something Anduril prides itself on.

In the context of Europe, it means monitoring, and if needed, defending the Greenland, Iceland, United Kingdom (GIUK) gap with a series of strategically placed Seabed Sentry nodes rather than the multitude of submarine hunting frigates and submarines needed historically. Or maintaining the dozens of undersea cables and pipelines in the Mediterranean from sabotage and destruction.

The flexibility of Seabed Sentry and the connectivity it provides would bring a significant boost to NATO undersea security efforts, which have ramped up rapidly following the Nord Stream pipeline sabotage in 2023 and a series of submarine cable disruptions in the Baltic Sea in 2024.

But Anduril wants to go further, to enable its full product range in the European security sphere. As Arnott told Naval News at Sea Air Space, Anduril's products are a family of systems meshed together to provide awareness, intelligence, and strike capability. Drake emphasized how the different undersea warfare products work together.

“Seabed Sentry provides a cordon layer, while UUV products like Dive-LD and Dive-XL change the capabilities of navies very quickly to achieve underwater mass. [Anduril's products] have the opportunity to change the game for European navies, and they can provide European navies the opportunity to achieve mass in their Areas of interest through UUVs and Seabed Sentry.”

RICH DRAKE, ANDURIL'S GENERAL MANAGER FOR THE UNITED KINGDOM AND EUROPE

While unable to disclose specific interests across Europe, Drake confirmed that Anduril has pitched Seabed Sentry to the Royal Navy for its “Atlantic Basin” effort, part of the United Kingdom's push for autonomous anti-submarine warfare systems in the North Atlantic.

GEO POLITICS DEFCROS NEWS 20/09/2025

NCSIST Plans to Modify and Produce Anduril Underwater Vehicles for Taiwan

Taiwan to Collaborate with Anduril on Autonomous Underwater Vehicles

Overview of the Initiative

The National Chung-Shan Institute of Science and Technology (NCSIST) announced plans to co-develop two autonomous underwater vehicles (AUVs) in partnership with Anduril Industries, enhancing Taiwan's military capabilities. This collaboration was unveiled at the Taipei Aerospace & Defense Technology Exhibition (TADTE) 2025, held from September 18 to 20.

Strategic Collaboration Goals

A project official indicated that collaborative efforts with Anduril will commence within the forthcoming months, with a particular focus on customizing the AUVs to meet specific requirements of the Republic of China (RoC) military. Key points include:

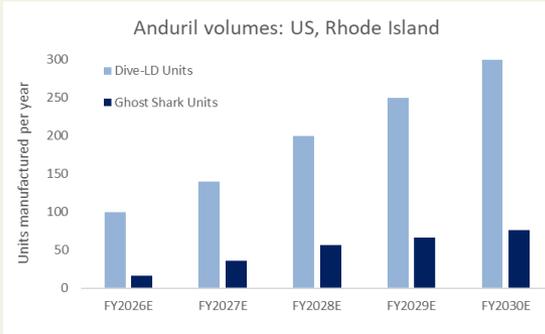
- **Customization:** Tailored adaptations to align with the operational demands of Taiwan's defense strategy.
- **Implementation Timeline:** Agreements for both projects are expected to be formalized by the end of 2025. However, details regarding the financial commitments and the scope of potential deployments remain confidential.

Future Development Plans

NCSIST aims to expedite collaboration with Anduril to ensure that the Dive-LD is specifically adapted for the Taiwanese context by the end of 2025. As stated by a project official:

US and Australian order paths alone position Kraken Robotics to capture revenue and EBITDA growth at multiples of trailing economics, significantly cheapening valuation

Anduril's US autonomous underwater vehicles factory opened in Oct 2025; to produce more than 200 AUVs per annum for the US Navy



Anduril to Open Large Scale Production Facility for Autonomous Underwater Vehicles

6/17/2024
By Anduril Industries



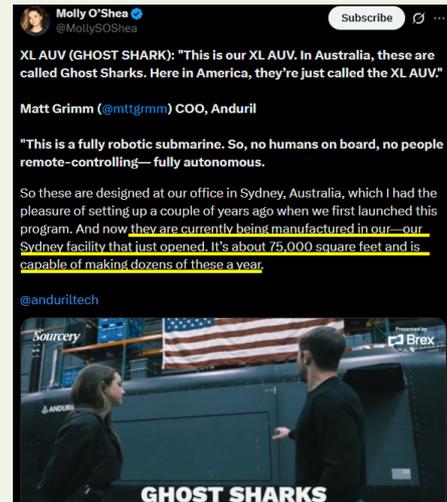
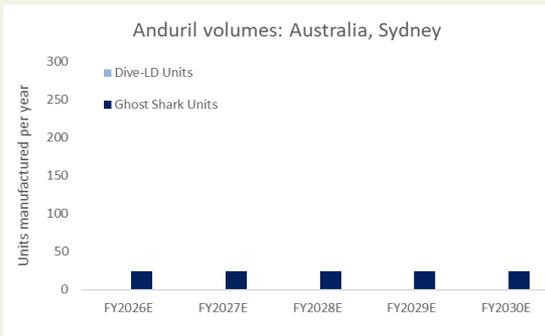
The Rhode Island production facility will enable Anduril to increase production to 200 AUVs per year and create more than 100 jobs over the next five years. The factory announcement comes amid growing demand for Anduril's AUVs, including an \$18.6 million contract with the U.S. Navy.

Anduril Industries is announcing a new manufacturing facility to support large-scale production of its Dive-LD family of autonomous underwater vehicles (AUVs) at Quonset Point, Rhode Island. By investing in a scaled production facility ahead of need, Anduril will be able to stay ahead of customer demand and deliver on orders with unprecedented speed.

"More than 200 AUVs per year, opening in [late] 2025"

AUVs are transforming maritime deterrence by providing an affordable, distributed, and adaptable undersea capability that complements the U.S. and allied submarine fleet. Developing, manufacturing, and fielding these systems at scale on an operationally-relevant timeline will be critical. The 100,000-150,000 square foot production facility will enable Anduril to immediately increase production capacity for its Dive-LD family of AUVs to more than 200 hulls per year. Anduril plans to create more than 100 jobs within five years of the facility opening in 2025.

Anduril's Australian autonomous underwater vehicles factory also opened in Oct 2025; to produce "dozens" of AUVs Ghost Sharks per annum for the Australian Navy



Anduril's production volume trajectory implies a rapidly accelerating revenue path for Kraken Robotics

- from guided C\$130m revenue in 2025, Kraken is positioned to grow revenues to C\$1bn by 2027, C\$2bn by 2030
- at its historic 25% EBITDA margins, Kraken's EBITDA reaches C\$250m by 2027 and C\$500m by 2030
- compares to Kraken current C\$2.7bn Enterprise Value

Anduril volumes per manufacturing facility	FY2026E	FY2027E	FY2028E	FY2029E	FY2030E
United States: Rhode Island					
Dive-LD Units	100	140	200	250	300
Ghost Shark Units	16	36	56	66	76
Total factory units	116	176	256	316	376
Australia: Sydney					
Dive-LD Units	0	0	0	0	0
Ghost Shark Units	24	24	24	24	24
Total factory units	24	24	24	24	24
Kraken Robotics revenue breakdown					
Anduril large autonomous platforms					
Dive-LD Units	100	140	200	250	300
Dive-LD ASP (C\$m)	1.86	1.67	1.67	1.67	1.67
Dive-LD Revenue (C\$m)	186.1	234.4	334.9	418.6	502.4
Ghost Shark Units	40	60	80	90	100
Ghost Shark ASP (C\$m)	10.68	9.61	9.61	9.61	9.61
Ghost Shark Revenue (C\$m)	427.3	576.8	769.1	865.2	961.3
Subtotal	613.3	811.2	1,104.0	1,283.8	1,463.7
Anduril distributed / mass-deployable systems					
Seabed Sentry Units	125	250	375	450	500
Seabed Sentry ASP (C\$m)	0.20	0.20	0.20	0.20	0.20
Seabed Sentry Revenue (C\$m)	25.0	50.0	75.0	90.0	100.0
Copperhead Units	300	750	1,000	1,200	1,350
Copperhead ASP (C\$m)	0.10	0.10	0.14	0.13	0.13
Copperhead Revenue (C\$m)	30.0	75.0	140.0	156.0	175.5
Subtotal	55.0	125.0	215.0	246.0	275.5
Non-Anduril Revenue (including service revenue)	90.0	117.0	140.4	161.5	177.6
		30.0%	20.0%	15.0%	10.0%
Total Kraken Robotics revenue	758.3	1,053.2	1,459.4	1,691.3	1,916.8

Case study: ImmunityBio – immunotherapy at inflection point

ImmunityBio is transitioning from a research-focused entity into a potential global force in immunotherapy through its flagship product, ANKTIVA, which recently received FDA approval for bladder cancer. Its clinical pipeline is broad, targeting aggressive cancer conditions using a unique "immune amplification" technology to activate the body's natural killer cells.

The construction of ImmunityBio's state-of-the-art biological manufacturing facility in New York on track to be completed by year end 2026 with capacity for 1 million doses of Anktiva annually



MAY 7, 2024

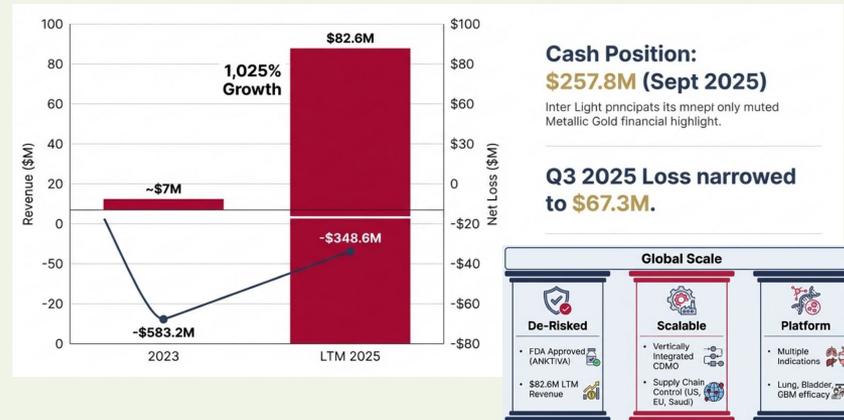
In 2020, the company began construction of a state-of-the-art biological manufacturing plant in California with large-scale bioreactors for ANKTIVA drug substance and it is anticipated to be completed in the next 12-18 months. The large-scale equipment needed for GMP biological manufacture, with long-lead times, are on site and will be installed in the next 12 months. Upon completion, this 100,000 square foot manufacturing site will have the capacity to manufacture drug substance sufficient for a million doses of ANKTIVA a year.

The drug product will be filled at the Dunkirk, New York facility, a 400,000 square foot state-of-the-art GMP facility in which the fill-finish equipment has been purchased and is in the process of being installed.

Anktiva costs \$30,000 per dose, therefore 1 million doses implies a capacity build sufficient to generate \$30 billion of revenue.

Trailing gross margin is >99%.

Following FDA approval (for a limited application) in 2024, ImmunityBio revenues have reached almost \$100m.



Saudi approval (wider application) early 2026 raises probabilities and cadence in favour of broader US and worldwide approvals



Case study: ImmunityBio – immunotherapy at inflection point

ImmunityBio is transitioning from a research-focused entity into a potential global force in immunotherapy through its flagship product, ANKTIVA, which recently received FDA approval for bladder cancer. Its clinical pipeline is broad, targeting aggressive cancer conditions using a unique "immune amplification" technology to activate the body's natural killer cells.



“I shook his [Trump's] hand and you know how the president is. He's very charming and friendly... and he held on to my hand... I started to explain to him... we have now discovered and developed this drug... this little vial that you inject subcutaneously... is on the path to curing cancer.”

“He turned to MBS and said, ‘This is important for both our countries... Health care as a policy for peace... Health care an invention that comes from America and transferred to other countries is a major foreign policy for world peace.’”

“He said to me, ‘Patrick, this is really important.’ He said, ‘Patrick, when we’re all done with this, I want you to meet with our people and come to the White House and discuss this.’”

“The president understood. He really believed in what we’re doing.”

“He invited me to the White House. He kept his promise.”

“I was at the White House meeting with the most senior people.”

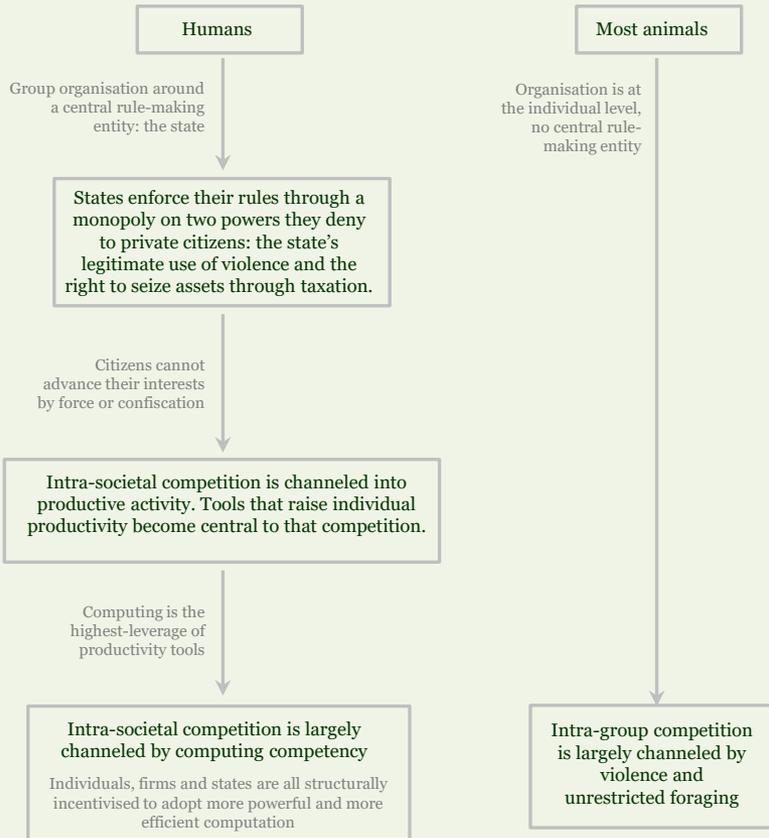
“Sharing health with the rest of the world is a path to the Nobel Peace Prize.”

“The only person who really can make this right at the end of the day is President Trump.”

Tailwind breakdown: an enduring increase in computing performance

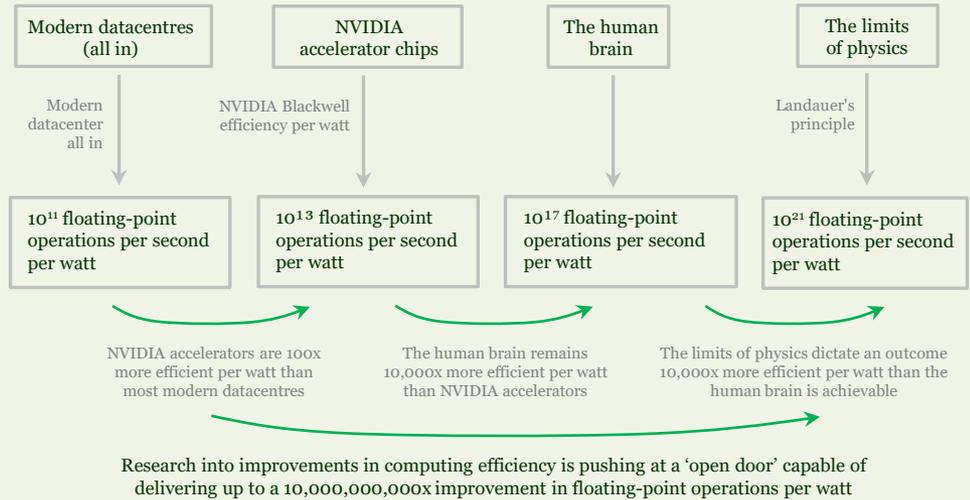
Computing efficiency/Watt remains $10^6\times$ short of the human brain, and a further $10^4\times$ short of the limits of physics

Incentive: the nature of human societies results in the enduring incentive for individual productivity through ongoing improvement computing efficiency



Achievability: computing efficiency is pushing at a 'open door'

To understand what is actually happening, the necessary recognition is that the research programs delivering computing efficiency improvement are pushing against an "open door" tailwind of long-term enhancement; Datacenter efficiency/Watt remains $10^6\times$ short of the human brain, and a further $10^4\times$ short of the limits of physics.

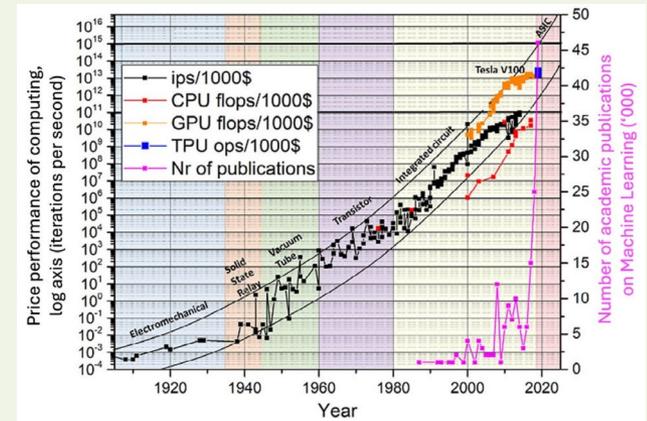


Outcome: a sustained future tailwind in increasing computing performance has deterministic qualities

The implication is that the trailing attributes of increasing computing performance per watt are extrapolatable.

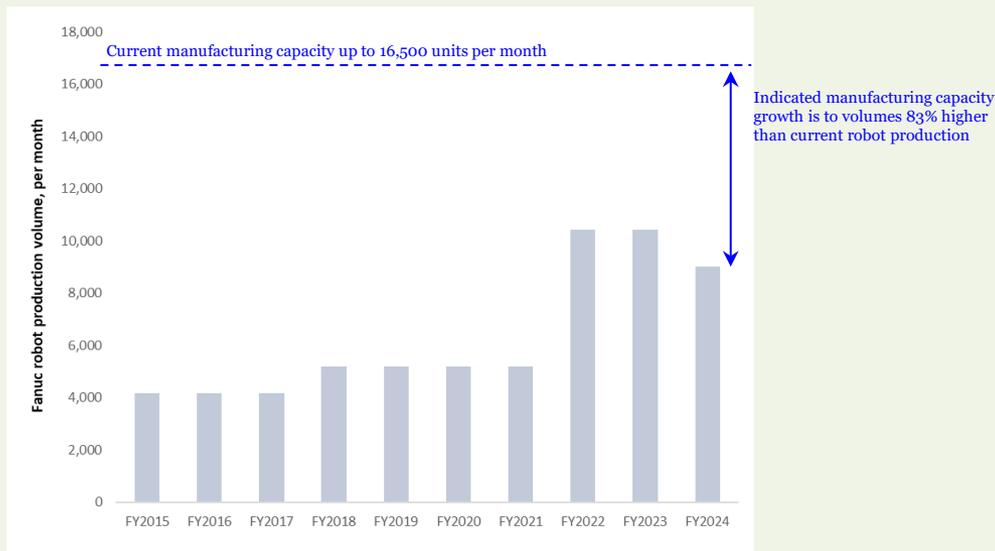
The base-case contention is that this trailing tailwind still has orders of magnitude of headroom ahead of it: even if human-brain-level efficiency is reached, the limits set by physics remain a further $10^4\times$ away.

As long as economic and political incentives continue to favour higher intra-group productivity, we should expect this gap to be progressively closed over coming decades.



Case study: Fanuc, global market leader in industrial robotics, is extremely well positioned within the ongoing shift of AI technologies to the factory floor

Fanuc's capacity expansion is indicative of an internal budget plan for volumes 83% higher than current robot production



Fanuc management, January 2022: "the evaluation of achieving a production capacity of **16,500 units per month**, without new constructions, is ongoing"

Fanuc 2024 annual report: "Fanuc has succeeded in increasing the number of units that can be produced by 50%, this has resulted in a production capacity of **more than 15,000 units per month**."

Increasing the Capacities of the Tsukuba ROBOT Factories

The Tsukuba Robot Factory #1 began operation in August 2018 and has significantly increased its production capacity in order to meet strong demands for robots. **FANUC has succeeded in increasing the number of units that can be produced by approximately 50% compared to what was initially planned, by making a series of revisions in the manufacturing process. This has resulted in a production capacity of more than 15,000 robots per month** when combined with the production in the Headquarters' Factories.

At Tsukuba Robot Factory #1, the automated warehouse and transport lines have been expanded, assembly cells automated by robots have been set up, and the collaborative robot CRX has been introduced to the manual assembly process to improve the quality of bolt tightening and reduce the number of workers required. To ensure high reliability, assembled robots undergo rigorous testing, including continuous operation tests at a test site. By analyzing data on quality collected from the past, the operating conditions for the continuous operation tests have been revised, which has enabled the operating time to be shortened. This has significantly reduced test lead time and has improved the turnover rate. In recent years, demand has been rapidly growing for robots with high payloads, such as those for transferring battery units of electric vehicles. To meet this demand, FANUC has more than doubled the production capacity of the M-1000IA and M-2000IA robots with payloads exceeding 1-ton.

In November 2022, the finished products warehouse was expanded. Prior to this, robots to be shipped overseas were transported by truck to a logistics company near the port, where export packaging and vaning into containers were performed. With the new finished products warehouse, export packaging and vaning of small robots can be handled inhouse, and truck transport has been replaced by transport of containers by trailers which has improved loading efficiency. The reduction in the number of trucks helps to promote carbon neutrality and solve the "2024 driver problem" where there will be a shortage of truck drivers. The Tsukuba ROBOT Factories will continue to improve their supply capacities by increasing efficiency, and will stably supply the high quality robots that customers desire.



Tsukuba Robot Factory #1/Finished products warehouse

M-1000IA and M-2000IA production line

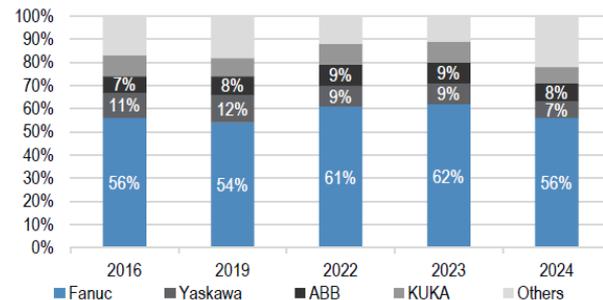
Fanuc is extremely well positioned with respect to the ongoing shift of AI technologies to robotics

The AI era is poised to significantly lift demand for Fanuc robotics:

- * **Task set expansion:** foundation model vision, force sensing, and policy learning is today empowering robots to tackle variant-rich, previously "unautomatable" steps (i.e. kitting, bin-picking, inspection, machine tending with irregular parts). More tasks achievable → more robots demanded.
- * **Friction collapse in robot deployment:** digital twin simulations and prompt engineered natural language programming shrink engineering hours and changeover times. Lower integration cost shortens payback periods → more robotics projects clear investment hurdle rates.
- * **Uptime optimisation:** predictive maintenance (e.g. servo, robot health) and tighter motion control raises robot availability x performance x quality of output, raising economics of robot deployment and incentivising additional orders.
- * **Political and demographic incentives:** onshoring incentive programs, labour scarcity, quality/traceability mandates raise the need for automation exactly where Fanuc is dominant – US industry.
- * **Winner-takes-all tailwinds:** As AI pushes autonomy to the edge, factories will value widely supported platforms. Fanuc's market dominant platform and service network is positioned to become the only "safe option".

Founded in 1972, Fanuc has held the global leadership position in industrial robotics since 2000, maintaining a stable US market share exceeding 50%

Figure 125: Industrial robot market share: US



Source: Yaskawa Electric data, J.P. Morgan

FANUC CORPORATION Q&A Summary of the Telephone Conference on Financial Results for the Third Quarter ended December 31, 2021 (January 26, 2022)

Q: ROBOTS are being manufactured both in FANUC Headquarters and Tsukuba. What are your plans for enhancing production capacity in these sites, as well as in the Mibu area?

A: The monthly production capacity of ROBOTS is 11,000 units, and it seems that manufacturing at full capacity is on the horizon. By using free space within the company and improving efficiency, prospects are clear for increasing the monthly production volume to approximately 14,000 units. Also, the evaluation of achieving a production capacity of 16,500 units per month, without new constructions, is ongoing.

Still, as the robot market is expected to expand dramatically, such enhancements are seen as being limited, and will cover demands only for the next few years. Building a new ROBOT factory in Tsukuba is contemplated as the next step. If demands increase even further, there is a possibility to consider using Mibu as an option for additional production.

Case study: autonomous vehicles, poised to deliver windfall profitability to Tesla, will also significantly increase volumes through urban toll roads

Autonomous vehicles are poised to deliver windfall profitability to Tesla

Tesla's self-driving robotaxis, achieving lowest cost provider dominant status by operating without LiDAR, have moved beyond proof of concept to deployment

As at November 2025, Tesla Robotaxis are deployed in two states, actively testing in a further six states, and Tesla has made job postings for testing in an additional seven states

Status of Tesla's robotaxi operations by city



Modelling Tesla AVs to charge \$0.50 per mile, 100k miles per year per AV, and an eventual market opportunity of 138m AVs worldwide, indicates a \$7 trillion per annum revenue opportunity

Self-driving cars

Service revenue per year

6,880 \$bn AV TAM worldwide (service revenue/year)

0.050 \$m revenue per AV/year
138 m TAM for AVs worldwide

0.50 \$ per mile charged by AVs (service revenue)
289,278 passenger km/year for each AV

16.1 human car service multiplier per AV
1,250 m vehicles worldwide in 2025
77% utilisation uplift

160,710 autonomous car km/year
1.8 average AV occupancy with pooling

16 hours/day autonomous car
28 km/h average in-service speed

12,000 km per year for non-autonomous cars
1.5 persons average occupancy
18,000 passenger-km/year

So, Tesla produces 2m vehicles a year, at \$50k service revenue per vehicle autonomous (i.e. Uber driver salary), that is \$200bn incremental service revenue per year.

At 138m vehicle TAM, \$7 trillion service revenue opportunity.

Sources: Tesla corporate disclosures, GA-Courtenay research estimates

Ferrovial, long-term toll road assets (average duration to maturity 54 years)

Core asset the 407 ETR toll road is a 74 year concession across central Toronto



- over the last 10 years, toll charge per trip has been increased by 6% per annum
- Toronto population forecast to increase by 46% by 2046
- the population growth is expected mostly along the 407-ETR corridor with the land around it having been designated as a provincially significant employment zone resulting in the government devoting resources to the area to boost employment
- concession owned until 2098

Growth assets are multiple toll roads within Dallas



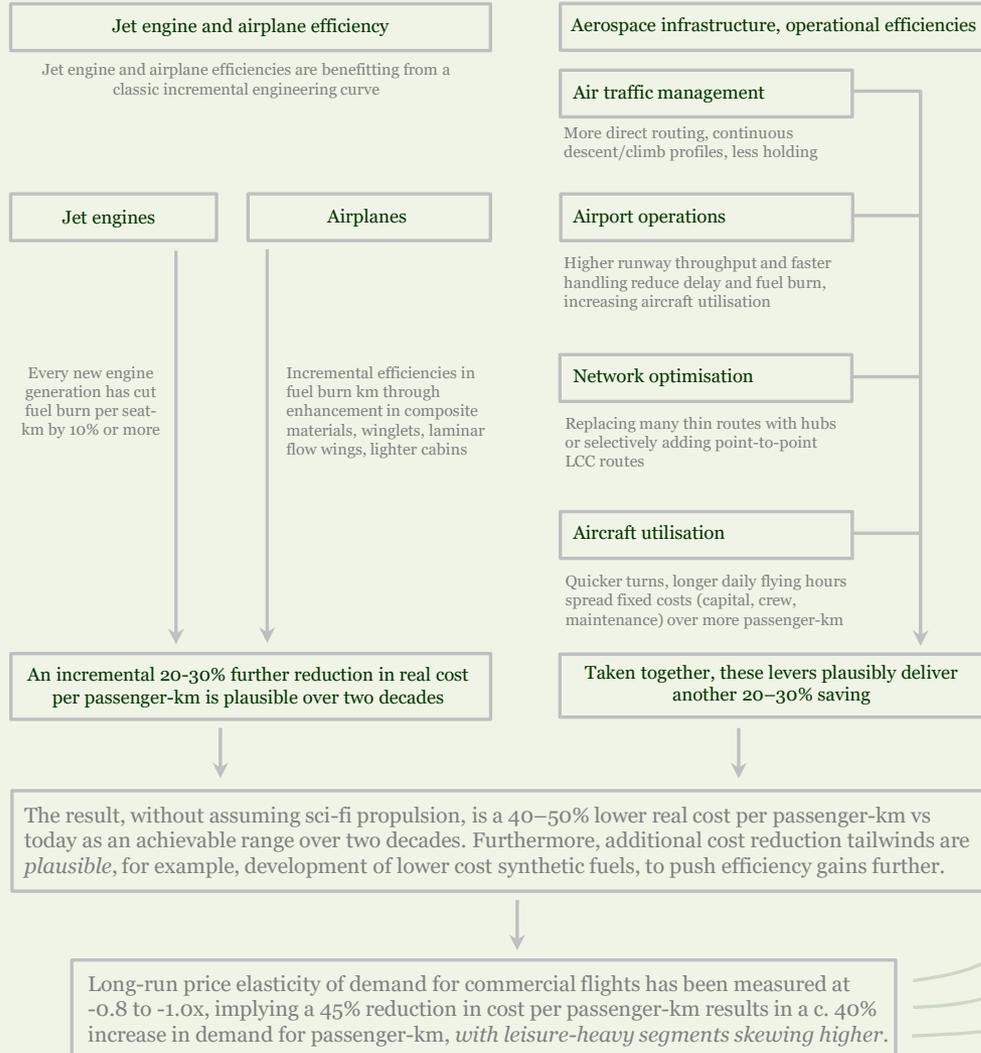
- over the last 10 years, toll charge per trip has been increased by more than 10% per annum
- the Dallas area is ranked no.1 in the US for population growth
- concession owned until 2060-2070

Sources: Ferrovial 2024 investor day, GA-Courtenay research

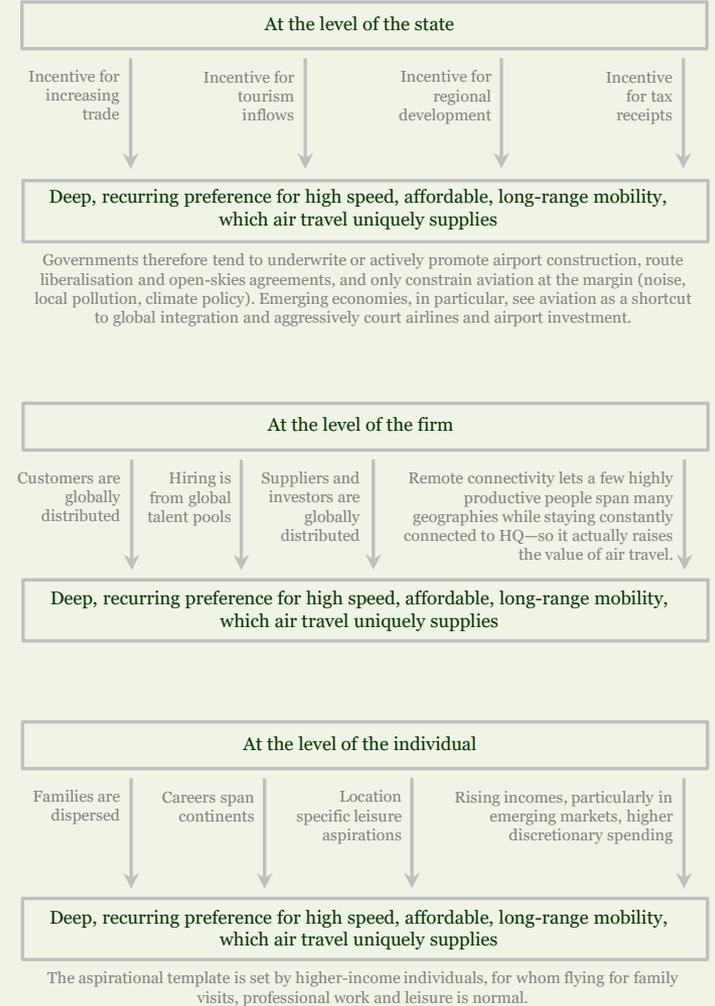
We estimate that in the scenario that autonomous vehicles are used for 64% of US vehicle miles travelled by 2040, this would increase by 38% total automotive urban miles travelled (autonomous frees parking land resulting in urban population increase, autonomous allows higher roadway volume per unit of road due to more precise driving, and autonomous through cheapening the cost of transit results in demand expansion), delivering significant additional long-term tailwind to Ferrovial toll road vehicle volumes

Tailwind breakdown: a demand tailwind in passenger flights through ongoing aerospace efficiency improvements

Achievability: ongoing advances in engines, airframes and operations can plausibly drive a 40–50% lower real cost per passenger-km over two decades



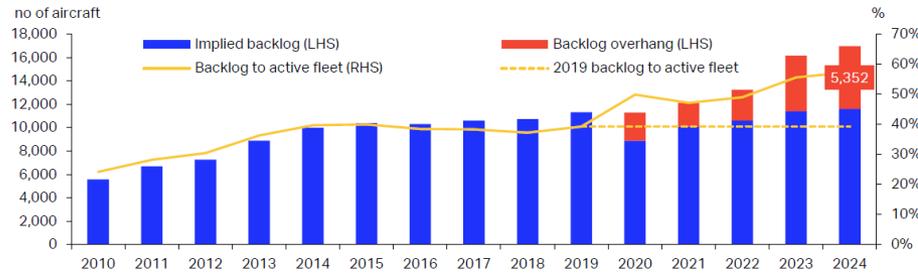
Incentive: across states, firms and individuals, an enduring demand for more commercial flight, with billions of people remaining underserved



Case study: GE Aerospace, Safran, and Airbus – jet engine and aircraft manufacturers poised to capture significant backlog and servicing tailwinds

1. Following capacity de-utilisation in the 2020 covid shock, there remains a very significant backlog in demand for new aircraft

Chart 16: Aircraft shortage implied by increased backlog



Source: IATA Sustainability and Economics, Cirium Fleets Analyzer

2. Efficiency demands result in jet engine designs that run hotter. More efficient engines cheapen flights, significantly stimulating long-term demand, yet also require increased servicing, bolstering the profitability of jet engine companies such as GE Aerospace, Safran, which derive the majority of their profits from engine servicing

Air & Space Magazine

The Hotter the Better

Make an engine that can run hotter and still survive, and you can get more thrust from the same amount of fuel

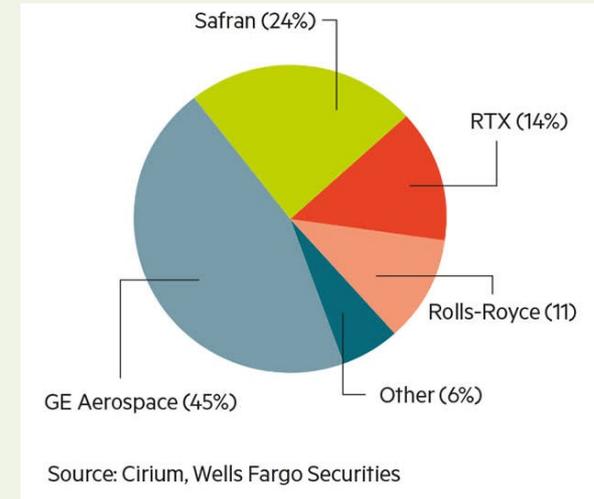
George C. Larson

- Hot-running engines cause more wear on turbine blades and affect the engine's lifecycle.
- Aircraft operators demand fuel-efficient engines, with engine performance crucial for efficiency.

Aircraft engines are designed to withstand very high internal temperatures during flight operations. There is a limit to how high the temperature can rise within the engine. With the ever-growing need to make the engines fuel-efficient, there is a constant need to increase the engine's internal temperature.

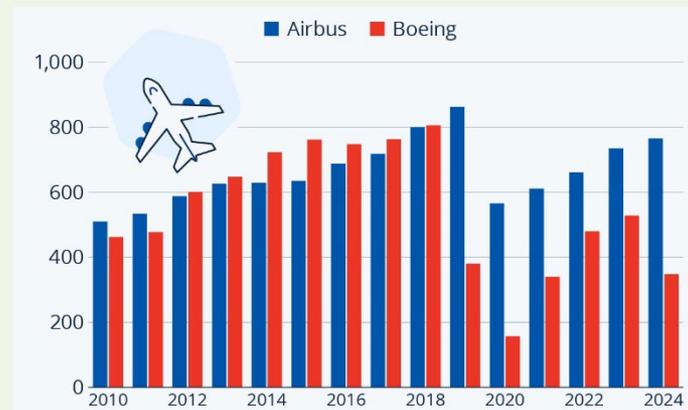
Hot-running engines mean more wear to the materials, particularly the turbine blades. Moreover, the engine's lifecycle is affected when it is frequently operated at high power.

3. Jet engine manufacturers GE Aerospace and Safran hold an effective duopoly on commercial jet engine manufacturing



Source: Cirium, Wells Fargo Securities

4. Airbus and Boeing constitute a duopoly on airplane manufacturing; since 2019, Airbus has dominated



Source: Corporate disclosures, public domain articles and GA-Courtenay research

Case study: Aena airport – passenger volumes by commercial flight are implied at a 6.5% CAGR by airport capex plans, well above widely used World Bank estimates

The widely used World Bank estimates for the growth in passenger volumes by commercial flight imply a CAGR of 3.4% to 2030, and 3.2% to 2040

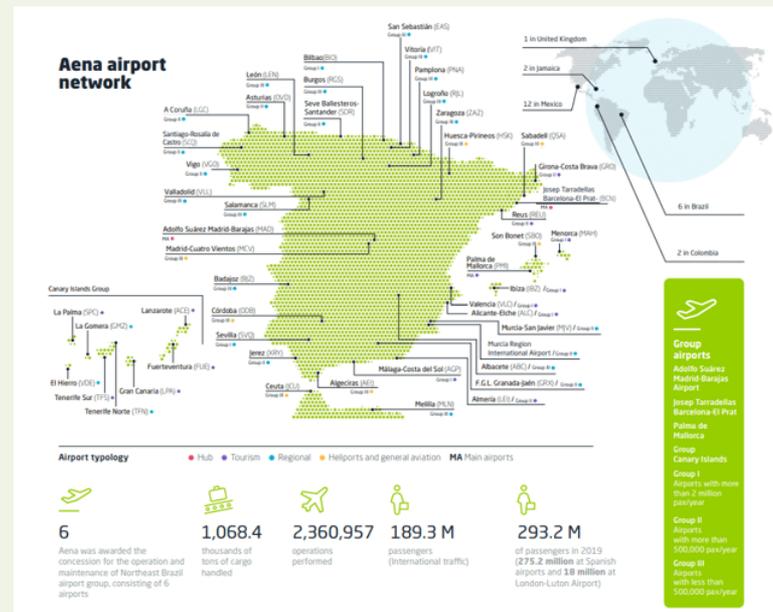
Growth (CAGR) in volume of passenger flights 2024-2030	
2.87%	US, UK, Ger, Fra
1.87%	United States
3.39%	United Kingdom
4.83%	Germany
9.13%	France
6.51%	Japan
6.33%	Brazil
7.79%	China
11.81%	India
1.60%	World ex US, UK, Gr, Fr, ex China, ex India
3.37%	World

Passenger volume in commercial flights 2024-2030	
3,069,000,000	US, UK, Ger, Fra
1,098,000,000	United States
171,000,000	United Kingdom
146,000,000	Germany
152,000,000	France
146,000,000	Japan
171,000,000	Brazil
1,098,000,000	China
366,000,000	India
3,069,000,000	World ex US, UK, Gr, Fr, ex China, ex India
6,100,000,000	World

Growth (CAGR) in volume of passenger flights 2024-2050	
2.38%	US, UK, Ger, Fra
2.08%	United States
2.54%	United Kingdom
3.14%	Germany
3.94%	France
3.15%	Japan
4.10%	Brazil
4.58%	China
7.12%	India
2.57%	World ex US, UK, Gr, Fr, ex China, ex India
3.15%	World

Passenger volume in commercial flights 2024-2050	
5,399,000,000	US, UK, Ger, Fra
1,680,000,000	United States
269,000,000	United Kingdom
246,000,000	Germany
246,000,000	France
224,000,000	Japan
336,000,000	Brazil
2,240,000,000	China
1,120,000,000	India
5,399,000,000	World ex US, UK, Gr, Fr, ex China, ex India
11,200,000,000	World

Aena, monopoly ownership of all Spanish airports; whilst landing charges are regulated, other charges (duty free rentals, taxi services, land development) remain unregulated



However, the actual capacity announcements by the world’s top 20 airports can be considered a greater reveal of “insider” estimates, and imply a 6.5% CAGR in passenger volumes by commercial flight to 2030

Airport	Announced expansion to (pax, m)	Timeline	Announced passenger capacity growth CAGR (%) to 2030
Total top 20	2,122		6.5%
Atlanta – Hartsfield-Jackson (ATL)	125	2030	2.6%
Dubai International (DXB)	150	2030	10.8%
Dallas/Fort Worth (DFW)	100	2030	3.3%
Tokyo Haneda (HND)	90	2030	0.0%
London Heathrow (LHR)	92	2031	0.4%
Denver International (DEN)	100	2040	1.5%
Istanbul Airport (IST)	150	2027	29.1%
Chicago O'Hare (ORD)	100	2028	7.7%
Delhi – Indira Gandhi Intl (DEL)	125	2030	4.6%
Shanghai Pudong (PVG)	130	2030	10.2%
Los Angeles (LAX)	100	2029	2.7%
Guangzhou Baiyun (CAN)	120	2026	0.0%
Seoul Incheon (ICN)	120	2030	2.5%
Paris Charles de Gaulle (CDG)	80	2030	0.0%
Singapore Changi (SIN)	140	2034	5.0%
Beijing Capital (PEK)	80	2030	-0.5%
Amsterdam Schiphol (AMS)	70	2030	0.0%
Madrid Barajas (MAD)	90	2030	5.2%
New York JFK (JFK)	80	2030	5.9%
Shenzhen Bao'an (SZX)	80	2027	26.5%

Source: Top 20 airport disclosures, World Bank estimates

Favourable tailwinds: over the last 10 yrs, flights into Spain have increased at a 6% annualised growth rate; tourism has the highest elasticity of demand to lower cost in per passenger-km, Spain is delivering the highest economic growth in the Eurozone

Spain's economy keeps growing – why is the country doing so well?

PUBLISHED SAT, AUG 23 2025 2:00 AM EDT | UPDATED MON, AUG 25 2025 7:48 AM EDT

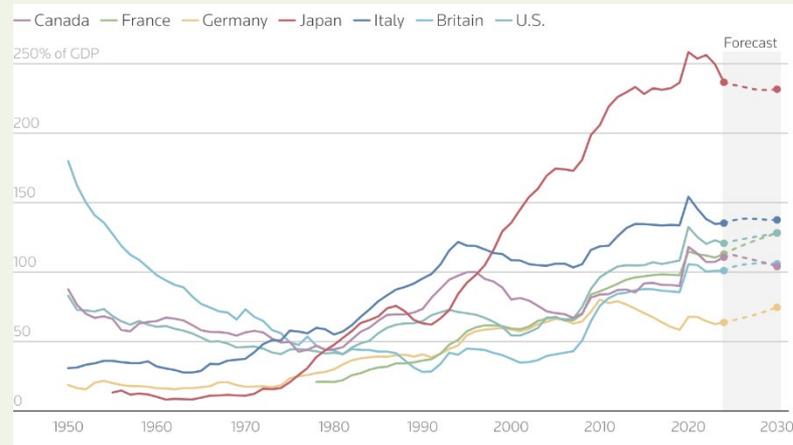
- Spain's gross domestic product surpassed expectations in the second quarter, growing 0.7%, above a forecast of 0.6%.
- Investment and consumption are the main key drivers for this growth, as well as a booming tourism sector.
- "Spain is a great outlier now in terms of growth. It's also a great place to invest." Spain's Finance Minister Carlos Cuelpo told CNBC.

Sources: Aena annual report, GA-Courtenay research, other corporate and public disclosures

Tailwind breakdown: an inflationary tailwind in favour of dominant business models with the ability to raise pricing

Across the West, a combination of rising debt/GDP, and stagnating population growth, raises the probability of currency devaluation

Rising G7 debt as % of GDP raises risk of fiat currency devaluations



Western population growth is stagnating, with many countries exhibiting population decline

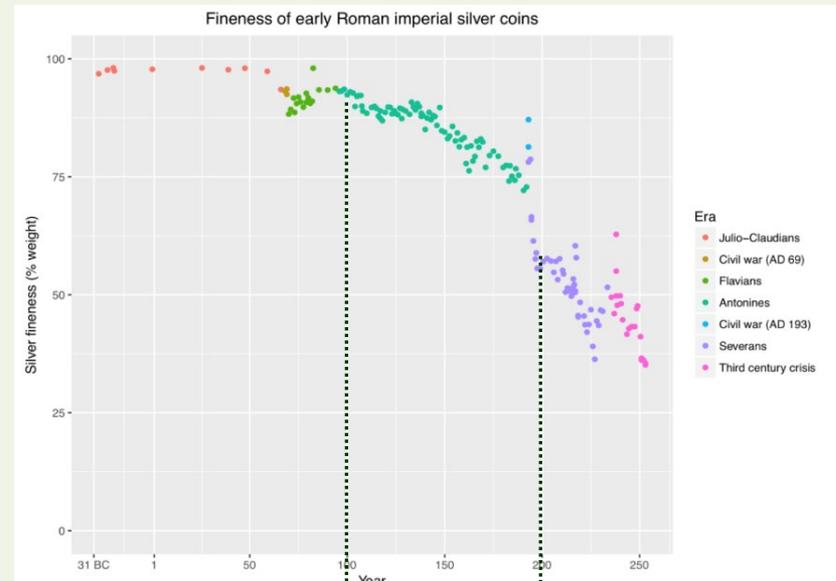
Population growth 2025-2050	Annualised	Gross
US, UK, Germany, France:	+0.20%	+5.4%
US:	+0.38%	+10.4%
UK:	+0.13%	+3.6%
Germany:	-0.22%	-5.5%
France:	-0.15%	-3.9%
Japan:	-0.68%	-16.3%
Brazil:	+0.33%	+8.9%
China:	-0.27%	-6.7%
India:	+0.54%	+15.1%
World ex US, UK, Germany, France, China, India:	+1.01%	+29.9%
World:	+0.68%	+19.3%

Whilst economic growth from AI and robotics may be sufficient to ultimately begin to lower the debt/GDP ratios..

"I came to the conclusion that the only way to get us out of the debt crisis and to prevent America from going bankrupt is AI and robotics. We need to grow the economy at a rate that allows us to pay off our debt."

Elon Musk, speaking in November 2025

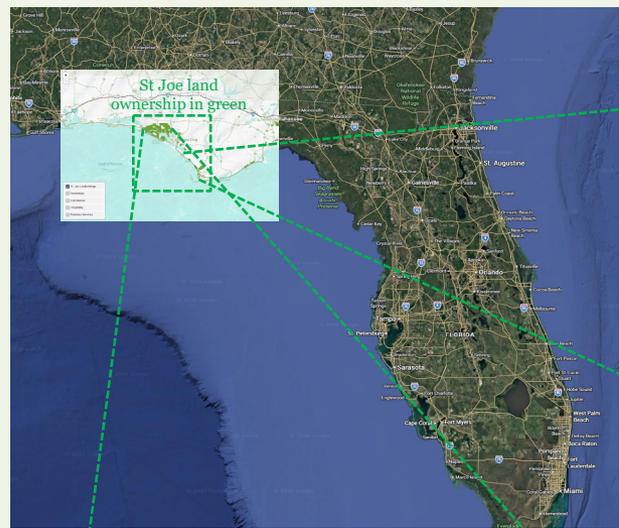
.. high debt/GDP regimes over time also recognise they possess no alternative but to engage in currency devaluation, resulting in sustained periods of higher inflation, to lower the real value of their debt



Roman currency
debasement 100-200 AD

Case study: St Joe at a 90% discount to net asset value: indicative NAV at \$40bn (i.e. 167,000 x \$225k) is considerably in excess of \$4bn market capitalisation

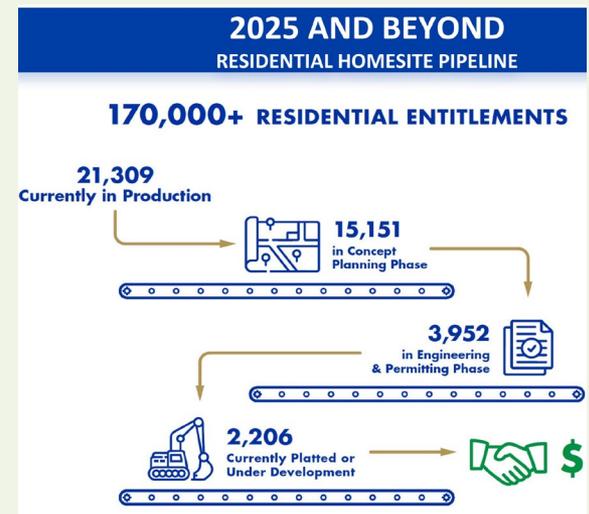
St Joe owns 167,000 acres of development land in Florida, with avg land value per acre > \$225k



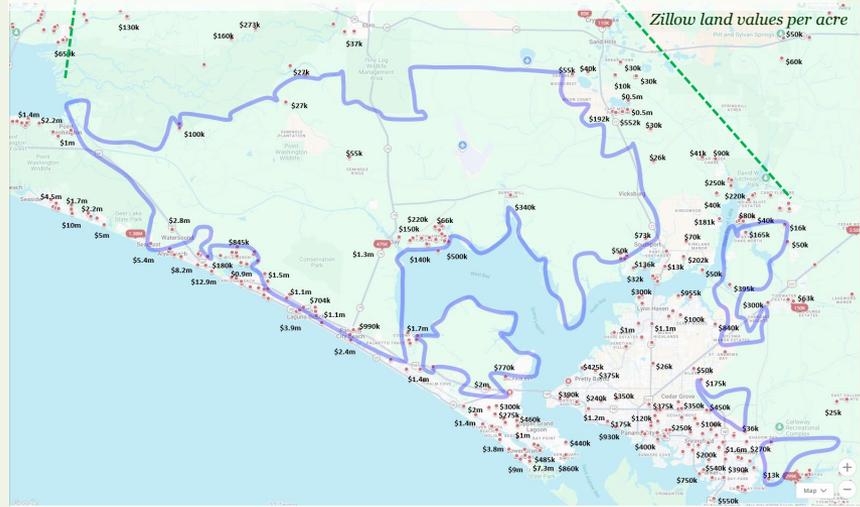
For the Port St Joe area, St Joe has rights for residential developments. Average land value per acre exceeds \$300k



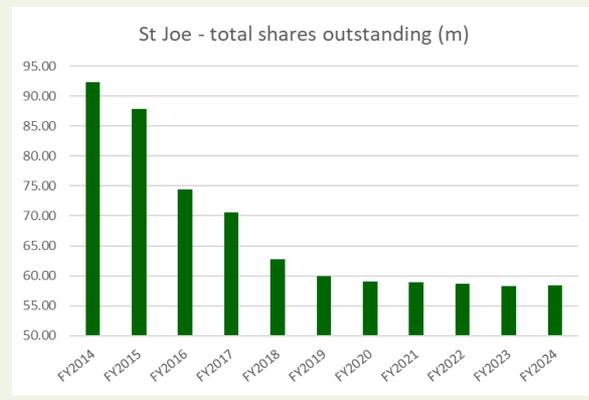
Of the more than 170,000 residential units that St Joe is currently entitled to, 21,309 are currently in development for sale



For the Bay-Walton sector area, St Joe has the legal right to develop 170,000 residential units. Average land value per acre exceeds \$200k



As St Joe continues to develop and sell its properties, at the same time as using the proceeds to buy back shares, its upside trajectory is akin to a long duration liquidation; with sale proceeds deployed into share buybacks



St Joe are continuing to guide additional buybacks as properties are sold:

October 30th, 2025:
"Share repurchase is a priority for us... through the first 9 months of 2025, we have invested \$25 million in share repurchase when compared to \$0 for the same 9 months in 2024.

Even after the third quarter, we have continued to repurchase shares.

And something that's important to think about, really the largest liquidity or cash event we had in the third quarter, the sale of Watercrest occurred literally a couple of days at the end of the third quarter."

Case study: US railroads to benefit from industry consolidation increasing pricing power through an inflationary age, concurrent with volume uplift

US onshoring of manufacturing is poised to significantly uplift railroad volumes

How Relocating Manufacturing from Asia to North America will Lead to Paradigm Shift in Rail and Logistics

The onshoring/reshoring phenomenon does offer great potential to grow rail business in the short term and strengthen the rail industry as a whole. However, improvements are needed to move forward.

Brian Gorton
Sep 11, 2024
From Corvair Corporation

Today, onshoring and reshoring continues to grow and flourish because companies believe that by manufacturing closer to customers, they will have better control over production and logistics, experience a shortened delivery timeline, receive significant cost reductions including reduced transportation costs, and other benefits.

However, the phenomenon of relocating manufacturing from Asia to North America will lead to a paradigm shift in logistics, and in railroading, in particular. It will cause managers to completely reexamine their transportation strategies, starting from mile zero, and consider some new alternatives such as rail freight for all of its advantages.

In theory, this new phenomenon should provide railroads with a bountiful growth opportunity resulting from their perceived proximity to the onshoring/reshoring ecosystem and its customers, such as heavy equipment, food, chemicals, wood, automobiles and other categories. However, that growth will not necessarily be automatic. The railroad industry will need to evolve in three key areas to maximize this onshoring/reshoring opportunity.

An America-first agenda will require a renewed focus on U.S. rail

02 May 2025  

Stretching coast to coast over 140,000 miles of track, the US rail network is set to play a critical part in meeting the growing domestic demand for efficient goods transport.

President Trump's "America First" agenda is prioritising delivering America's economic needs through American industry. Meanwhile, geopolitical and economic uncertainty is causing more companies to onshore their operations in the United States. A KPMG survey, published in 2024, found that 81% of U.S.-based executives say their companies are bringing back more of their supply chains due to global challenges¹. This research was conducted ahead of the introduction of tariffs which will further amplify this trend.

Together, these factors should increase demand on the country's domestic rail networks. This is an opportunity of a scale that the sector hasn't seen in decades, including for the smaller, but critical, components of the network: its short line railroads.

According to our own research, the rail freight market in the US has seen nearly continuous growth in volumes over the last 20 years when excluding coal volumes. In addition, it has outpaced the growth in trucking in the US by around 40%. There's room for further expansion as for distances over 550 miles, where rail is typically the most cost-effective option, rail only accounts for about 50% of the freight transportation market.

December 2015: BNSF CEO states that if Norfolk Southern receives takeover approach, BNSF "would participate" either with counter offer for Norfolk Southern or with takeover of CSX

Buffett's BNSF Open to Bid for Norfolk to Challenge CP's Offer

By Thomas Black
December 10, 2015, 11:36 PM GMT Updated on December 11, 2015, 9:40 PM GMT

- ▶ Chairman Rose says N. America industry won't stop at one deal
- ▶ He prefers no consolidation, but would jump in if it begins

BNSF Railway Executive Chairman Matt Rose is open to making a competing offer for Norfolk Southern Corp., the company targeted by Canadian Pacific, and CSX Corp. also would be "very much in play." While BNSF doesn't favor fresh dealmaking, the carrier won't be sidelined if any occurs, Rose said Thursday in a telephone interview.

Putting Canadian Pacific together with Norfolk Southern would leave Jacksonville, Florida-based CSX at a disadvantage, inevitably making that railroad a target as well, Rose said. Canadian Pacific sees \$1.8 billion in merger benefits from a Norfolk Southern deal, which "quite frankly creates an uneven, unstable railroad network with CSX," he said.

"Then you've got two railroads in the west that would be looking at, 'Should one of us jump in with the NS assets or should the other one jump in on the CSX assets?'" Rose said.

A BNSF offer for Norfolk, Virginia-based Norfolk Southern would be akin to Union Pacific's efforts to step in during the 1990s to "provide a competitive bid when the Burlington Northern and Santa Fe were merging," Rose said. "If there is consolidation to be had, we would participate as well."

August 2025: Trump fires Surface Transportation board member who opposed prior railroad mergers

Trump fires Democratic member of Surface Transportation Board ahead of huge rail merger decision

BY JOSH FUNK
Updated 9:53 PM GMT-1, August 28, 2025



Share 

President Donald Trump has fired one of two Democratic members of the U.S. Surface Transportation Board to break a 2-2 tie before the body considers the largest railroad merger ever proposed.

Board member Robert E. Primus said on LinkedIn that he received an email from the White House Wednesday night terminating the position he has held since he was appointed by Trump in his first term. The vacancy would allow Trump to appoint two additional Republicans to the board before its decision on the Union Pacific-Norfolk Southern merger, though the Senate would have to confirm them.

Primus was the only board member to oppose Canadian Pacific's acquisition of Kansas City Southern railroad when it was approved two years ago because he was concerned it would hurt competition. He was named Board chairman last year by former President Joe Biden and led the board until Trump, after his election, elevated Board member Patrick Fuchs to Chairman.

July 2025: Union Pacific announces takeover of Norfolk Southern

Union Pacific and Norfolk Southern to create \$250bn US rail giant in biggest deal of the year

Combined operator would be the first to carry cargo from the west coast to the eastern seaboard on its own tracks

Oliver Barnes in New York

Published JUL 29 2025

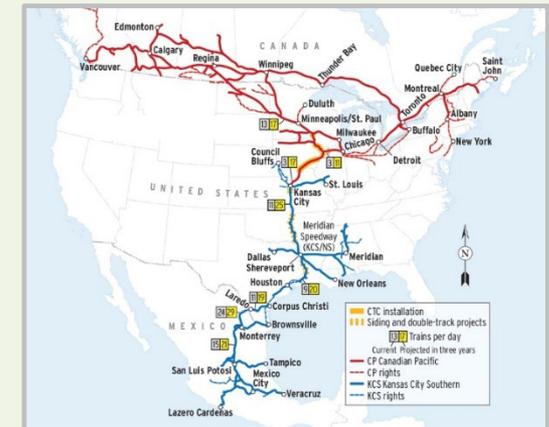
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US railroad operator Union Pacific has agreed to acquire Norfolk Southern in the biggest deal of the year, which will create a transcontinental rail juggernaut valued at \$250bn.

The largely stock-based tie-up, which would forge the largest railroad operator in the country with more than 50,000 miles of track across 43 states, comes as the industry grapples with weaker freight volumes as well as high fuel and labour costs.

A combination of Union Pacific, which operates west of the Mississippi River, and Norfolk Southern, in the east, would be the first operator in US history capable of carrying goods from the Pacific coast to the Atlantic on its own tracks. It would also help to ease a logjam around the main interchange point in Chicago.

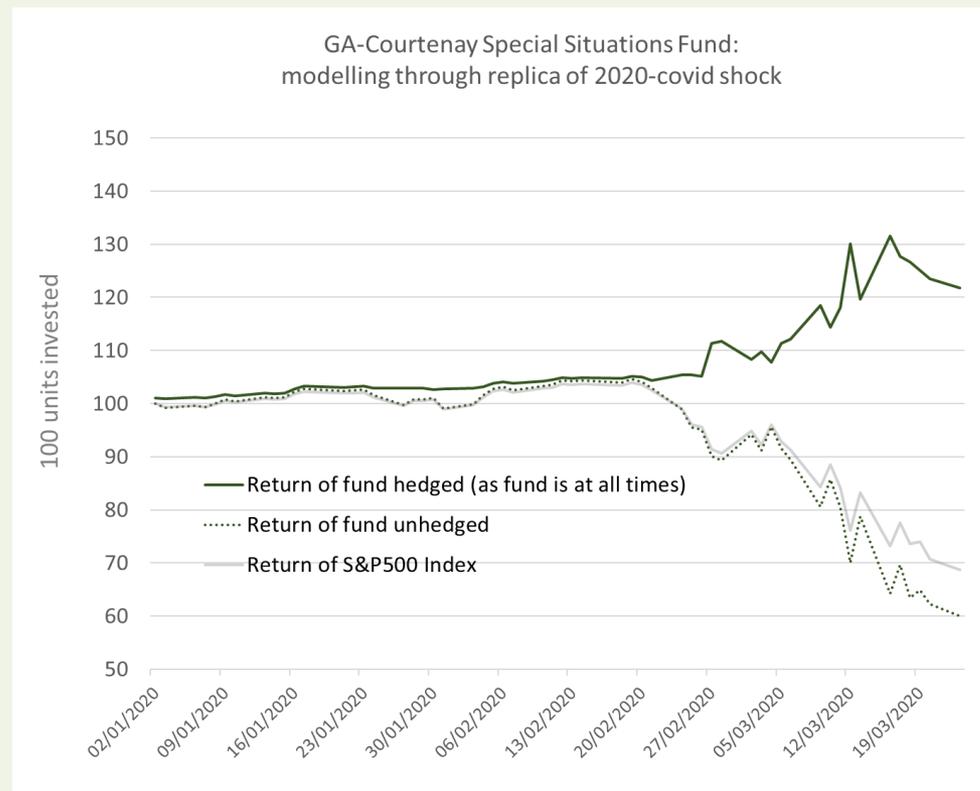
Canadian Pacific – duopoly Canada railroads and a monopoly Canada-to-Mexico railroad



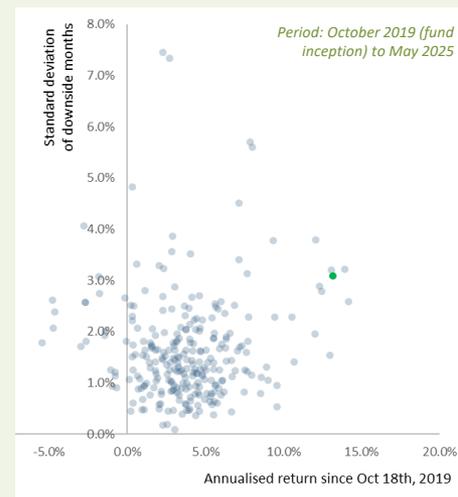
Source: public domain articles, Canadian Pacific corporate disclosures

Positive carry protection designed to deliver advantageous risk and de-correlation metrics; SSF targets a downside-aware, strong performance trajectory

Put option protection designed to insulate fund from market shocks: S&P500 puts purchased sufficient to protect fund against extreme developments (below, modelling through repeat of 2020 covid shock)



Returns relative to risk: on a Sortino Ratio basis (return/downside months SD), SSF ranks in the top one third (26th percentile) of all UCITS funds



De-correlation from other funds: below average correlation to other UCITS funds and as such SSF also acts as a powerful portfolio de-correlator



Opportunities to partner with GA-Courtenay Special Situations Fund

Product

GA-Courtenay Special Situations Fund:
our flagship UCITS hedge fund

AUM: \$34m

GA-Courtenay Focused:
Seeder class opportunity for focused
offshore GA-Courtenay Fund

Prospective AUM: \$10m

GA-Courtenay Javelin:
Concentrated segregated accounts

Opportunity

The GA-Courtenay Special Situations Fund remains a unique product proposition amongst UCITS hedge funds:

- *Explicit focus on monopolistic businesses, formidable barriers to entry, long term growth tailwinds*
- *Ability to safely leverage equity book*
- *Product downside protection using S&P500 options, allowing product to target double digit percentage returns whilst significantly mitigating impacts from market shock scenarios*
- *No long-term performance drag from holding S&P500 put options, put option decay cost paid for by merger arbitrage yield*
- *Builds on Adrian's more than 20 year special situations career experience and more than 6 years in overseeing GA-Courtenay Special Situations Fund*

GreenAsh Partners is in a position to agree selective access to seeder class allocations to GA-Courtenay Focused Fund. Please contact us for further information.

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