GA-Courtenay Special Situations Fund

The GA-Courtenay Special Situations Fund has been built to deliver enhanced returns using a specialised approach to investing in dominant growth businesses, alongside deploying a positive-carry hedging structure

A message from the fund manager, Adrian Courtenay

Dear Investor,

Welcome to the GA-Courtenay Special Situations Fund.

Our approach targets advantaged investment outcomes by focusing on monopolistic business models with high barriers to entry that dominate industries with enduring growth tailwinds and, in the most compelling cases, are deeply mispriced due to esoteric circumstances. Barriers to entry—technological, regulatory, scale-based, or network-driven—are a critical determinant of long-term investment outcomes. They underpin excess returns on capital while reducing the risk of over-reliance on forecast precision in environments otherwise characterised by emerging or persistent competitive threats.

Portfolio holdings differ not by selection philosophy but by maturity. Some monopolies are long established; others are earlier in their lifecycle, where durable moats exist but are only identifiable through rigorous, first-principles research. By holding equities across the maturity spectrum, the fund combines portfolio balance with long-term compounding while remaining anchored to a consistent underlying investment logic.

Leverage is applied not to speculate on sectors, narratives, or timing, but to amplify exposure to durability itself. By restricting the long book to businesses where competitive erosion is structurally constrained, the fund seeks exceptional long-term outcomes without the fragility typically associated with high-return strategies. Systemic market dislocations—such as liquidity shocks or regime breaks—are addressed separately through an always-on, positive-carry hedge, protecting the path to compounding through periods of elevated volatility.

In April 2025, *The Hedge Fund Journal* recognised GA-Courtenay Special Situations as the best-performing event-driven UCITS hedge fund over the trailing five-year period. That record, however, also encompasses a full platform transition following the withdrawal of financing and derivative arrangements in 2023, which were only re-established from the second half of 2025. This period tested—and ultimately reinforced—the fund's infrastructure, counterparties, and risk disciplines.

Today, the strategy again operates with its full toolkit deployed within a specialised and resilient framework, positioning the fund to deliver peer-group-leading outcomes.

My objective is to anchor the strategy in a depth of framework and analytical rigour that goes beyond conventional practice. When each investment is treated as a first-principles inquiry, capital can be allocated more intelligently. Over time, my vision is that the fund can become a constructive force in global markets, reducing capital misallocation and helping high-quality businesses scale their most productive trajectories.

Best regards,

Adrian Courtenay

Adrian Courtenay, Managing Director and Head of Special Situations Strategy

Fund background

- *Founded and seeded by fund manager Adrian Courtenay in October 2019 at Odey Asset Management*
- *2019-2021 the fund performed at the top percentile within UCITS hedge funds, AUM rose to $110m*
- *Following Odey disruption in 2023, fund transferred to GreenAsh Partners*
- *Financing and derivative protection agreements lost 2023-mid 2025; in the interim period the fund largely focused on merger arbitrage in line with absolute return mandate*
- *Fund has emerged stronger with enhanced systems and fully restored prime broker financing and derivative protection agreements from mid-2025, again positioning the fund to target peer group leading returns*
- *Annualised net return since inception 12.0%*
- *Strong risk metrics: low equity correlation R^2 of 0.10, strong Sortino ratio, defensive in market stress*
- *Current AUM $25m, 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*

Source: Performance figures and risk metrics are for USD I class

Fund strategy

- *Research-intensive, deep dive approach to stock selection*
- *The fund targets exceptional businesses, including both esoteric special situations and enduring 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*
- *Hedge structure designed to achieve positive carry – incorporating merger arbitrage yield funding S&P500 put option protection*
- *The outcome: the fund amplifies our unitholders' exposure to dominant growth corporate trajectories concurrently with the maintenance of strong defences against market risk — over time delivering highly advantageous absolute returns.*

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*

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

Net performance since inception

Since inception the GA-Courtenay Special Situations (USD I class) has returned 12.0% net annualised at low correlation to the market at large

GA-Courtenay Special Situations Fund (USD I) Period Net Returns

Price at 12-Dec-25	Month to date	Year to date	Annualised since inception (%)
$200.61	6.0%	6.1%	12.0%

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTD
2025	0.5	-1.6	-0.2	0.9	6.5	2.4	-3.5	-1.7	-0.2	0.1	-2.6	6.0	6.1
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. During this period, the product was operated at low leverage and with a higher focus on yield creation through merger arbitrage in order to ensure consistent adherence 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

Fund positioning

Equity holdings	Value $m	% of NAV
Echostar (core asset: SpaceX equity)	2.29	9.3%
Filtronic plc	2.21	9.0%
General Electric Company	1.85	7.5%
Tesla, Inc.	1.64	6.7%
Kraken Robotics Inc.	1.55	6.3%
Visa Inc.	1.19	4.8%
Aena S.M.E., S.A.	1.14	4.7%
Safran SA	1.13	4.6%
Formula One Group	1.13	4.6%
Microsoft Corporation	1.13	4.6%
Ferrovial SE	1.12	4.6%
Mastercard Incorporated	1.12	4.6%
Airbus SE	1.10	4.5%
NovaGold Resources Inc.	1.08	4.4%
Fanuc Corporation	1.08	4.4%
Apple Inc.	1.05	4.3%
ASML Holding N.V.	1.05	4.3%
American Express Company	1.05	4.3%
Amazon.com, Inc.	1.03	4.2%
Spotify Technology S.A.	1.00	4.1%
SoftBank Group Corp.	1.00	4.1%
Moody's Corporation	0.98	4.0%
Brookfield Corporation	0.96	3.9%
Taiwan Semiconductor Manufacturing Compa	0.95	3.9%
Clean Harbors, Inc.	0.92	3.7%
Canadian Pacific Kansas City Limited	0.88	3.6%
ImmunityBio, Inc.	0.62	2.5%
Lindt & Sprüngli AG	0.55	2.3%
Fraport AG	0.25	1.0%

Fund statistics	% of NAV
Equity special situations, long gross exposure	134.7%
S&P500 put option protection (delta)	-31.2%
Fund net long at current option deltas	103.4%
S&P500 put option strike, % below current index level (%)	-12.1%
At strike, nominal value of S&P500 puts as % of fund NAV	216.3%

Special Opportunities	% of NAV
Pershing Square SPARC Holdings, warrants	0.00%
(SSF owns 387,285 SPAR warrants; each warrant contains	
a call on two stock units upon merger announcement)	

Hedge economics | annualised carry		% of NAV
Annualised net hedge yield estimate % (A + B)		8.2%
1 .S&P500 put option component		
	Value $m	% of NAV
S&P500 put option protection (delta)	-7.67	-31.2%
Annualised cost of put option decay (to expiry) (A)		-3.8%
2. Merger arbitrage component		
		% of NAV
Annualised yield all merger arbitrages, disclosed terms		20.6%
Budgeted impact of deal breaks		-1.9%
Cost of fund leverage		-6.6%
Annualised yield of all merger arbitrages, break adj (B)		12.0%
Total gross exposure of merger arbitrage book		61.7%

Largest merger arbitrage holdings	Value $m	% of NAV
Frontier Communications Parent, Inc.	1.12	4.5%
Kenvue Inc.	1.08	4.4%
Loncor Gold Inc.	1.07	4.4%
Warner Bros. Discovery, Inc.	1.06	4.3%
Northern Superior Resources Inc.	1.01	4.1%
JTC PLC	1.00	4.1%
Norfolk Southern Corporation	0.97	3.9%
Just Group plc	0.93	3.8%
ProAssurance Corporation	0.82	3.3%
Insignia Financial Ltd.	0.81	3.3%
InterRent Real Estate Investment Trust	0.78	3.2%
Alexander & Baldwin, Inc.	0.72	2.9%
Dowlais Group plc	0.71	2.9%

Source: GA-Courtenay internal systems

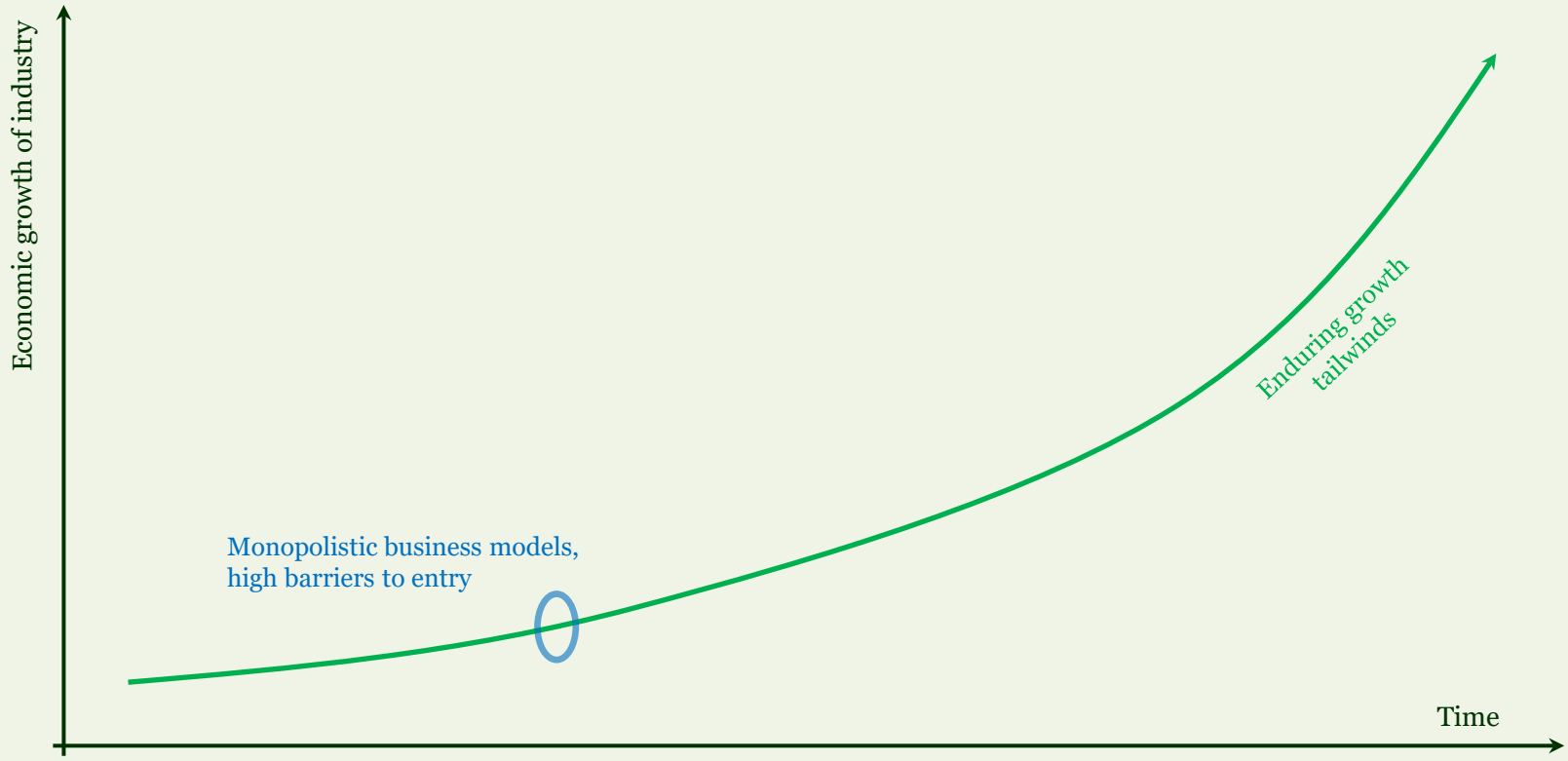
The GA-Courtenay fund architecture has been progressively optimised to deliver a series of differentiated structural advantages

Optimisation vector	*GA-Courtenay architecture*
***Strong defence** without long-term performance drag*	*The fund deploys a permanent holding of S&P500 put options, strongly protecting against market dislocation risks; put option expenses are paid for using merger arbitrage yield, removing the otherwise long-term performance drag.*
***Returns amplification** through safely deployed leverage for equity investments*	*Our strong defences allow an equity leverage advantage over long-only funds. This allows the fund to amplify returns, with tracking error between equity book and hedge closely monitored and extensively modelled through history.*
***A stock selection approach targeting enhanced accuracy** in long-term investment outcomes*	*Our amplification empowers a highly disciplined stock selection approach focused on accuracy of outcome rather than amplitude of outcome (i.e. by otherwise targeting higher risk situations). Fund holdings centre on monopolistic businesses, with high barriers to entry tested through time, and enduring growth tailwinds.*

Source: GA-Courtenay research

A focus on monopolistic business models, high barriers to entry, enduring growth tailwinds, often in esoteric circumstances

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



Source: GA-Courtenay research illustration

Whether exceptional business leaders create value in private or public markets, we target the public market pathways to own it

Company	*Founder/CEO*	*Founded*	*Business model*	*Fund holdings*	
Space / in-orbit economy					
SpaceX		*2002*	*Dominates reusable rocketry and low-cost high-cadence orbital launch with unmatched execution speed*	EchoStar filtronic	*SpaceX is deeply discounted through EchoStar (cash > market cap, SpaceX equity implied at zero)* *Direct investment through Filtronic equity; monopolist in high-power E-band SSPAs — the fulcrum technology for SpaceX Starlink backhaul*
Robotics					
Tesla		*2003*	*The car as a robotic platform for at-scale autonomy while developing humanoid robots that can translate AI into the physical economy*	Tesla	*Direct investment through Tesla equity*
Anduril		*2017*	*Reinventing defence with autonomous systems, rapid iteration, and software-centric architectures*	Kraken Robotics	*Investment through Kraken Robotics equity, a monopolistic supplier of deep-sea batteries and sensors to Anduril*
amazon		*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*	amazon	*Direct investment through Amazon equity*
AI computing					
OpenAI		*2015*	*Leading the frontier of AI and driving a global transformation in software, productivity, and autonomous systems at unprecedented velocity*	SoftBank Group	*SoftBank, trading at a more than 40% discount to NAV, deep value exposure to both OpenAI and ARM Holdings*
Drug discovery					
ImmunityBio		*2014*	*Pursuing a unified immunotherapy platform targeting cancer and infectious diseases; driven by a founder with a history of breakthroughs*	ImmunityBio	*Direct investment through ImmunityBio equity*
Development stage gold mining					
NovaGold		*1997*	*Controls one of the world's largest undeveloped gold deposits; a rare blend of visionary contrarianism and long-cycle resource expertise*	NovaGold	*Direct investment through NovaGold equity*

Source: GA-Courtenay research, public domain disclosures

Growth tailwinds underpin compounding across the fund's equity holdings

Breakthrough cos: 27% of NAV

– Breakthrough companies –

Rocket & satellite launches

SpaceX (discounted 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 (Echostar, pro-forma): 50%

Others 10% share

81-86 GHz band SSPAs

Filtronic (core customer: SpaceX) **100% share**

At the high end of E-band (81–86 GHz), Filtronic 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 Filtronic is by far the price / performance leader.

Core customer: SpaceX

Filtronic has been an RF specialist for more than 40 years and held the leadership position in SSPAs since 2015

Net cash / mcap: 5%

Aqueous batteries (>6km depth)

Kraken Robotics 100% share

Kraken possesses a monopoly on large, 6,000m-depth-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: 16%

Immune-based oncology

ImmunityBio 100% share

Monopoly patents holder of immune-based oncological treatments, which can be contended as possessing "best in class" cancer treatment.

ImmunityBio has led the market on immune-based oncology since 2014.

Net debt / mcap: 18%

Computing efficiency improvement: 41% of NAV

– Value uplift from continuing improvements in computing efficiency –

– Robotics –

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

Online retail / warehouse robotics

Amazon 40% share

Dominant online retail and logistics platform since 1994

Net debt / mcap: 5%

Walmart 11% share

eBay: 4%

Others 45% share

Robotaxis (prospective)

Tesla 95% share

With manufacturing capacity >2m units per annum, Tesla is poised to dominate robotaxis

Net cash / mcap: 1%

Waymo/others <5% share

– Computing hardware and software –

Cloud infrastructure

Amazon 30% share

Dominant cloud provider since 2002

Net debt / mcap: 3%

Microsoft 20% share

Dominant cloud provider since 2008

Net debt / mcap: 1%

Google 13% share

Others 37% share

Computing operating systems

Microsoft 71% share

PC OS monopolist since 1975

Net debt / mcap: 1%

Apple 16% share

Other 13% share

AI services

ChatGPT 70% share

OpenAI was founded in 2015, however, OpenAI can also be viewed as a partial Microsoft subsidiary, which has a right to revenue/IP sharing and Azure commitments until 2030-32.

Microsoft, founded in 1975, has monopolised PC operating systems for more than 50 years.

Microsoft's 27% equity stake in OpenAI is included in its valuation "for free". SoftBank, trading at a more than 20% discount to NAV, also owns an 11% stake in OpenAI (its second largest investment after ARM Holdings).

Others 30% share

Music streaming

Spotify 31% share

Globally dominant music streaming service since 2012

Net cash / mcap: 4%

Apple 14% share

Tencent 13% share

Amazon 13% share

YouTube 9% share

Others 20% share

– Semis manufacturing –

Extreme Ultraviolet Lithography

ASML 100% share

Monopoly provider of EUV lithography machines since 2010

Net cash / mcap: 1%

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%

Others 5% share

Growth in flights: 24% of NAV

– Growth in passenger flights –

Jet engines

GE Aerospace and Safran (joint venture) **55% share**

GE Aerospace: Dominant jet engine manufacturer since 1942

Net debt / mcap: 3%

Safran: Dominant jet engine manufacturer since 1965

Net cash / mcap: 1%

Pratt & Whitney 26% share

Rolls Royce 18% share

Spanish airports

Aena 100% share

Monopoly owner of all Spanish airports, built from 1927

Net debt / mcap: 15%

Airplane manufacturer

Airbus 60% share

Aircraft manufacture duopolist since 1972

Net debt / mcap: 1%

Boeing 40% share

Pricing power through an inflationary age: 44% of NAV

– Media rights –

Open seat motor racing

Formula One 94% share

Monopoly provider of world racing championships since 1950

Net cash / mcap: 1%

Formula E 6% share

– Royalty collectors through an inflationary age –

– Waste collection –

Hazardous Waste Incineration

Clean Harbors 64% share

Leading US waste incinerator for more than 20 years

Net debt / mcap: 25%

Veolia 21% share

Others 15% share

– Brand goodwill –

Premium chocolates

Lindt 30% share

Dominant in premium chocolate since 1845 (domestic production for US region)

Net debt / mcap: 4%

Others 70% share

– Transaction gatekeepers –

Credit and debit cards

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

Dominant payments exchange provider since 1958

Net debt / mcap: 1%

Amex 32% share (credit cards)

Dominant premium credit card provider since 1958

Mastercard 30% share (credit & debit cards)

Others 5% share

Credit rating agencies

Moody's 40% share

Dominant provider of credit ratings services since 1909

Net debt / mcap: 5%

S&P Global 40% share

Dominant provider of credit ratings services since 1916

Net debt / mcap: 6%

Fitch 15% share

Others 5% share

– Transport gatekeepers –

Canada-to-Mexico railroad

Canadian Pacific 100% share

Founded in 1881, the only both pan-US railroad and with a monopoly on uninterrupted Canada-to-Mexico transit.

Net debt / mcap: 27%

Toronto toll roads

Ferrovial 100% share

Ferrovial's core asset is the 407 ETR toll road, a 74 year duration central arterial roadway across Toronto, Canada.

Net debt / mcap: 20%

– Leverage to gold –

Gold mining

(% prospective gold mined on US soil)

NovaGold >22% share

The largest gold mine on US soil, forecast to go into production by 2031. The mine also has significant expansion potential.

Carlin 19% share

Barrick/Newmont JV

Cortez 12% share

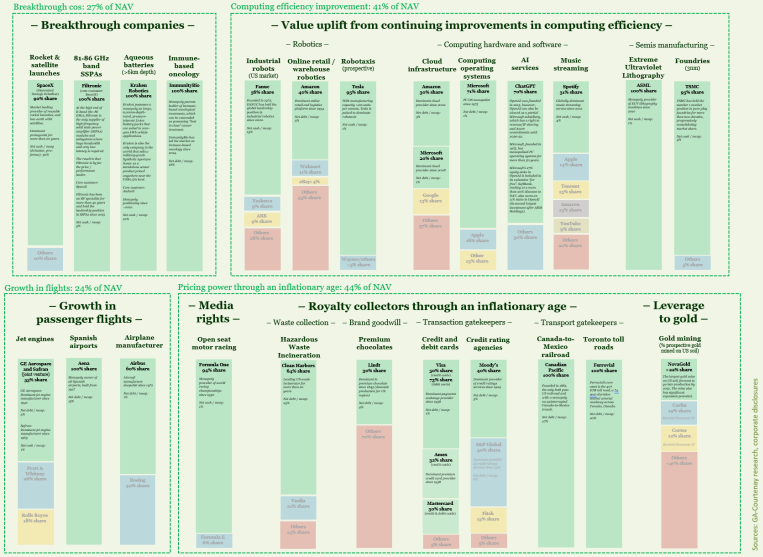
Barrick/Newmont JV

Others <47% share

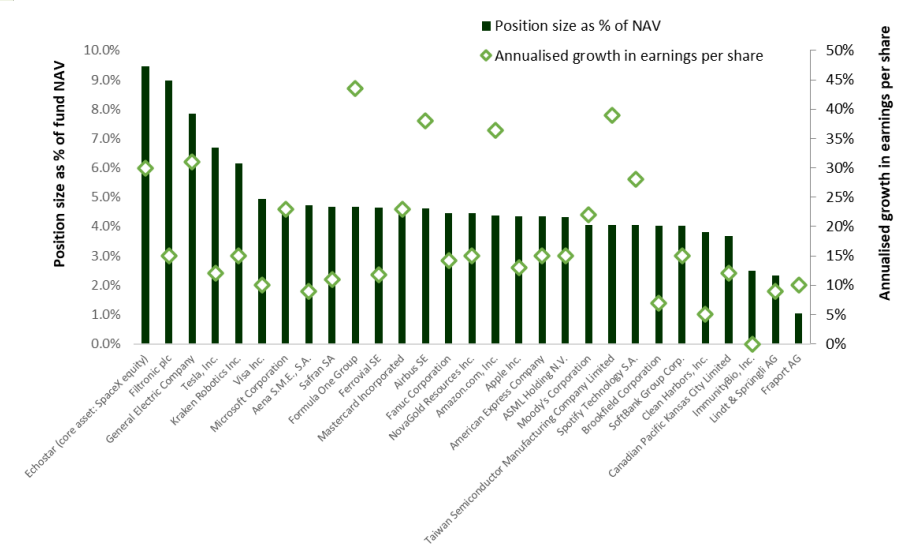
Sources: GA-Courtenay research, corporate disclosures

Position size weighted average earnings per share growth of fund equity holdings exceeds 19% annualised

With growth tailwinds underpinning compounding across the fund's equity holdings..



..the outcome is that the fund's equity holdings are reporting earnings per share growth exceeding 19% annualised



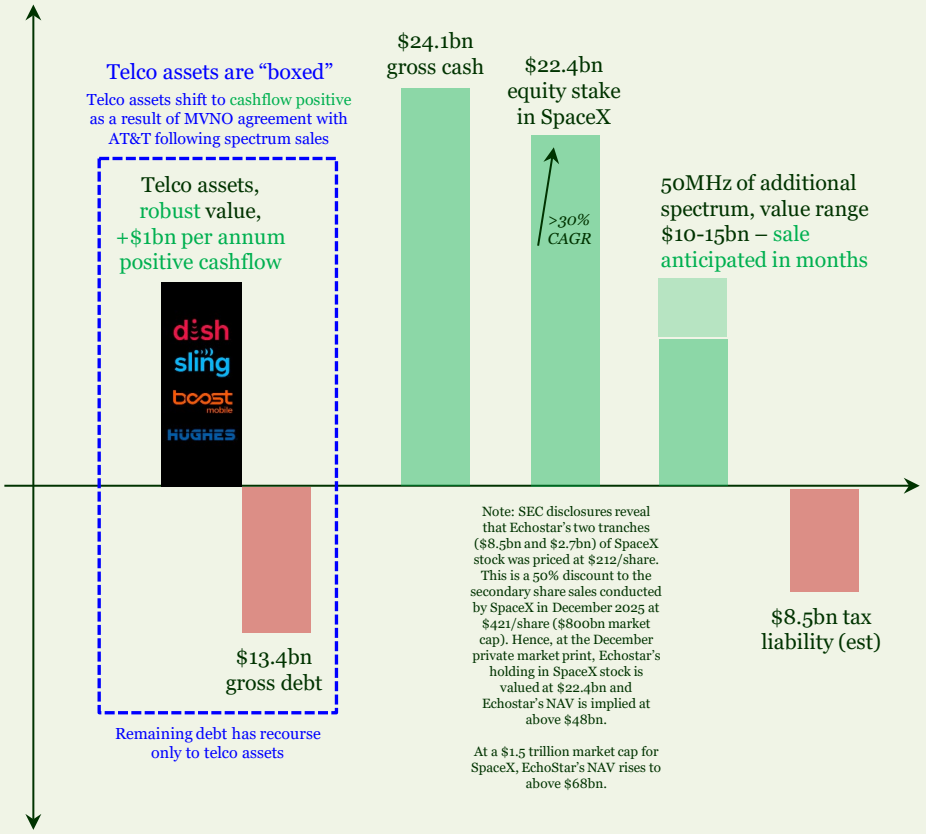
Source: corporate disclosures, GA-Courtenay internal systems

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 $48bn based on SpaceX secondary share sales in December

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)



In December, Elon Musk confirmed SpaceX will conduct share sales valuing SpaceX at $800bn and is considering a 2026 IPO valuation of up to $1.5 trillion

BARRON'S

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

By Al 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 $11.1 billion in SpaceX stock by selling Musk's rocket company wireless spectrum. That's some 52 million shares at the July price, which are now worth some $22 billion.

Through Friday trading, Echostar stock has gained about 44%, adding $9.5 billion in market value since initial reports about an $800 billion valuation broke about a week ago. That is short of the $11.1 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.

Source: Echostar corporate disclosures, public domain articles and X posts by Elon Musk, GA-Courtenay research

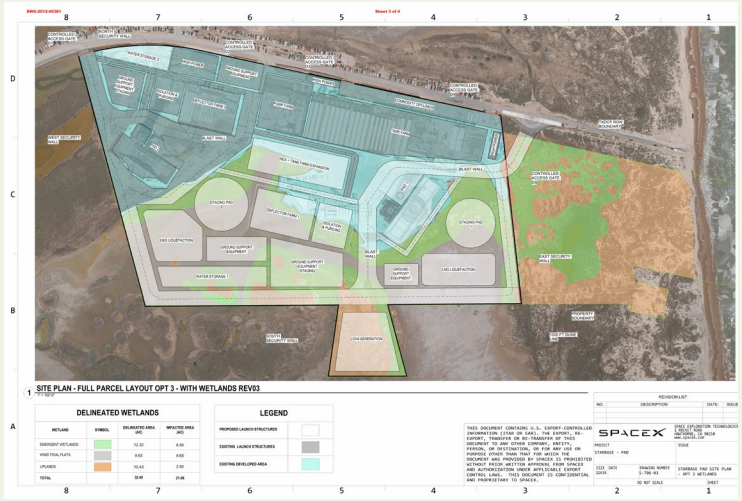
SpaceX disclosures imply that current regulatory permissions for 144 Starship launches pa are likely to be increased *by an order of magnitude* over time

Starship has received regulatory clearances for 144 launches per annum, however, this implies a far lower utilisation rate at SpaceX Starbase Texas (12-13 launches per pad) than at SpaceX Kennedy Space Centre (44 per pad) or SpaceX Cape Canaveral (38 per pad), indicative of room to increase

SpaceX Kennedy Space Centre LC-39A :
1 x Starship launch pad
Regulatory clearance: 44 Starship launches pa
→ 44 launches per pad per annum

SpaceX Cape Canaveral SLC-37:
2 x Starship launch pads
Regulatory clearance: 76 Starship launches pa
→ 38 launches per pad per annum

SpaceX Starbase Texas *(image shows expansion plan to two pads):*
2 x Starship launch pads
Current regulatory clearance: 25 Starship launches per annum
→ 12-13 launches per pad per annum



- **Furthermore, Starship manufacturing capacity implies that Texas launches will significantly exceed current regulatory permissioning at 12-13 pa**
- **Additionally this is combined with comments by Elon Musk that the longer-term plan is to build 1,000 Starships per annum**

SpaceX Gigabay Florida is the manufacturing plant for LC-39A and SLC-37 Starships (119 launches pa)


SpaceX Gigabay Florida

However, SpaceX also plans an equivalent capacity Gigabay Texas, implying current 25 Starship launches pa from Texas is significantly below longer-term plan, suggested by Elon Musk at **1,000 Starships pa**

SpaceX Is Building A New $250 Million Facility In South Texas

Jannat Un Nisa July 20, 2025 0

According to filings with the Texas Department of Licensing and Regulation (TDLR), the new Gigabay will be a 700,000-square-foot industrial facility designed specifically for advanced manufacturing. The project is slated to begin construction on July 1 and is expected to be complete by late 2026. Dallas-based firm HDR is handling the design, continuing a trend of large-scale developments at the site.

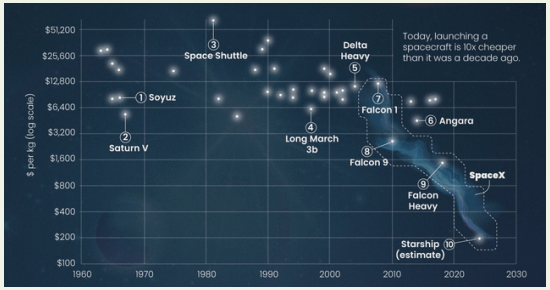
The latest expansion was hinted at earlier this year when Elon Musk shared a bold vision for Starship production: "We're aiming to build about three Starships a day," he reportedly said during a May presentation on X (formerly Twitter). That ambitious pace would mean manufacturing up to 1,000 Starships annually—a critical scale-up required to support Musk's long-term Mars mission strategy.

Sources: SpaceX corporate disclosures and management public statements, space sector public regulatory disclosures, GA-Courtenay research estimates

At 150 Starship launches pa 2026-2030, SpaceX is orientated to reach 95% of satellites launched, 48% of mobile bandwidth, $3.3 trl revenue by 2040

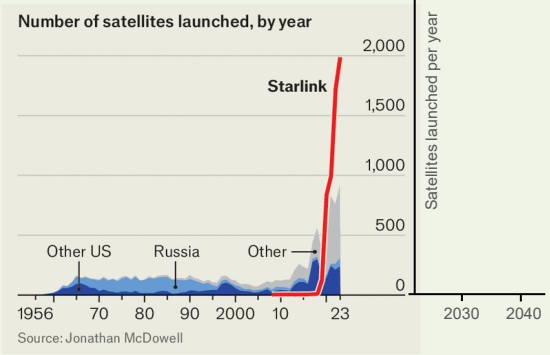
SpaceX Starlink poised to reach monopoly position of >95% of satellites launched

SpaceX reusable rocketry has reduced the cost of reaching orbit by more than 60x over two decades



SpaceX Starlink annual launches to reach 10k in 2030, and 56.6k by 2040

At 60 Starship V3 satellites per launch, 10k satellites will be launched in 2030 and 56.6k in 2040, handing to SpaceX a close to monopoly position of more than 95% of all satellites launched



At 90 Gbps effective bandwidth per satellite, SpaceX Starlink is poised to deliver an equivalent of 5% of all mobile bandwidth worldwide by 2030 (A), and 46% by 2040 (B)

SpaceX's low cost to orbit implies Starlink mobile bandwidth as the lowest cost provider in both 2030 and 2040

By 2030, SpaceX Starlink cost of 150Gbps mobile bandwidth is implied at $4,762 (C), versus current terrestrial mobile providers charging $6,000 (D)

Bandwidth (YE2030)	
1,073	Cumulative Falcon 9 launches
606	Cumulative Starship launches
18,500	Falcon 9 payload capacity (kg, LEO)
75,000	Starship payload capacity (kg, LEO)
19,850,500	Falcon 9 cumulative upmass (kg)
45,450,000	Starship cumulative upmass (kg)
29	Falcon 9 V2 mini satellites per launch
60	Starship V3 satellites per launch
67,477	Cumulative satellites launched
10,002	Annual number of satellites launched
11,293	Cumulative satellites de-orbited
56,184	Total active satellites
1,162	Mass (kg) per satellite
11,119,880	Maximum constellation bandwidth (Gbps)
198	Gross bandwidth (Gbps) per satellite
25%	Capacity utilisation
49	Effective deployed bandwidth (Gbps) per satellite in each unit period of time
2,779,970	Total effective deployed bandwidth (Gbps) of Starlink fleet
5%	Actual capacity utilisation of mobile usage vs 150Mbps headline speeds A
370.7	Implied number of mobile phone bandwidth user units (m)
4.6%	Starlink bandwidth as a percent of total worldwide population if all used mobiles
333.6	Starlink revenue ($bn) if all effective bandwidth at mobile pricing

Cost base (YE2030)	
650	Cost to manufacture satellite ($/kg)
769	Launch cost per kg
1,419	Total satellite cost per kg
1.65	Total unit cost per satellite ($m)
33,332	Total cost $ per Gbps of bandwidth
7	Depreciation years
4,762	Annual cost $ per Gbps of bandwidth C
60	At 150Mbps, breakeven ARPU per month
119	At 300Mbps, breakeven ARPU per month

Competitor comparison (YE2030)	
US mobile	
75	US mobile cost $ per line/month
900	US mobile cost $ per line/year
150	Mobile speed (Mpbs)
6,000	Cost per Gbps of bandwidth D
26%	Premium (discount) vs Starlink
US cable	
75	US mobile cost $ per line/month
900	US mobile cost $ per line/year
300	Mobile speed (Mpbs)
3,000	Cost per Gbps of bandwidth
-37%	Premium (discount) vs Starlink

By 2040, SpaceX Starlink cost of 150Gbps mobile bandwidth is implied at $4,416 (E), versus current terrestrial mobile providers charging $6,000 (F)

Bandwidth (YE2040)	
1,998	Cumulative Falcon 9 launches
9,596	Cumulative Starship launches
18,500	Falcon 9 payload capacity (kg, LEO)
75,000	Starship payload capacity (kg, LEO)
36,963,000	Falcon 9 cumulative upmass (kg)
719,700,000	Starship cumulative upmass (kg)
29	Falcon 9 V2 mini satellites per launch
60	Starship V3 satellites per launch
633,702	Cumulative satellites launched
56,623	Annual number of satellites launched
327,861	Cumulative satellites de-orbited
305,841	Total active satellites
2,474	Mass (kg) per satellite
111,616,617	Maximum constellation bandwidth (Gbps)
365	Gross bandwidth (Gbps) per satellite
25%	Capacity utilisation
91	Effective deployed bandwidth (Gbps) per satellite in each unit period of time
27,904,154	Total effective deployed bandwidth (Gbps) of Starlink fleet
5%	Actual capacity utilisation of mobile usage vs 150Mbps headline speeds B
3,720.6	Implied number of mobile phone bandwidth user units (m)
46.5%	Starlink bandwidth as a percent of total worldwide population if all used mobiles
3,348.5	Starlink revenue ($bn) if all effective bandwidth at mobile pricing

$3.3 trl of targetable revenue at mobile equivalent pricing/Gbps

Cost base (YE2040)	
650	Cost to manufacture satellite ($/kg)
490	Launch cost per kg
1,140	Total satellite cost per kg
2.82	Total unit cost per satellite ($m)
30,913	Total cost $ per Gbps of bandwidth
7	Depreciation years
4,416	Annual cost $ per Gbps of bandwidth E
55	At 150Mbps, breakeven ARPU per month
110	At 300Mbps, breakeven ARPU per month

Competitor comparison (YE2040)	
US mobile	
75	US mobile cost $ per line/month
900	US mobile cost $ per line/year
150	Mobile speed (Mpbs)
6,000	Cost per Gbps of bandwidth F
36%	Premium (discount) vs Starlink
US cable	
75	US mobile cost $ per line/month
900	US mobile cost $ per line/year
300	Mobile speed (Mpbs)
3,000	Cost per Gbps of bandwidth
-32%	Premium (discount) vs Starlink

Sources: SpaceX corporate disclosures and management public statements, GA-Courtenay research estimates

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 (81–86 GHz), Filtronic is the only commercially available supplier of SSPAs – and by far the price/performance leader

81-86 GHz band SSPAs

Filtronic
(core customer: SpaceX)
100% share

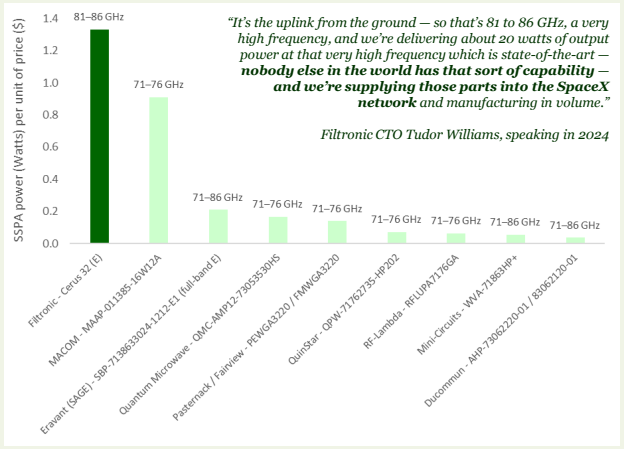
At the high end of E-band (81–86 GHz), Filtronic is the only supplier of high-frequency solid state power amplifier (SSPAs) modules and subsystems where huge bandwidth and very low latency is required.

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

Core customer: SpaceX

Filtronic has been an RF specialist for more than 40 years and held the leadership position in SSPAs since 2015

Net cash / mcap: 5%



*"It's the uplink from the ground — so that's 81 to 86 GHz, a very high frequency, and we're delivering about 20 watts of output power at that very high frequency which is state-of-the-art — **nobody else in the world has that sort of capability — and we're supplying those parts into the SpaceX network** and manufacturing in volume."*

Filtronic CTO Tudor Williams, speaking in 2024

*"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

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

filtronic

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 telecoms 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 is issuing 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.

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

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 — Hide

- 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 in 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.

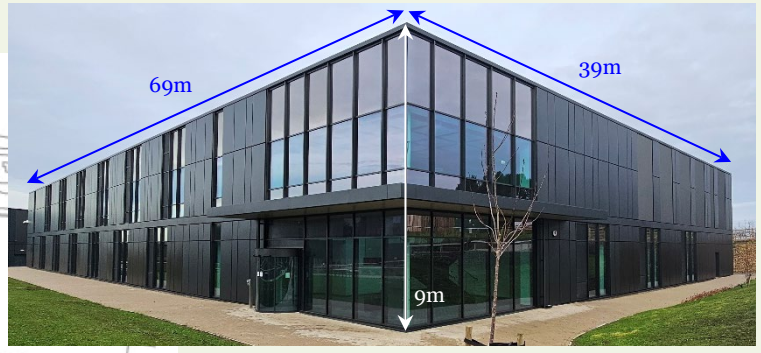
In a company message seen by Bloomberg on Friday, SpaceX said it's preparing for a possible public offering in 2026 that would be aimed at funding an "insane flight rate" for its developmental Starship rocket, artificial intelligence data centers in space and a base on the moon.

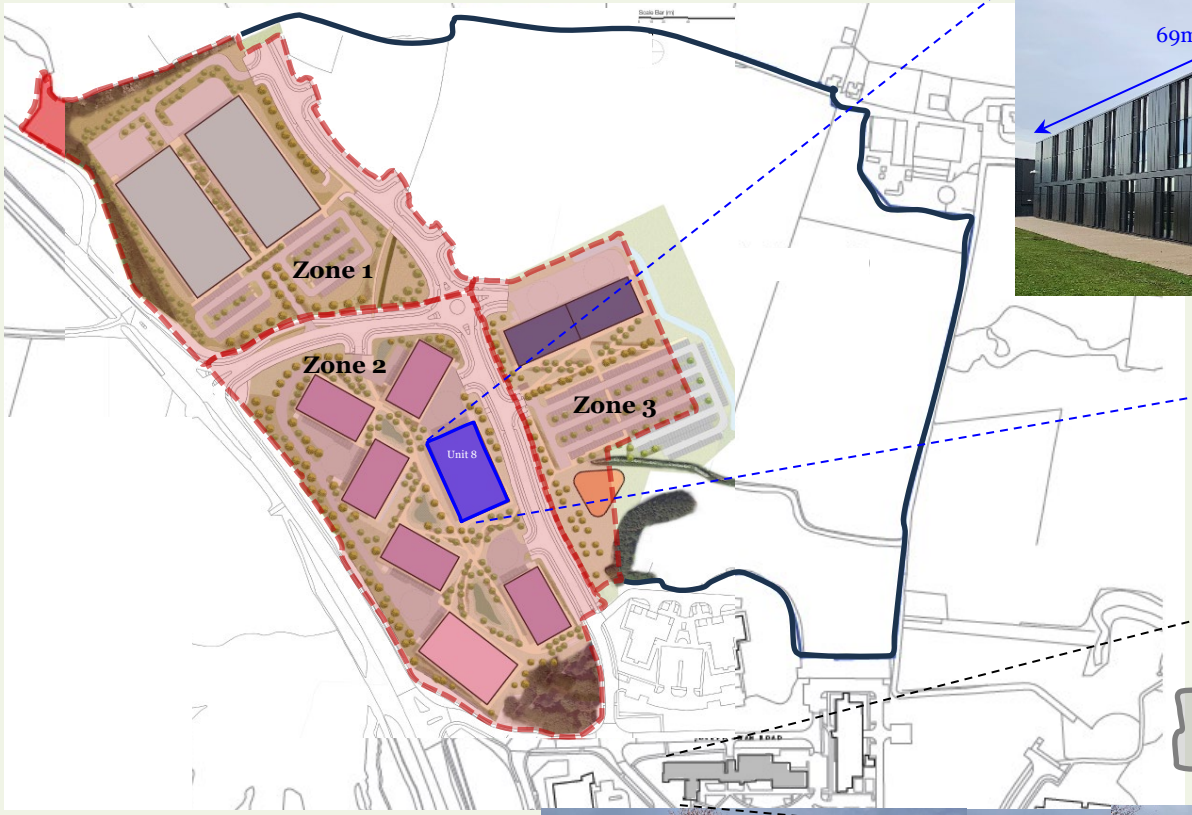
Sources: Filtronic corporate disclosures and management public statements, SpaceX corporate disclosures and management public statements, GA-Courtenay research estimates

Site visits confirm Filtronic's capacity expansion

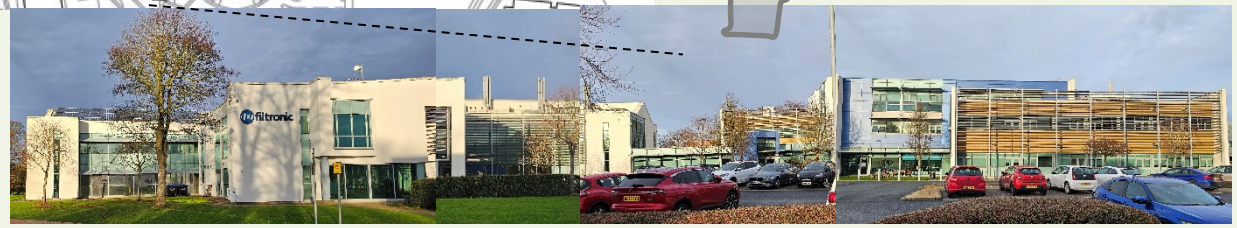
From early 2026, Filtronic is more than doubling its footprint at NetPark, Durham following a 75% increase in manufacturing capacity in 2024. The additional facilities are custom-designed, also allowing the company to move up the value chain to higher product ASPs

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



Sources: Filtronic corporate disclosures and management public statements, GA-Courtenay research and site visit estimates

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

Anduril Arsenal 1 (Ohio) – hyperscaling manufacturing across defense components, including for autonomous underwater vehicles
up to 15 million square feet of manufacturing space

Anduril Arsenal 1 (manufacturing headquarters)

Anduril Rhode Island (AUV final assembly)

Anduril AUV final assembly
- Deep-water port + restricted industrial zoning
- Proximity to US Navy (NUWC, Newport), Electric Boat, Raytheon ecosystem
- Optimised for **final integration, testing, and customer handover**, not component manufacture

11 hrs by truck

11 hrs by truck

Trucking remains the most economical transit route for Kraken's 1,000 kWh SeaPower batteries. Set against an estimated c.$6 million sale price per 1,000 kWh battery, logistics represent well under 0.1% of battery value.

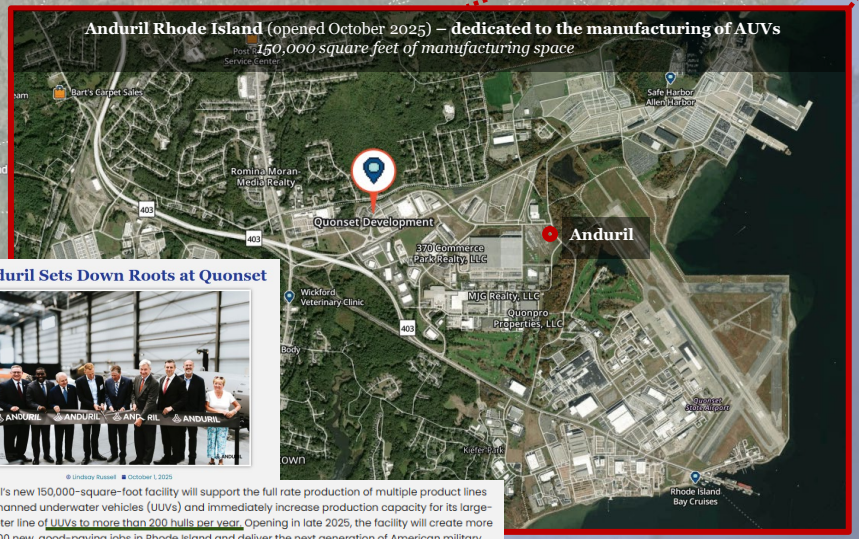
Kraken Robotics Nova Scottia
(pressure tolerant batteries and sonar)

Nova Scotia (Kraken SeaPower batteries and sonar)
- Pressure-tolerant battery production is **capital-intensive, test-infrastructure heavy, and safety-regulated**
- Requires deep-water access for pressure testing + hazardous materials handling

Canada offers:
- Easier permitting for pressure vessels and energy systems
- Lower fixed-cost base than New England
- Political neutrality for exports to multiple NATO navies

Kraken Robotics is a monopoly supplier to Anduril – in large, 6,000 m-depth-rated battery packs, and military-grade Synthetic Aperture Sonar (SAS)

Anduril Rhode Island (opened October 2025) **– dedicated to the manufacturing of AUVs**
150,000 square feet of manufacturing space



Anduril Sets Down Roots at Quonset

Anduril's new 150,000-square-foot facility will support the full rate production of multiple product lines of unmanned underwater vehicles (UUVs) and immediately increase production capacity for its large-diameter line of UUVs to more than 200 hulls per year. Opening in late 2025, the facility will create more than 100 new, good-paying jobs in Rhode Island and deliver the next generation of American military technology.

Kraken Novia Scottia – dedicated to battery pack and sonar manufacturing
60,000 square feet of manufacturing space

Kraken Robotics to expand battery production as demand ramps up

Kraken's newly leased 60,000-square-foot production facility, slated to be operational by the end of 2025, will include numerous 6,000-metre pressure-testing tanks enabling the company to triple battery production to just shy of $200 million per year at capacity.

The Nova Scotia facility is near numerous existing customers in the U.S. northeast and will both reduce delivery times and facilitate customer support, creating 200 permanent advanced manufacturing jobs over the next four years, better equipping the company – alongside its original facility in Germany – to keep up with the subsea power industry's estimated 13.5 per cent compound annual growth rate through 2032.

Sources: Google Maps, public domain articles and transit pricing, GA-Courtenay research

Kraken Robotics possesses monopoly / irreplaceable status in core AUV components: large, 6,000m-depth battery packs, and military-grade Synthetic Aperture Sonar (SAS)

Kraken's path to monopoly on large, 6,000 m-depth-rated, pressure-tolerant Li-ion battery packs that are naturally suited to 200–400 kWh vehicle applications

2004–2015: Dr. Carl Thiede's team at ENITECH develops pressure-neutral subsea drives, electronics and Li-ion batteries under successive German BMBF projects (*Druckneutrale Systeme, Druckneutrale Systeme Tiefsee, SMIS*). ENITECH is quickly recognised as a niche leader in pressure-tolerant batteries and drives.

2016–2017: Kraken Sonar takes a 19.9% stake in ENITECH and gains access to its proprietary silicone-gel encapsulation technologies.

2019–2020: Kraken raises its ownership of ENITECH to 100%. The technology is formalised into the SeaPower module family, creating standardised large building blocks for 200–400 kWh vehicle packs and subsea power banks.

2021: Kraken Robotics commercially launches SeaPower batteries and receives its first order from Dive Technologies in Massachusetts for its underwater autonomous vehicles. Additional customers follow.

2022: Dive Technologies is acquired by Anduril, which accelerates SeaPower battery order volumes from Kraken Robotics.

2023: Public disclosures reveal Anduril's Dive-LD and XLUUVs are equipped with Kraken SeaPower batteries; Anduril's Ghost Shark underwater autonomous vehicle is described as using roughly US$8m of Kraken components (SeaPower + sensors) per vehicle.

2025: Kraken SeaPower becomes the de facto industry standard for large Extra-Large Uncrewed Underwater Vehicle (XLUUV) batteries; company materials emphasise SeaPower as a 6,000m-rated, platform-agnostic battery.

2025: At the 2025 REPMUS exercise in Portugal, Kraken highlights that multiple UUV platforms from German, Dutch, and other navies are operating with Kraken SeaPower batteries.

Kraken's path to monopoly as the only company in the world selling a military-grade Synthetic Aperture Sonar at anywhere near the US$0.5m price level

2010–2012: Synthetic Aperture Sonar (SAS) technologies move from NATO to Marport Deep Sea Technologies, then spin out as Kraken Sonar Systems.

2013: Australia's Defence Science and Technology Organisation becomes the first purchaser of Kraken's AquaPix SAS for its autonomous underwater vehicles.

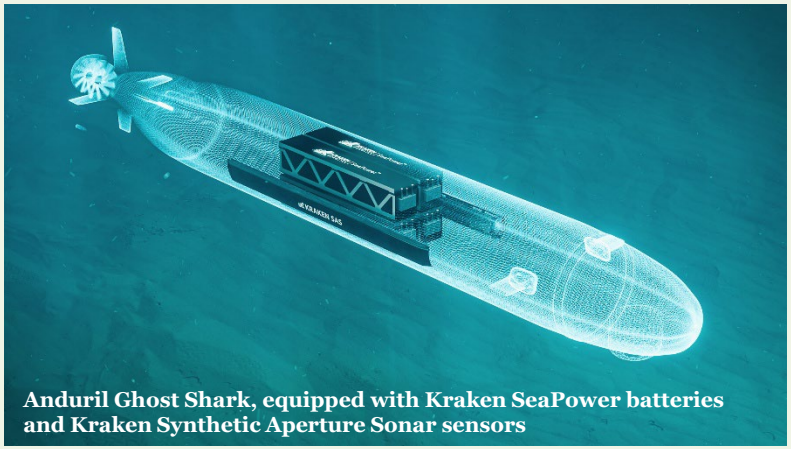
2015: Kraken Robotics acquires robotics technology, IP and staff from Marine Robotics Inc (a Marport subsidiary), uplifting Kraken's capabilities from SAS sensor to additional robotics platform components.

2020–2021: The Danish Royal Navy and Polish Navy select the Kraken Katfish towed sensing vehicle for their seabed mine-hunting operations.

2021: Kraken acquires PanGeo Subsea, a specialist in 3D sub-seabed acoustic imaging.

2023: Public disclosures reveal Anduril's Dive-LD and XLUUVs are equipped with Kraken AquaPix SAS sensors; Anduril's Ghost Shark underwater autonomous vehicle is described as using roughly US$8m of Kraken components (SeaPower + sensors) per vehicle.

2025: At the 2025 REPMUS exercise in Portugal, Kraken highlights that multiple UUV platforms from German, Dutch, and other navies are operating with Kraken SAS payloads.



Anduril Ghost Shark, equipped with Kraken SeaPower batteries and Kraken Synthetic Aperture Sonar sensors

Sources: GA-Courtenay research; Kraken Robotics; Anduril corporate disclosures

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 Malyasov | 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.

TechCrunch

Aria Alamalhodaei — 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

USNI News

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

NAVALNEWS

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 monitoring 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 2022 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 Bastion' 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.

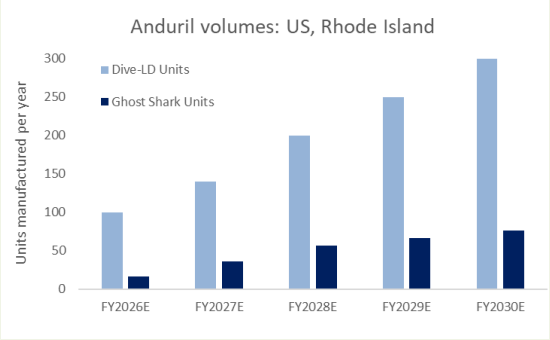
Future Development Plans

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:

Sources: public domain articles and interviews, GA-Courtenay research, Kraken, Anduril corporate disclosures

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

ANDURIL

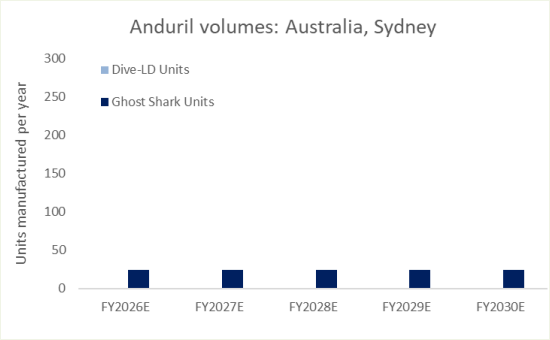
The Rhode Island production facility will enable Anduril to increase production to 200 AUVs per year and create more than 100 jobs over the next five years. The factory announcement comes amid growing demand for Anduril's AUVs, including an $18.6 million contract with the U.S. Navy.

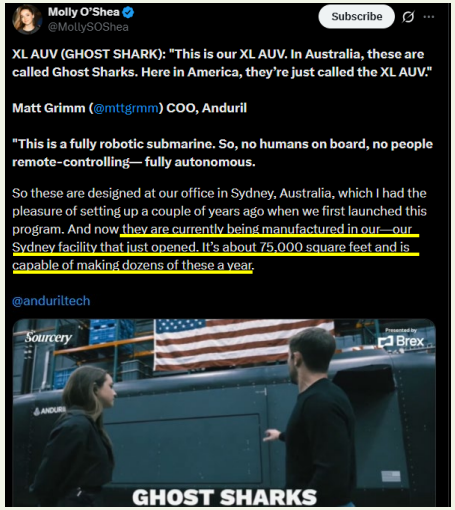
Anduril Industries is announcing a new manufacturing facility to support large-scale production of its Dive-LD family of autonomous underwater vehicles (AUVs) at Quonset Point, Rhode Island. By investing in a scaled production facility ahead of need, Anduril will be able to stay ahead of customer demand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





Molly O'Shea @MollySOShea Subscribe

XL AUV (GHOST SHARK): "This is our XL AUV. In Australia, these are called Ghost Sharks. Here in America, they're just called the XL AUV."

Matt Grimm (@mttgrmm) COO, Anduril

"This is a fully robotic submarine. So, no humans on board, no people remote-controlling— fully autonomous.

So these are designed at our office in Sydney, Australia, which I had the pleasure of setting up a couple of years ago when we first launched this program. And now they are currently being manufactured in our—our Sydney facility that just opened. It's about 75,000 square feet and is capable of making dozens of these a year.

@anduriltech

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$1.6bn Enterprise Value*

	FY2026E	FY2027E	FY2028E	FY2029E	FY2030E
Anduril volumes per manufacturing facility					
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

Sources: GA-Courtenay research; Kraken Robotics; Anduril corporate disclosures, forecasts provided for illustrative purposes only

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

Humans

Group organisation around a central rule-making entity: the state

States enforce their rules through a monopoly on two powers they deny to private citizens: the state's legitimate use of violence and the right to seize assets through taxation.

Citizens cannot advance their interests by force or confiscation

Intra-societal competition is channeled into productive activity. Tools that raise individual productivity become central to that competition.

Computing is the highest-leverage of productivity tools

Intra-societal competition is largely channeled by computing competency

Individuals, firms and states are all structurally incentivised to adopt more powerful and more efficient computation

Most animals

Organisation is at the individual level, no central rule-making entity

Intra-group competition is largely channeled by violence and unrestricted foraging

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.

Modern datacentres (all in)	NVIDIA accelerator chips	The human brain	The limits of physics
Modern datacenter all in	NVIDIA Blackwell efficiency per watt		Landauer's principle
10^{11} floating-point operations per second per watt	10^{13} floating-point operations per second per watt	10^{17} floating-point operations per second per watt	10^{21} floating-point operations per second per watt
	NVIDIA accelerators are 100x more efficient per watt than most modern datacentres	The human brain remains 10,000x more efficient per watt than NVIDIA accelerators	The limits of physics dictate an outcome 10,000x more efficient per watt than the human brain is achievable

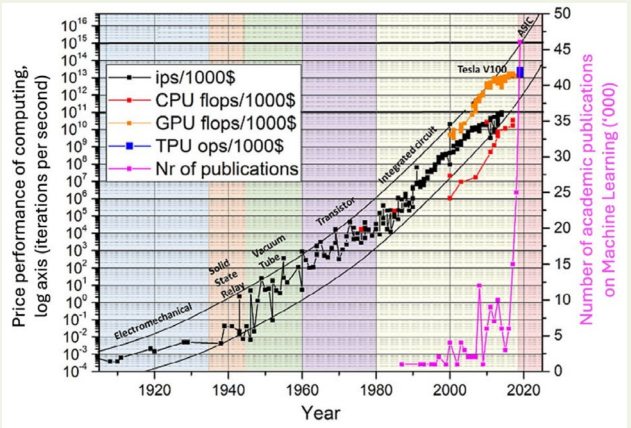
Research into improvements in computing efficiency is pushing at a 'open door' capable of delivering up to a 10,000,000,000x improvement in floating-point operations per watt

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 assumption 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.

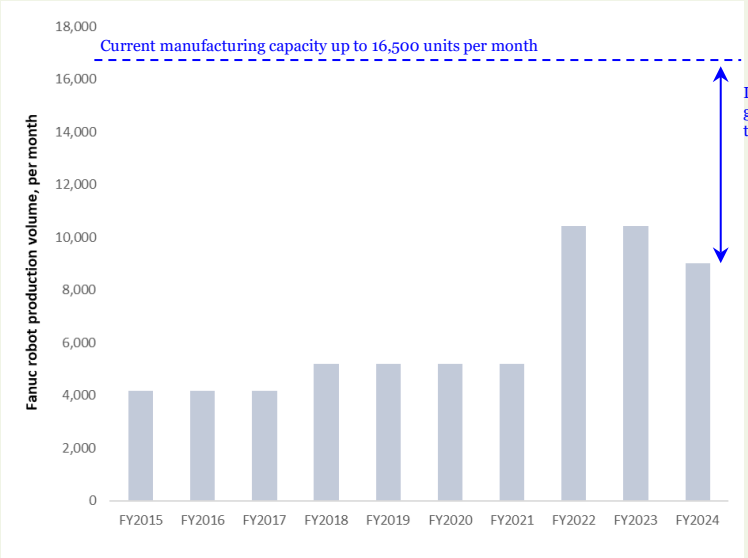
As long as economic and political incentives continue to favour higher intra-group productivity, we should expect this gap to be progressively closed over coming decades.



Source: GA-Courtenay research

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

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.

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 vanning into containers were performed. With the new finished products warehouse, export packaging and vanning 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

Source: Fanuc corporate disclosures

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.

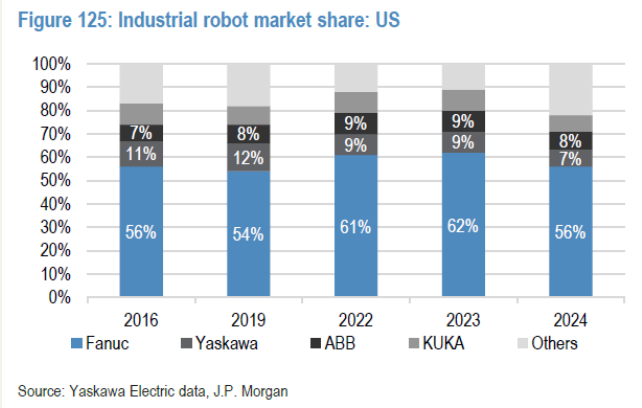
* **Friction collapse in robot deployment**: digital twin simulations and prompt engineered natural language programming shrink engineering hours and changeover times. Lower integration cost shortens payback periods → more robotics projects clear investment hurdle rates.

* **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%



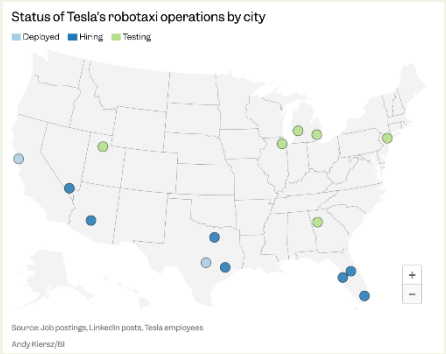
Source: Yaskawa Electric data, J.P. Morgan

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



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

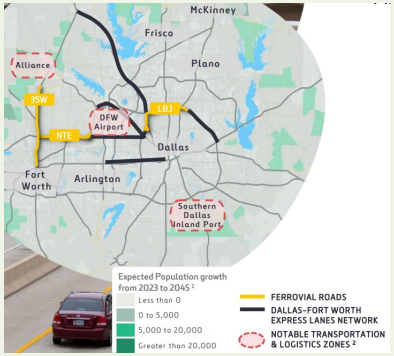
Sources: Tesla corporate disclosures, GA-Courtenay research estimates

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

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

Jet engine and airplane efficiency

Jet engine and airplane efficiencies are benefitting from a classic incremental engineering curve

Jet engines

Every new engine generation has cut fuel burn per seat-km by 10% or more

Airplanes

Incremental efficiencies in fuel burn km through enhancement in composite materials, winglets, laminar flow wings, lighter cabins

An incremental 20-30% further reduction in real cost per passenger-km is plausible over two decades

Aerospace infrastructure, operational efficiencies

Air traffic management

More direct routing, continuous descent/climb profiles, less holding

Airport operations

Higher runway throughput and faster handling reduce delay and fuel burn, increasing aircraft utilisation

Network optimisation

Replacing many thin routes with hubs or selectively adding point-to-point LCC routes

Aircraft utilisation

Quicker turns, longer daily flying hours spread fixed costs (capital, crew, maintenance) over more passenger-km

Taken together, these levers plausibly deliver another 20–30% saving

The result, without assuming sci-fi propulsion, is a 40–50% lower real cost per passenger-km vs today as an achievable range over two decades. Furthermore, additional cost reduction tailwinds are *plausible*, for example, development of lower cost synthetic fuels, to push efficiency gains further.

Long-run price elasticity of demand for commercial flights has been measured at -0.8 to -1.0x, implying a 45% reduction in cost per passenger-km results in a c. 40% increase in demand for passenger-km, *with leisure-heavy segments skewing higher*.

additional demand

additional demand

additional demand

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

At the level of the state

- Incentive for increasing trade
- Incentive for tourism inflows
- Incentive for regional development
- Incentive for tax receipts

Deep, recurring preference for high speed, affordable, long-range mobility, which air travel uniquely supplies

Governments therefore tend to underwrite or actively promote airport construction, route liberalisation and open-skies agreements, and only constrain aviation at the margin (noise, local pollution, climate policy). Emerging economies, in particular, see aviation as a shortcut to global integration and aggressively court airlines and airport investment.

At the level of the firm

- Customers are globally distributed
- Hiring is from global talent pools
- Suppliers and investors are globally distributed
- Remote connectivity lets a few highly productive people span many geographies while staying constantly connected to HQ—so it actually raises the value of air travel.

Deep, recurring preference for high speed, affordable, long-range mobility, which air travel uniquely supplies

At the level of the individual

- Families are dispersed
- Careers span continents
- Location specific leisure aspirations
- Rising incomes, particularly in emerging markets, higher discretionary spending

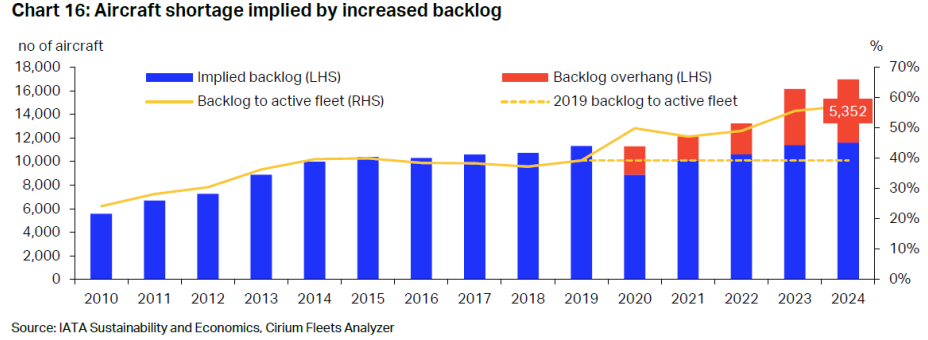
Deep, recurring preference for high speed, affordable, long-range mobility, which air travel uniquely supplies

The aspirational template is set by higher-income individuals, for whom flying for family visits, professional work and leisure is normal.

Source: GA-Courtenay research

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



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

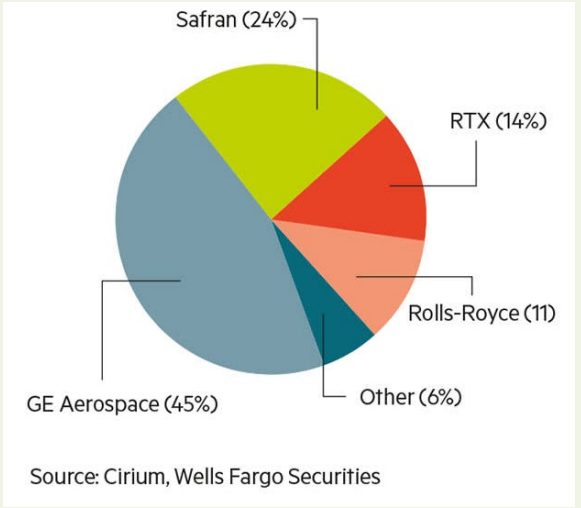
George C. Larson

- **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.**

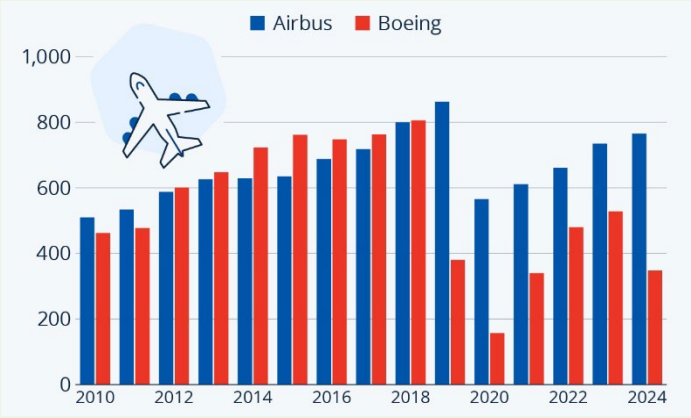
Aircraft engines are designed to withstand very high internal temperatures during flight operations. There is a limit to how high the temperature can rise within the engine. With the ever-growing need to make the engines fuel-efficient, there is a constant need to increase the engine's internal temperature.

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



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

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 2024-2030	
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

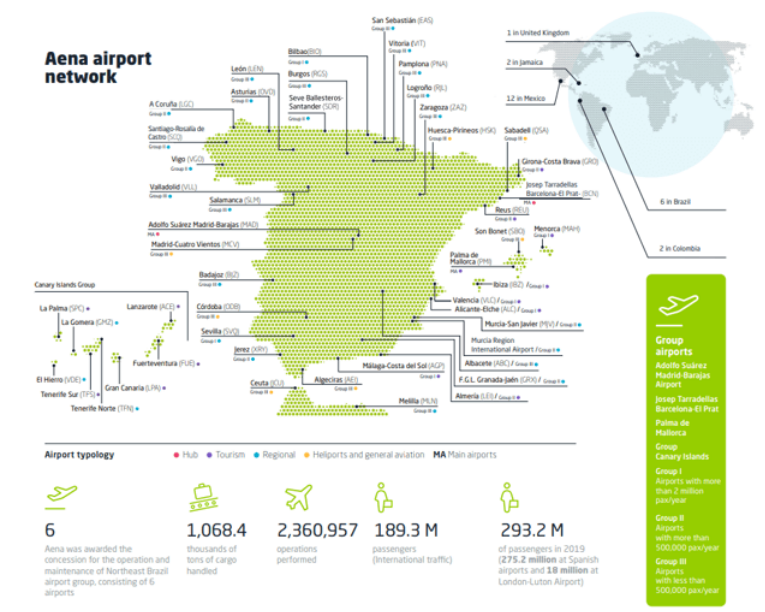
Passenger volume in commercial flights 2024-2050	
5,399,000,000	US, UK, Ger, Fra
1,680,000,000	United States
269,000,000	United Kingdom
246,000,000	Germany
246,000,000	France
224,000,000	Japan
336,000,000	Brazil
2,240,000,000	China
1,120,000,000	India
5,399,000,000	World ex US, UK, Gr, Fr, ex China,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

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

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



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

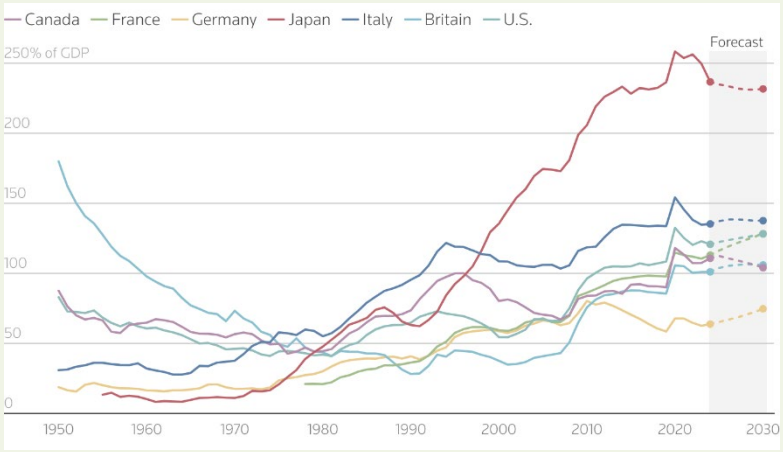
- Spain's gross domestic product surpassed expectations in the second quarter, growing 0.7%, above a forecast of 0.6%.
- Investment and consumption are the main key drivers for this growth, as well as a booming tourism sector.
- "Spain is a great outlier now in terms of growth. It's also a great place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

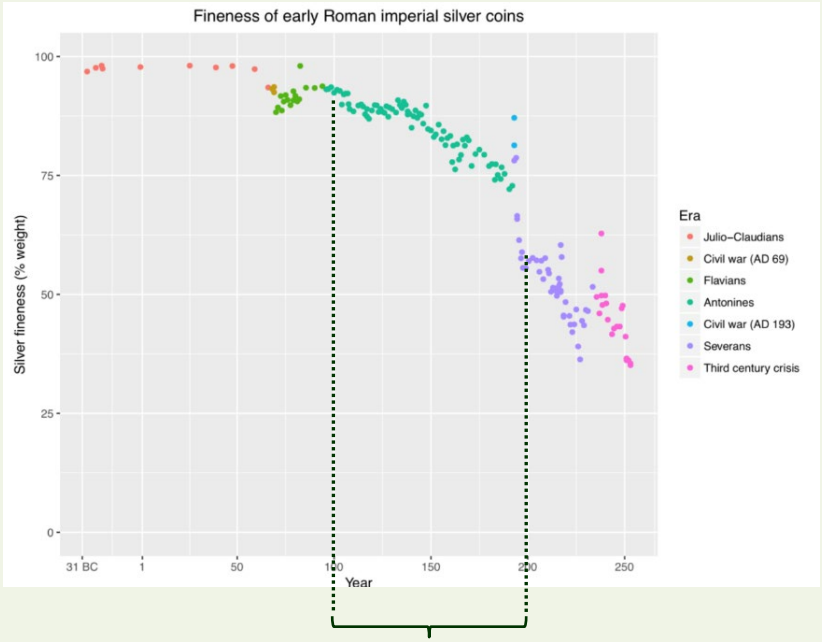
Population growth 2025-2050	Annualised	Gross
US, UK, Germany, France:	+0.20%	+5.4%
US:	+0.38%	+10.4%
UK:	+0.13%	+3.6%
Germany:	-0.22%	-5.5%
France:	-0.15%	-3.9%
Japan:	-0.68%	-16.3%
Brazil:	+0.33%	+8.9%
China:	-0.27%	-6.7%
India:	+0.54%	+15.1%
World ex US, UK, Germany, France, China, India:	+1.01%	+29.9%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

Source: Sovereign debt disclosures, World Bank estimates, Elon Musk public comments, Walker D.R. (1976-78) The Metrology of the Roman Silver Coinage, GA-Courtenay research

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

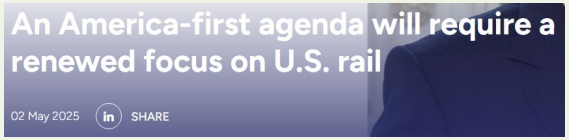
The onshoring/reshoring phenomenon does offer great potential to grow rail business in the short term and strengthen the rail industry as a whole. However, improvements are needed to move forward.

Brian Gorton
Sep 11, 2024
From Conrail 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.



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 challenges[1]. 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."

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

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.

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

AP

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

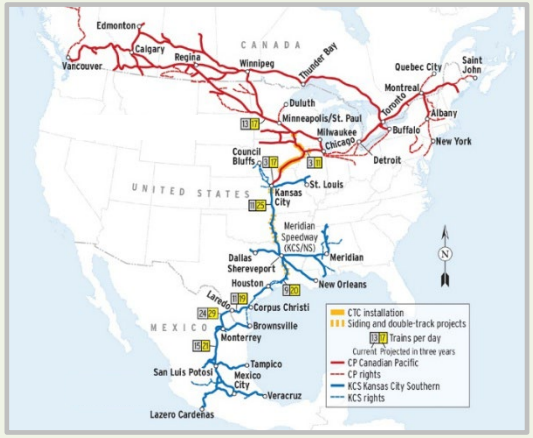
Share

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.

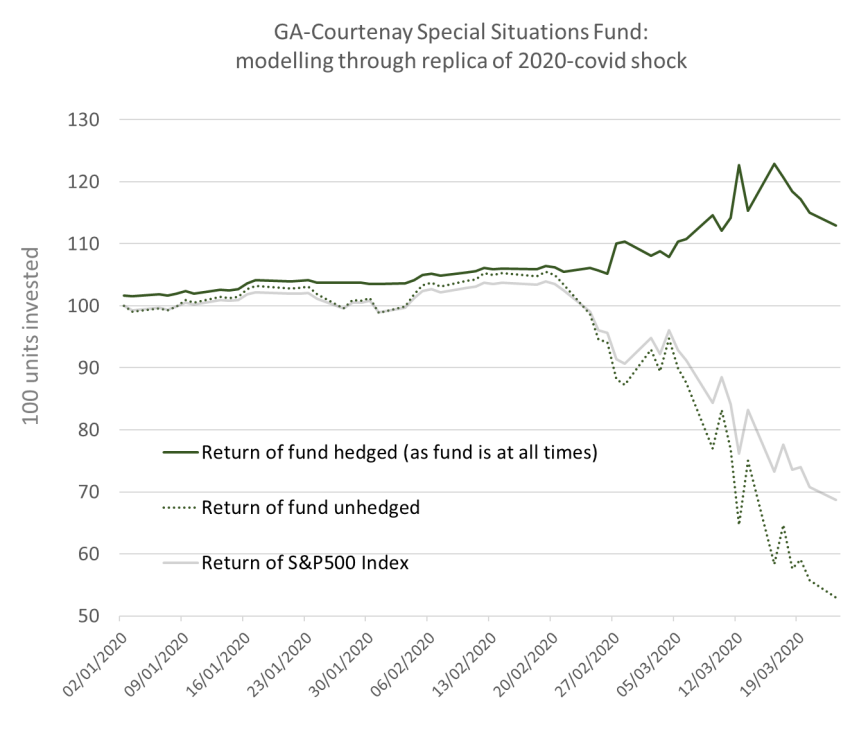
Canadian Pacific – duopoly Canada railroads and a monopoly Canada-to-Mexico railroad



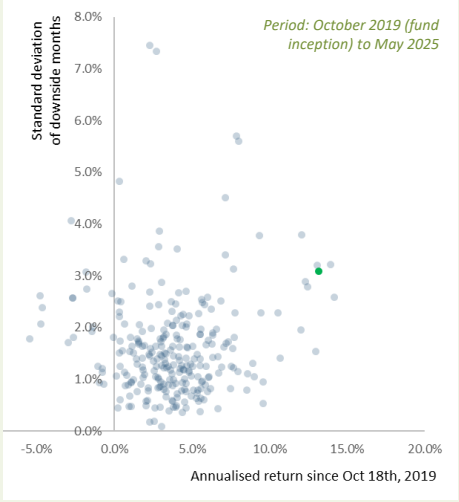
Source: public domain articles, Canadian Pacific corporate disclosures

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

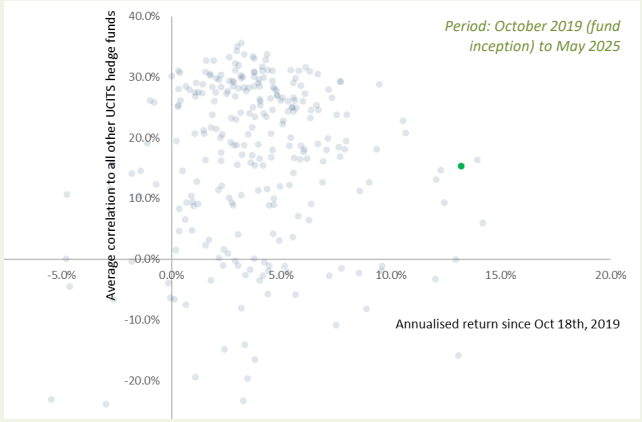
Put option protection designed to insulate fund from market shocks: S&P500 puts purchased sufficient to protect fund against extreme developments (below, modelling through repeat of 2020 covid shock)



Returns relative to risk: on a Sortino Ratio basis (return/down 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*



Source: GreenAsh Partners internal systems, GA-Courtenay research, Absolute Hedge UCITS funds database

Opportunities to partner with GA-Courtenay Special Situations Fund

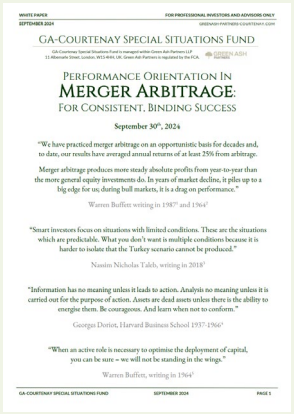
Product	*Opportunity*
***GA-Courtenay Special Situations Fund**: our flagship UCITS hedge fund*	*The GA-Courtenay Special Situations Fund remains a unique product proposition amongst UCITS hedge funds:* • *Explicit focus on monopolistic businesses, formidable barriers to entry, long term growth tailwinds* • *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*
Concentrated segregated accounts	*GreenAsh Partners is also able to provide concentrated segregated accounts focused on individual or a selection of positions held by GA-Courtenay Special Situations Fund, alongside bespoke hedge structures. Please contact us for further information.*
Seeder class opportunity for focused offshore GA-Courtenay Fund	*GreenAsh Partners is also in a position to agree selective seeder share class commitments for a prospective, focused offshore GA-Courtenay Special Situations Fund. Please contact us for further information.*

Running concentrated mandates alongside UCITS is complementary: the UCITS enforces a broad opportunity search, while the concentrated products harvest only the best outcomes of that search

The fund's website provides comprehensive additional information

www.greenash-partners-courtenay.com | info@greenash-partners.com

Fund strategy related white papers



GA-COURTENAY SPECIAL SITUATIONS FUND

PERFORMANCE ORIENTATION IN
MERGER ARBITRAGE:
FOR CONSISTENT, BINDING SUCCESS

September 30th, 2024

"We have practiced merger arbitrage on an opportunistic basis for decades and, to date, our results have averaged annual returns of at least 25% from arbitrage.

Merger arbitrage produces more steady absolute profits from year-to-year than the more general equity investments do. In years of market decline, it piles up to a big edge for us; during bull markets, it is a drag on performance."

Warren Buffett writing in 1987[1] and 1964[2]

"Smart investors focus on situations with limited conditions. These are the situations which are predictable. What you don't want is multiple conditions because it is harder to isolate that the Turkey scenario cannot be produced."

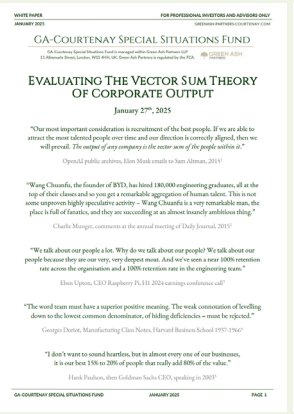
Nassim Nicholas Taleb, writing in 2018[3]

"Information has no meaning unless it leads to action. Analysis no meaning unless it is carried out for the purpose of action. Assets are dead assets unless there is the ability to energise them. Be courageous. And learn when not to conform."

Georges Doriot, Harvard Business School 1937-1966[4]

"When an active role is necessary to optimise the deployment of capital, you can be sure – we will not be standing in the wings."

Warren Buffett, writing in 1964[5]



GA-COURTENAY SPECIAL SITUATIONS FUND

EVALUATING THE VECTOR SUM THEORY
OF CORPORATE OUTPUT

January 27th, 2025

"Our most important consideration is recruitment of the best people. If we are able to attract the most talented people over time and our direction is correctly aligned, then we will prevail. *The output of any company is the vector sum of the people within it.*"

OpenAI public archives, Elon Musk emails to Sam Altman, 2015[1]

"Wang Chuanfu, the founder of BYD, has hired 180,000 engineering graduates, all at the top of their classes and so you get a remarkable aggregation of human talent. This is not some unproven highly speculative activity – Wang Chuanfu is a very remarkable man, the place is full of fanatics, and they are succeeding at an almost insanely ambitious thing."

Charlie Munger, comments at the annual meeting of Daily Journal, 2015[2]

"We talk about our people a lot. Why do we talk about our people? We talk about our people because they are our very, very deepest moat. And we've seen a near 100% retention rate across the organisation and a 100% retention rate in the engineering team."

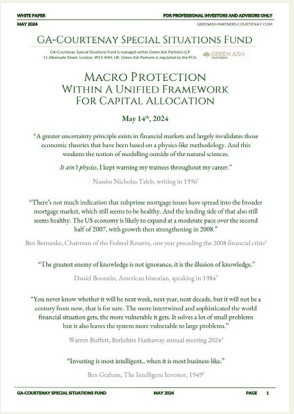
Eben Upton, CEO Raspberry Pi, H1 2024 earnings conference call[3]

"The word team must have a superior positive meaning. The weak connotation of levelling down to the lowest common denominator, of hiding deficiencies – must be rejected."

Georges Doriot, Manufacturing Class Notes, Harvard Business School 1937-1966[4]

"I don't want to sound heartless, but in almost every one of our businesses, it is our best 15% to 20% of people that really add 80% of the value."

Hank Paulson, then Goldman Sachs CEO, speaking in 2005[5]



GA-COURTENAY SPECIAL SITUATIONS FUND

MACRO PROTECTION
WITHIN A UNIFIED FRAMEWORK
FOR CAPITAL ALLOCATION

May 14th, 2024

"A greater uncertainty principle exists in financial markets and largely invalidates those economic theories that have been based on a physics-like methodology. And this weakens the notion of modelling outside of the natural sciences.

It ain't physics, I kept warning my trainees throughout my career."

Nassim Nicholas Taleb, writing in 1996[1]

"There's not much indication that subprime mortgage issues have spread into the broader mortgage market, which still seems to be healthy. And the lending side of that also still seems healthy. The US economy is likely to expand at a moderate pace over the second half of 2007, with growth then strengthening in 2008."

Ben Bernanke, Chairman of the Federal Reserve, one year preceding the 2008 financial crisis[2]

"The greatest enemy of knowledge is not ignorance, it is the illusion of knowledge."

Daniel Boorstin, American historian, speaking in 1984[3]

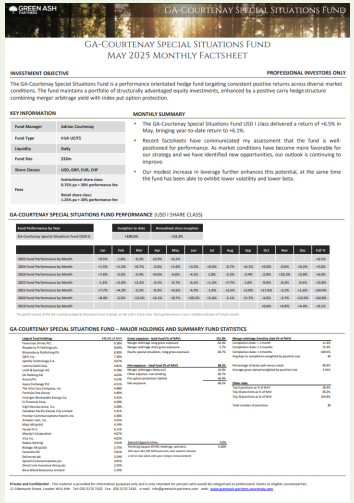
"You never know whether it will be next week, next year, next decade, but it will not be a century from now, that is for sure. The more interwined and sophisticated the world financial situation gets, the more vulnerable it gets. It solves a lot of small problems but it also leaves the system more vulnerable to large problems."

Warren Buffett, Berkshire Hathaway annual meeting 2024[4]

"Investing is most intelligent.. when it is most business-like."

Ben Graham, The Intelligent Investor, 1949[5]

Monthly factsheets



GA-COURTENAY SPECIAL SITUATIONS FUND

GA-COURTENAY SPECIAL SITUATIONS FUND
MAY 2025 MONTHLY FACTSHEET

INVESTMENT OBJECTIVE

PROFESSIONAL INVESTORS ONLY

The GA-Courtenay Special Situations Fund is a performance orientated hedge fund targeting consistent positive returns across diverse market conditions. The fund maintains a portfolio of structurally advantaged equity investments, enhanced by a positive carry hedge structure combining merger arbitrage yield with index put option protection.

KEY INFORMATION

MONTHLY SUMMARY

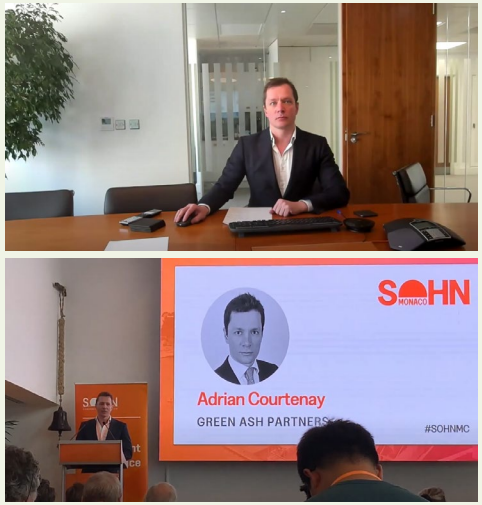
- The GA-Courtenay Special Situations Fund USD I class delivered a return of +6.5% in May, bringing year-to-date return to +6.1%.
- Recent factsheets have communicated my assessment that the fund is well-positioned for performance. As market conditions have become more favorable for our strategy and we have identified new opportunities, our outlook is continuing to improve.
- Our modest increase in leverage further enhances this potential, at the same time the fund has been able to exhibit lower volatility and lower beta.

GA-COURTENAY SPECIAL SITUATIONS FUND PERFORMANCE (USD I SHARE CLASS)

GA-COURTENAY SPECIAL SITUATIONS FUND – MAJOR HOLDINGS AND SUMMARY FUND STATISTICS

Private and Confidential – This material is provided for information purposes only and is only intended for persons who would be categorised as professional clients or eligible counterparties.

Video presentations include quarterly webinars and event presentations



Stock specific deep dives

GA-COURTENAY SPECIAL SITUATIONS FUND

FEVER TREE: TRANSFORMATIONAL DEAL
PUTS US EXPANSION ON COORS

March 17th, 2025

"If 3/4 of your drink is the mixer, mix with the best."

Fever Tree marketing slogan

"We took it on absolutely head on, we took on the world's biggest brands, Schweppes in America, and we said, look it's rubbish. Decent spirits need better mixers, they deserve better.

So we said what we are going to do is design something from scratch, and say, if we started with a clean sheet of paper, how would we make the best tonic water in the world?"

Charles Rolls, co-founder of Fever Tree, speaking in 2018[1]

"Can you imagine a supply chain director from a big incumbent drinks company saying we're going to import the ingredients for our product from the Rwanda Congolese border?

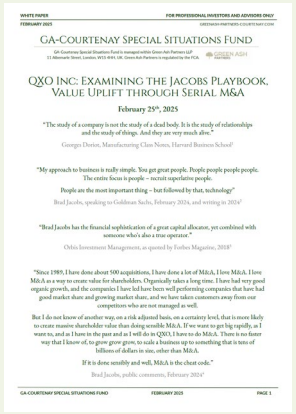
If you want to be the best – you have to ask yourself what it takes."

Jeremy Kanter, Chief Marketing Officer, Fever Tree, speaking in July 2024[2]

"The size and opportunity of the US market is significant. We see an opportunity that's multiple times the size of our business currently. And as I explained, there's no question Molson Coors have the capability to really drive this business to the next level in terms of size, but also crucially into new channels and new opportunities.

This transformative partnership will enable Fever Tree to capitalise on Molson Coors' supply chain and procurement strength to drive operational efficiencies as well as manage the onshoring of US production."

Tim Warrillow, CEO, Fever Tree, January 2025[3]



GA-COURTENAY SPECIAL SITUATIONS FUND

QXO INC: EXAMINING THE JACOBS PLAYBOOK,
VALUE UPLIFT THROUGH SERIAL M&A

February 25th, 2025

"The study of a company is not the study of a dead body. It is the study of relationships and the study of things. And they are very much alive."

Georges Doriot, Manufacturing Class Notes, Harvard Business School[1]

"My approach to business is really simple. You get great people. People people people people. The entire focus is people – recruit superlative people.

People are the most important thing – but followed by that, technology"

Brad Jacobs, speaking to Goldman Sachs, February 2024, and writing in 2024[2]

"Brad Jacobs has the financial sophistication of a great capital allocator, yet combined with someone who's also a true operator."

Orbis Investment Management, as quoted by Forbes Magazine, 2018[3]

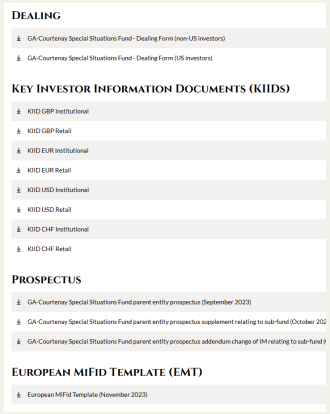
"Since 1989, I have done about 500 acquisitions, I have done a lot of M&A, I love M&A. I love M&A as a way to create value for shareholders. Organically takes a long time. I have had very good organic growth, and the companies I have had have been well performing companies that have had good market share and growing market share, and we have taken customers away from our competitors who are not managed as well.

But I do not know of another way, on a risk adjusted basis, on a certainty level, that is more likely to create massive shareholder value than doing sensible M&A. If we want to get big rapidly, as I want us, and as I have in the past and as I will do in QXO, I have to do M&A. There is no faster way that I know of, to grow grow grow, to scale a business up to something that is tens of billions of dollars in size, other than M&A.

If it is done sensibly and well, M&A is the cheat code."

Brad Jacobs, public comments, February 2024[4]

Comprehensive fund document PDFs



DEALING

- GA-Courtenay Special Situations Fund - Dealing Form (non-US Investors)
- GA-Courtenay Special Situations Fund - Dealing Form (US investors)

KEY INVESTOR INFORMATION DOCUMENTS (KIIDS)

- KIID GBP Institutional
- KIID GBP Retail
- KIID EUR Institutional
- KIID EUR Retail
- KIID USD Institutional
- KIID USD Retail
- KIID CHF Institutional
- KIID CHF Retail

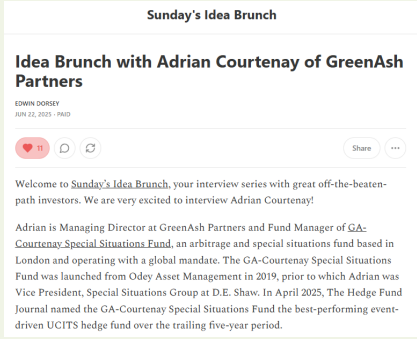
PROSPECTUS

- GA-Courtenay Special Situations Fund parent entity prospectus (September 2023)
- GA-Courtenay Special Situations Fund parent entity prospectus supplement relating to sub-fund (October 202
- GA-Courtenay Special Situations Fund parent entity prospectus addendum change of IM relating to sub-fund

EUROPEAN MIFID TEMPLATE (EMT)

- European MiFid Template (November 2023)

Fund manager interviews



Sunday's Idea Brunch

Idea Brunch with Adrian Courtenay of GreenAsh Partners

EDWIN DORSEY
JUN 22, 2025 • PAID

11 Share

Welcome to Sunday's Idea Brunch, your interview series with great off-the-beaten-path investors. We are very excited to interview Adrian Courtenay!

Adrian is Managing Director at GreenAsh Partners and Fund Manager of GA-Courtenay Special Situations Fund, an arbitrage and special situations fund based in London and operating with a global mandate. The GA-Courtenay Special Situations Fund was launched from Odey Asset Management in 2019, prior to which Adrian was Vice President, Special Situations Group at D.E. Shaw. In April 2025, The Hedge Fund Journal named the GA-Courtenay Special Situations Fund the best-performing event-driven UCITS hedge fund over the trailing five-year period.

Links to publically disclosed shareholder activism

O3 Mining investor knocks Agnico offer

Frédéric Tomesco - The Northern Miner | January 17, 2025 | 12:53 pm Markets News Top Companies Canada Gold

A minority shareholder in O3 Mining (TSXV: OIII) is urging Agnico Eagle Mines (TSX: AEM; NYSE: AEM) to sweeten its all-cash offer for the company, saying the current proposal significantly undervalues the owner of Quebec's Marban Alliance project.

Agnico, the second-largest gold miner by stock market value, agreed to acquire O3 last month for about C$204 million in a deal that values the company's shares at C$1.67 apiece – a 58% premium to O3 Mining's closing price on the day before the bid was disclosed. A special committee of independent O3 directors unanimously recommended that the company accept Agnico's offer, which expires Jan. 23 at 11:59 p.m. (EST).

"We are perplexed at what appears to be the deeply discounted valuation of the proposed takeover of O3 Mining and a pricing level which may deliver no material advantage to Agnico Eagle," Adrian Courtenay, fund manager and managing director at London-based GreenAsh Partners, said in a statement Friday.

Legal disclosures

This document is issued by Green Ash Partners Investment Management Ltd (hereinafter "Green Ash"), at 11 Albemarle Street, London, W1S 4HH, who is regulated and authorised by the Financial Conduct Authority (FCA). It is provided on a confidential basis. This disclaimer is not intended to exclude or restrict any liability under the rules of the Financial Conduct Authority ("the FCA Rules") or FSMA.

The information and data presented in this document are not to be considered as an offer or solicitation to buy, sell or subscribe to any securities, financial instruments or product. This document is exclusively intended for (i) EU professional investors and (ii) Swiss qualified investors within the meaning of article 10 paragraph 3, 3bis, 3ter and 4 of the Swiss Collective Investment Schemes Act (“CISA”). The recipient of this document is not allowed to circulate to other people which are not eligible investors described above. This document is intended only to provide a general status overview of Green Ash. The information herein is not intended to provide, and should not be relied upon for accounting, legal or tax advice or investment recommendations. The recipient of this document should make an independent investigation of the information described herein, including consulting your tax, legal, accounting or other advisors about the matters discussed herein.

The information contained herein is provided for informational purposes only, is not complete, and does not contain certain material information about Green Ash, its affiliates and funds. Information, opinions and estimates expressed in this document reflect a judgment at its original date of publication and are subject to change without notice. Green Ash has not taken any steps to ensure that the information referred to in this document are suitable for any qualified investor and this document is not to be relied upon in substitution for the exercise of independent judgment. Tax treatment depends on the individual circumstances of each investor and may be subject to change in the future. The value and income of any of the financial instruments or products mentioned in this document can fall as well as rise and, as a consequence, investors may receive back less than originally invested. Risk factors are listed in the prospectus or offering memorandum and dedicated supplements of each product and are not intended to be reproduced in full in this document.

Past performance is no guarantee nor a reliable indicator of future results. This material is not intended to be substitute to the full legal documentation of the products mentioned in the presentation and to any information which investors must obtain from their financial intermediaries acting in relation to their investment in the products mentioned in this document.