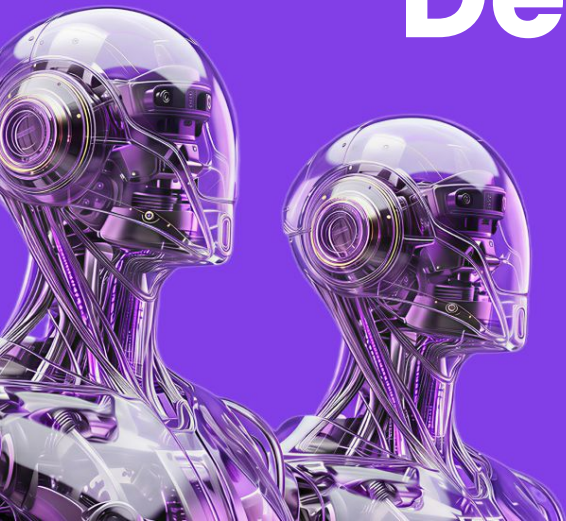




Drumbeat
Capital

The 2026 Deep Tech Report

June 2026



The next trillion dollar companies will be built in the world of atoms

The global economy is being reshaped by two powerful forces. First, globalization is giving way to **a more fragmented world**. Countries are increasingly focused on securing critical technologies, strengthening domestic manufacturing, and building more resilient supply chains. Second, many advanced economies face growing **structural challenges**: aging populations, labor shortages, rising energy demand, and the mounting effects of climate change that slow growth and strain public finances.

In response, we are witnessing a historic, state-backed reallocation of capital. Governments and institutional allocators are deploying unprecedented resources to secure technological supremacy, triggering a definitive shift from bits back to atoms. As the easy margins and moats of pure software erode, the next great epoch of value creation will be forged in the physical world. **This is the dawn of the Deep Tech supercycle**: a once-in-a-generation opportunity to build the infrastructure of the future.

Yet technological sovereignty is not synonymous with self-sufficiency. No nation can realistically dominate every layer of increasingly complex industrial value chains. The future belongs to trusted alliances that combine complementary strengths while reducing dependence on strategic rivals. The U.S. and Europe are uniquely positioned to lead this shift. The defining global champions will win because they forge **a new transatlantic industrial bridge**, fusing the unparalleled depth of U.S. capital markets and commercial scale with Europe's immense reserves of deep engineering talent and legacy industrial might.

The startups that successfully bridge these ecosystems will be uniquely positioned to build the infrastructure, industries, and technologies that shape the next chapter of the global economy.

Key Facts & Figures

Deep Tech Defined

Commercializing Scientific Breakthroughs

Deep Tech is a moment in time

7 of 10 largest companies started in Deep Tech

\$3.9 Trillion start-up EV

Similar margins to SaaS

2x more likely for U.S. Deep Tech to get to Series D vs. Regular Tech

25% more likely for European Deep Tech

5-8 years and **\$75-175M raised** to get to Unicorn status

Similar to Regular Tech

Transatlantic Opportunity

Top global alliance

- Largest economies
- Largest trade partners
- #2 & 3 in manufacturing
- Largest foreign investors
- Largest foreign jobs

50% of top technical universities are in the U.S.

30% of top technical universities are in Europe

Europe has (vs. U.S.) **2x** more STEM graduates

2x longer tenure

2-5x lower salaries

Bay Area, Los Angeles, New York

London, Paris, Munich

are main Deep Tech hubs

Funding Landscape

\$156.6B Deep Tech funding in U.S. & Europe

2x early funding in U.S.

24x later funding in U.S.

50% of U.S. VC funding is in Deep Tech

25% of European VC funding is in Deep Tech

60% of Deep Tech unicorns are in U.S.

10% are in Europe

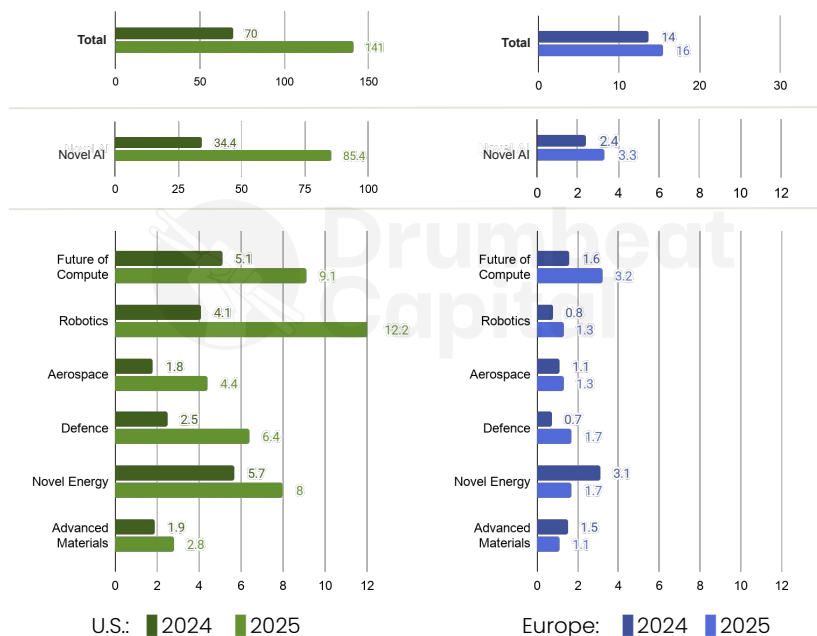
\$92B Deep Tech exit value

90% of exit count are M&A

60% of exit value are IPOs

Key Facts & Figures

Deep Tech venture capital raised in the U.S. & Europe (\$B)



U.S.: Deep Tech Fundraising Cheat-Sheet

Round		Round Size in \$M	Post-Money in \$M	Dilution in %	Lead Investor Share in %
Seed	P25	\$2	\$12	14%	36%
	P50	\$4	\$20	21%	50%
	P75	\$8	\$35	30%	74%
Series A	P25	\$5	\$31	13%	29%
	P50	\$12	\$60	22%	46%
	P75	\$26	\$120	32%	66%
Series B	P25	\$10	\$58	11%	25%
	P50	\$22	\$124	19%	38%
	P75	\$53	\$272	27%	57%
Series C	P25	\$9	\$73	9%	25%
	P50	\$36	\$211	16%	36%
	P75	\$101	\$590	23%	49%
Series D+	P25	\$16	\$151	7%	26%
	P50	\$42	\$447	11%	43%
	P75	\$125	\$1,093	19%	64%

About this report

A unified definition of Deep Tech: The primary goal of this report is to arm the Deep Tech ecosystem with an aligned set of definitions so that founders, investors, operators, academics, and policymakers can operate with a single, standardized language, globally.

From bits to atoms: We are entering a new Industrial revolution. This moment marks a critical paradigm shift from traditional software to rebuilding the physical world. Breakthrough science and engineering must be actively deployed to address humanity's most pressing global challenges – from increasing debt burdens, to low fertility rates, rising energy demand, and climate change.

Data for the people: As the popularity of Deep Tech increases, so does the noise. The best antidote to poorly informed punditry and propaganda is data. Our goal is simple: to provide the clarity needed to build, fund, partner with, and scale world-leading Deep Tech companies.

International collaboration: This report outlines a definitive blueprint for cross-border collaboration, illustrating that category-defining champions are scaled not in isolation, but through a deeply interconnected transatlantic economy that leverages the unique strengths of Europe and the U.S.

Methodology

Deep Tech is a moment in time:

Some technologies that were once considered Deep Tech have now become mainstream. As a result, some companies are included in previous reports but not in this year's report. Hence, funding numbers may vary year over year.

Cut-off date:

December 31, 2025 unless stated otherwise on the chart.

Data sources:

Data sources can be found on the bottom of each slide.

Contributors:

We partner with leading experts across domains for external input.

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Sam Cash, AT&T Capital Group
Selma El Ouadi, Hello Tomorrow
Steve Franklin, Gunderson Dettmer

Special thanks to our Deep Tech Ecosystem Partners



Asset-Backed
Financing



Events & Media



Transatlantic
Recruiting



Strategic M&A



Deal Structures



LP Perspective



Robotics &
Cleaning



Robotics &
Data Centers



Intellectual Property



Loan Structures



Website Design



Equipment
Financing

For deep dives into local ecosystems, see previous reports by us and our partners

Global Deep Tech Report



European Deep Tech Reports



Country Deep Tech Reports



Table of contents (click the chapter name to link to the chapter page)

1. The Role of Deep Tech in the Modern World ----- 10

1.1.	What is Deep Tech?	11
1.2.	Why does Deep Tech Matter?	20
1.3.	Why Now?	47
1.4.	Why Transatlantic?	77

2. The Global State of Deep Tech ----- 104

2.1.	Research & Patents	106
2.2.	Talent	124
2.3.	Funding	145
2.4.	Geography	160
2.5.	Round Sizes	166
2.6.	Valuations	173
2.7.	Dilution	180
2.8.	Lead Investor Ownership	187
2.9.	SAFEs	193
2.10.	Graduation Rates	200
2.11.	Scaling to Unicorns & Beyond	211
2.12.	Exits	219
2.13.	Investors	244

3. Deep Tech Sector Deep Dives ----- 257

3.1.	Novel AI	265
3.2.	Future of Compute	273
3.3.	Robotics	309
3.4.	Aerospace	331
3.5.	Defense	343
3.6.	Novel Energy	350
3.7.	Advanced Materials	360

4. Founder Resources ----- 368

4.1.	VC 101 for Deep Tech Founders	369
4.2.	The Deep Tech Pitch Deck Template	379
4.3.	Transatlantic Recruiting for Deep Tech	381
4.4.	Intellectual Property for Deep Tech	393
4.5.	Strategic M&A for Deep Tech	404
4.6.	Venture Debt: An Introduction	409
4.7.	Loan Structures for Deep Tech	418
4.8.	Equipment Financing for Deep Tech	426
4.9.	Asset-Backed Financing for Deep Tech	431
4.10.	Public Financing for Deep Tech	435
4.11.	LP Perspective on Deep Tech	443
4.12.	Website Design for Deep Tech	449
4.13.	Event & Media for Deep Tech	457

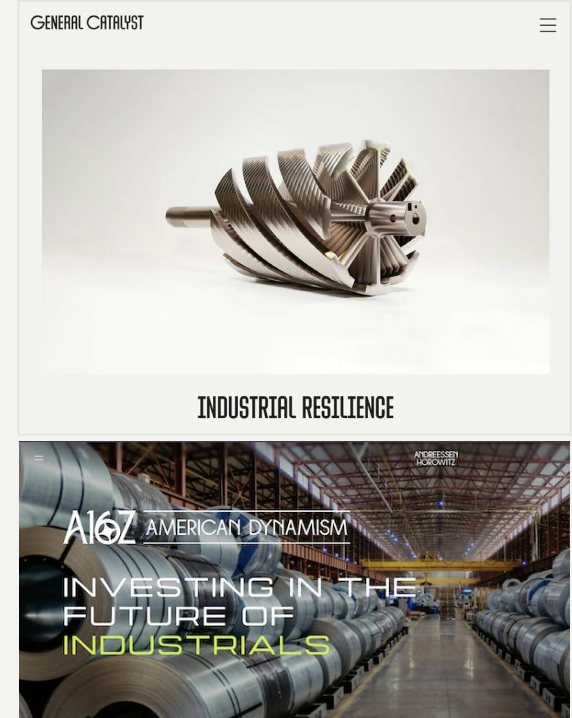
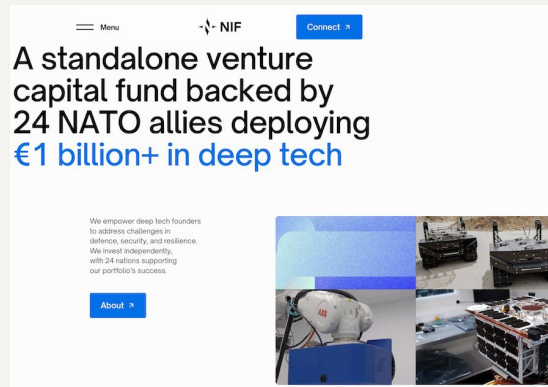
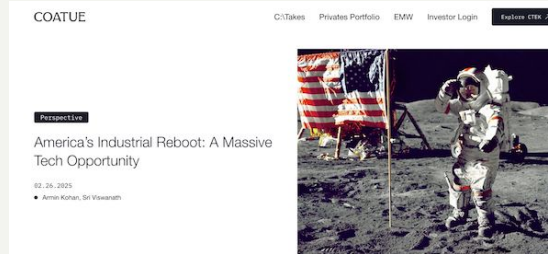
PART 1

The Role of Deep Tech in the Modern World

1.1

What is *Deep Tech*?

Deep Tech is the hottest trend in venture, but the definition is still fuzzy



Deep Tech is defined as:

Commercializing
Scientific
Breakthroughs

Commercializing Scientific Breakthroughs

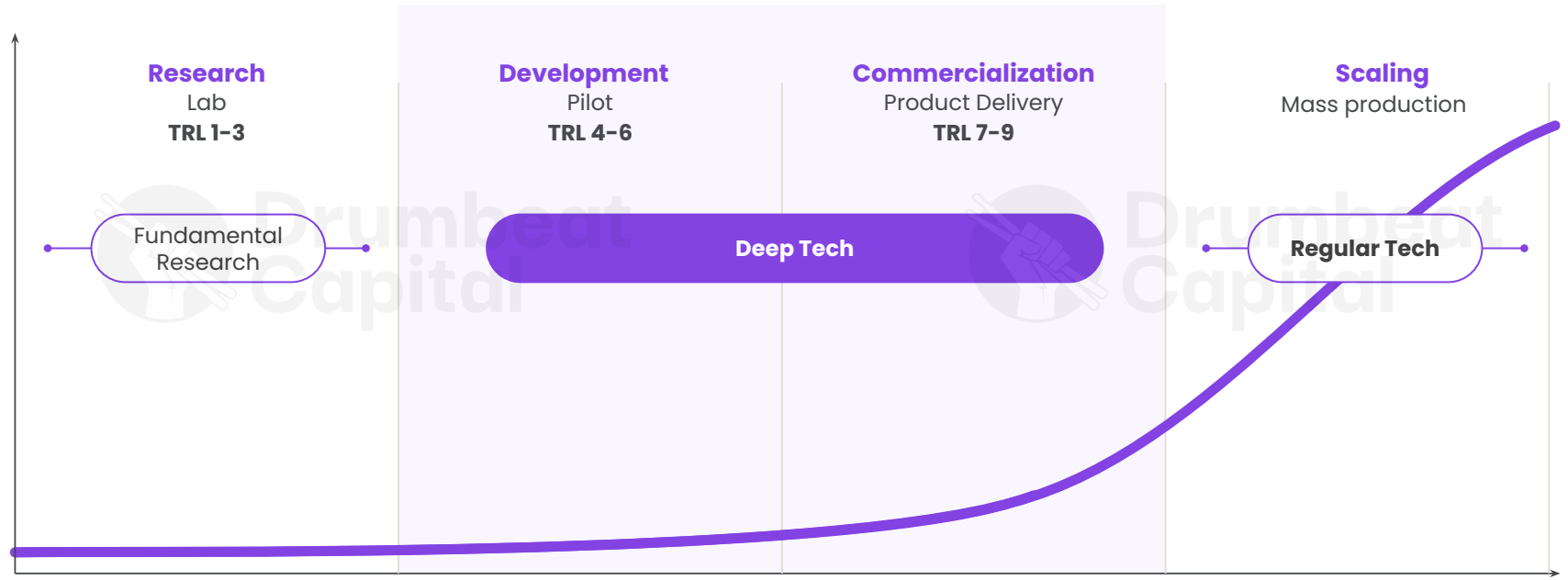
Deep Tech is a moment in time.

It's the moment a founding team decides to turn a new discovery into something the world can use.

The companies that make this leap from discovery to deployment are Deep Tech companies.

Deep Tech is a moment in time

Technology Readiness Levels (TRL) 1-10



What was once Deep Tech may no longer be considered Deep Tech today

1900

Internal Combustion Engine
Chemicals
Electricity



BASF
We create chemistry



1950

Petrochemicals
Electronics
Aviation

البتروكيماويات
saudil oromco



AIRBUS

1990

Internet Search
Networking
RISC & GPU

Google

CISCO

arm



2020

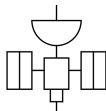
Advanced Materials
Future of Compute
Novel Energy
Aerospace
Robotics
Novel AI

Deep Tech spans across a variety of scientific domains



Future of Compute

Harnessing novel physics to advance humanity's greatest tool



Aerospace

The infrastructure buildout in space is the next frontier of global power



Novel Energy

Access to sustainable energy will define the quality of life for future generations



Robotics

Automating physical work at scale to address labor shortages



Novel AI

The models that come after LLMs will be unbelievably powerful strategic assets



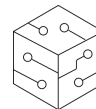
Defense

Protecting safety and sovereignty in an ever changing world



Advanced Materials

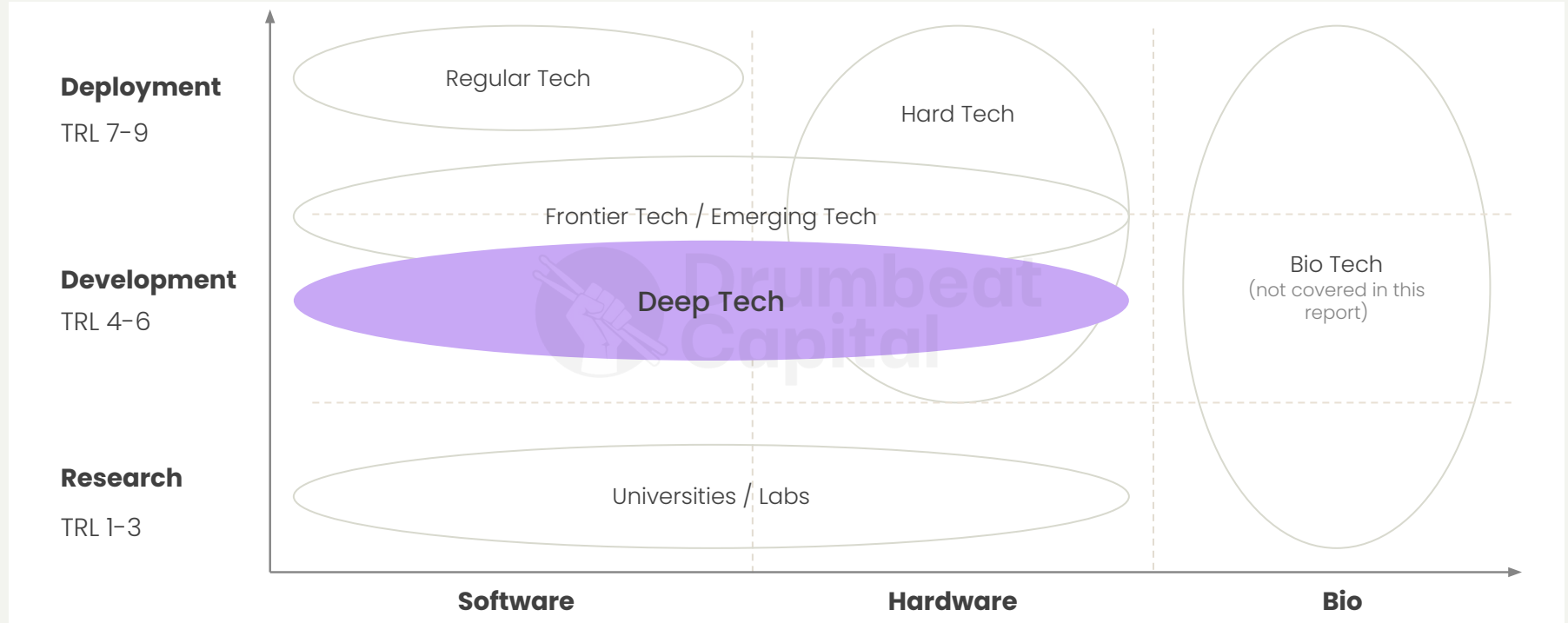
Material science innovation is the base from construction to semiconductors



Beyond

Exploring technologies that redefine what's possible

Deep Tech includes software and hardware



Deep Tech companies trade market risk for engineering risk

Development Risk

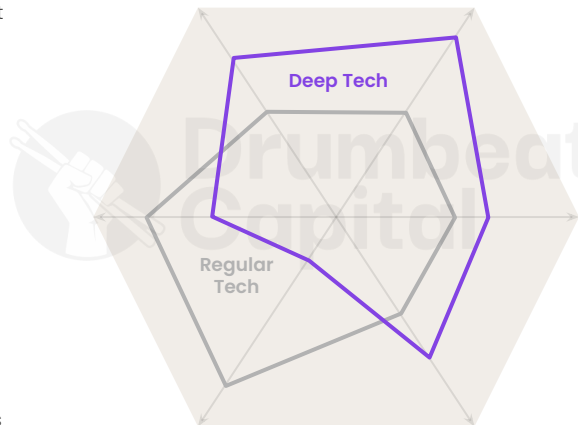
Longer initial development phase

Market Risk

If the technology solves one of the world's biggest problems, there will be ample demand

Competition Risk

Often the strong technology edge prevents competition



Capital Intensity

Often heavy CapEx ahead of revenues and PMF

Team Risk

Academic and scientific backgrounds may have less commercial experience

Technology Risk

New technologies don't always work as expected

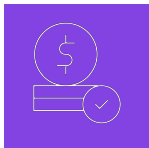
Deep Tech startups trade speed for defensibility. They take longer to build, require more capital, and carry technical uncertainty – but when they work, they create categories that are hard to replicate.

In addition, Deep Tech shifts risk from the market to the technology. If the technology can scale effectively, demand usually follows.

1.2

Why does Deep Tech *Matter*?

01



Financial argument

Deep Tech has always been the engine behind venture's biggest outcomes

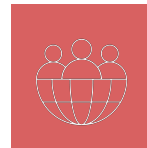
02



Power argument

Deep Tech secures geopolitical soft and hard power

03



Societal argument

Deep Tech has helped solve some of humanity's greatest challenges

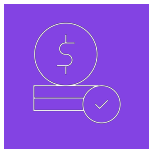
*Deep Tech shapes **societies**, defines **global power**, and drives **economic prosperity**.*

Breakthroughs such as the transistor fundamentally transformed how societies function.

Leadership in domains like semiconductors and space are shifting the balance of geopolitical power.

The companies that win in Deep Tech often become the defining businesses of their generation.

01



Financial argument

Deep Tech has always been the engine behind venture's biggest outcomes

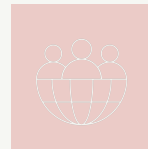
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Power argument

Deep Tech secures geopolitical soft and hard power

03



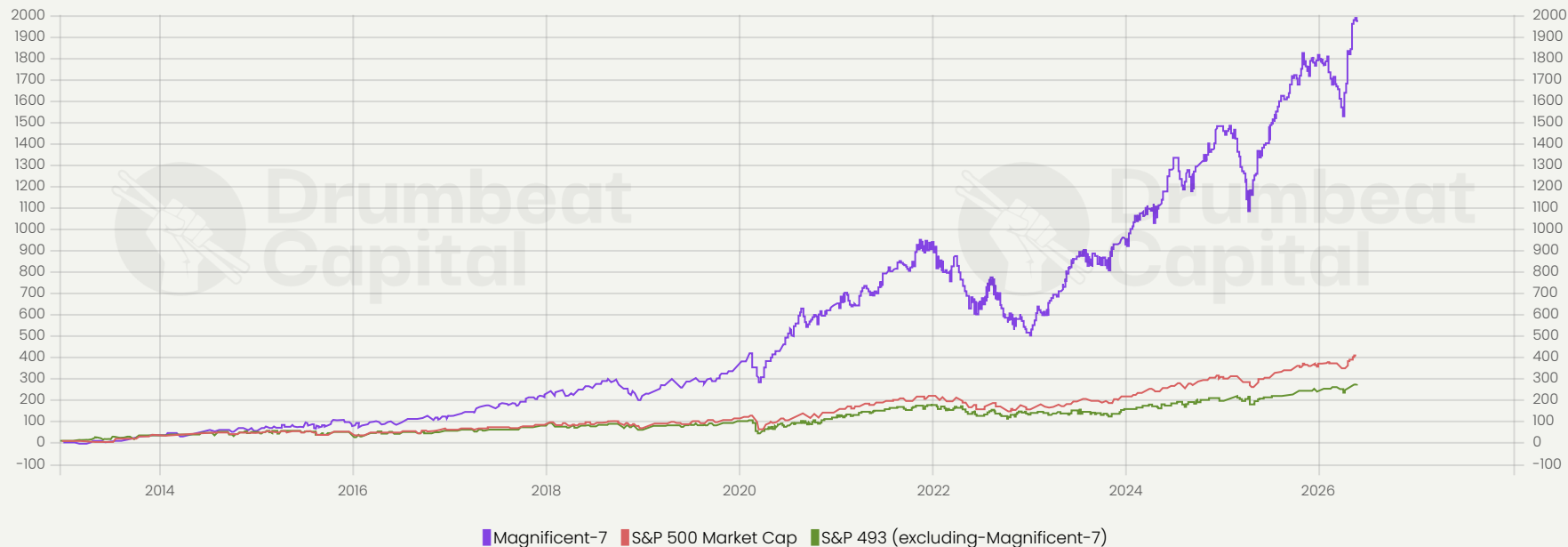
Societal argument

Deep Tech has helped solve some of humanity's greatest challenges

We all were told that software ate the world

Magnificent-7 Performance vs. S&P 493 and S&P 500

(Mag-7: Apple, Microsoft, Alphabet, Amazon, Nvidia, Meta, Tesla)



However, Deep Tech is the engine behind the most valuable companies today

7

out of the

TOP 10

companies started as

Deep Tech

#	Company	Cap	Deep Tech Heritage
1	 NVIDIA	\$4.261 T	Revolutionized GPU-computing
2		\$4.129 T	Pioneered personal computers
3	Alphabet	\$3.748 T	Leveraged new search algorithms from Stanford
4	 Microsoft	\$3.556 T	Innovated operating system for computers
5	 amazon	\$2.418 T	(warehouse and automation aspects)
6	 BROADCOM	\$1.699 T	Developed new communication technology
7	 Meta	\$1.623 T	(AR/VR aspects)
8	 أرامكو السعودية Saudi Aramco	\$1.547 T	Led oil extraction & refinery
9	TESLA	\$1.526 T	Re-invented the automobile
10	 tsmc	\$1.514 T	Developed state-of-the art chip manufacturing

This has been consistent over the last 50 years

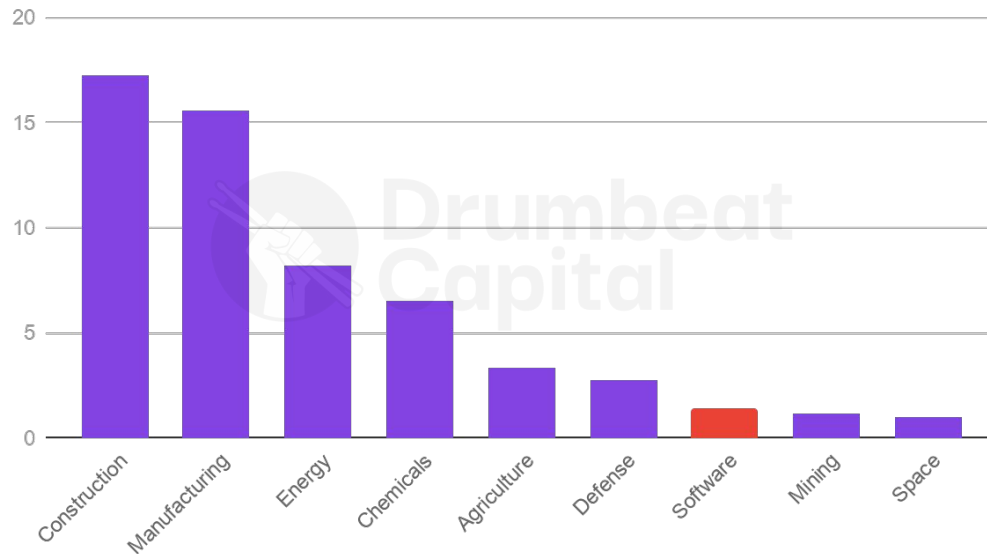
Rank	1970	1990	2010	2026
1	 IBM	 IBM	 Apple	 NVIDIA
2	 AT&T	 Exxon	 ExxonMobil	 Apple
3	 General Motors	 General Electric	 Microsoft	 Alphabet
4	 Exxon	 NTT	 PetroChina	 Microsoft
5	 General Electric	 Royal Dutch Shell	 ICBC	 Amazon
6	 Kodak	 AT&T	 China Mobile	 Broadcom
7	 Texaco	 Toyota	 BHP Billiton	 Meta
8	 Sears	 Coca-Cola	 Johnson & Johnson	 Saudi Aramco
9	 DuPont	 Philip Morris	 Walmart	 Tesla
10	 Chevron	 Merck	 Nestlé	 TSMC

Addressable markets for Deep Tech today are huge

The sectors that underpin the global economy—energy, manufacturing, chemicals, agriculture, and mining—collectively dwarf traditional software markets.

As technology moves from bits to atoms, value creation shifts toward the world's largest economic sectors.

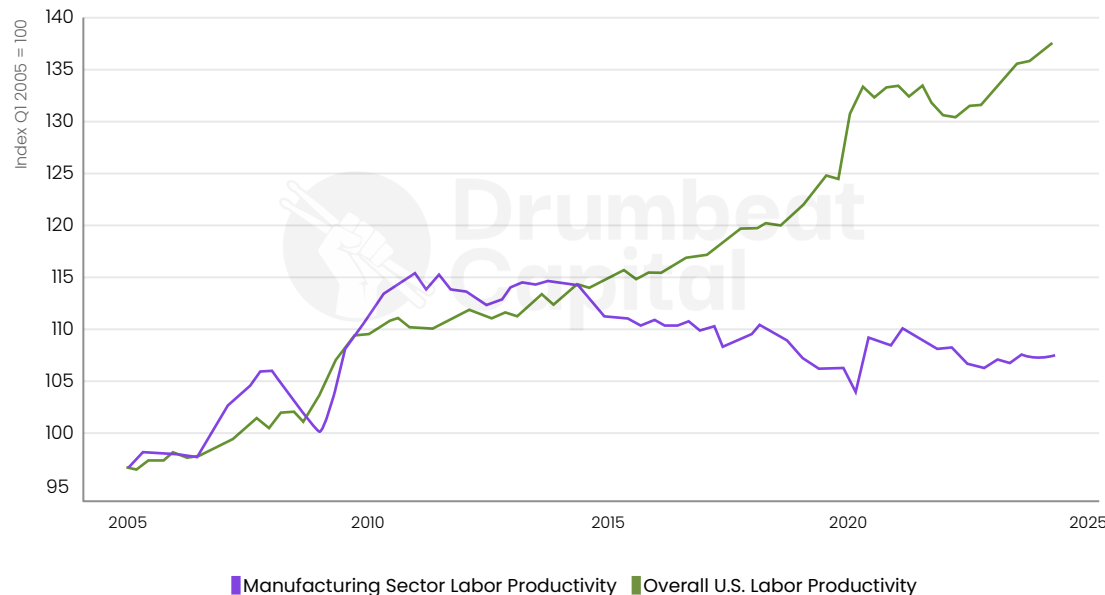
Market size estimates in \$T



Addressable for: ■ Deep Tech ■ SaaS

Deep Tech markets are ripe for disruption

U.S. Labor Productivity

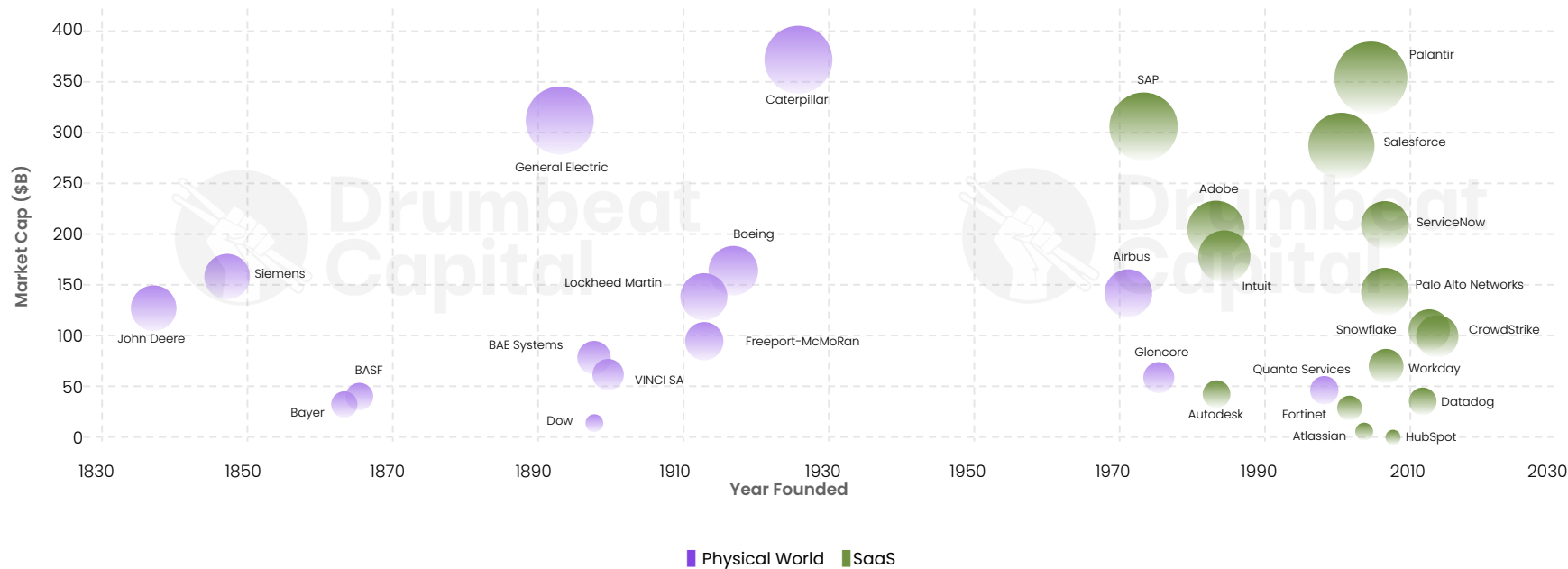


Historically, productivity surges have been concentrated in manufacturing, while gains in services have emerged more gradually due to the service-heaviness of many jobs: While razor manufacturers can dramatically increase efficiency, barbers face inherent limits on how much faster they can cut hair.

Yet over the past decade, manufacturing productivity growth has largely stalled. With a constrained labor pool, it's critical to improve the efficiency of manufacturing output to meet consumer demand for goods.

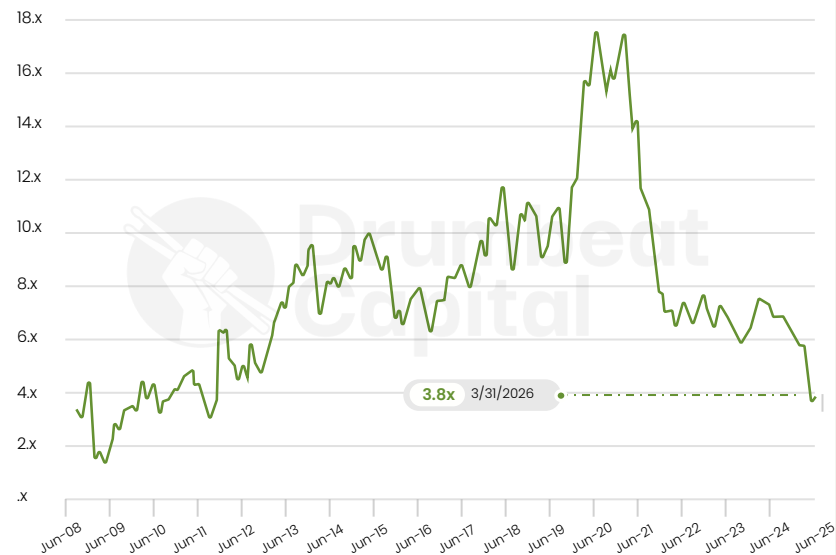
The incumbents in the physical world are big and old

Illustrative sample of companies by year founded and market cap

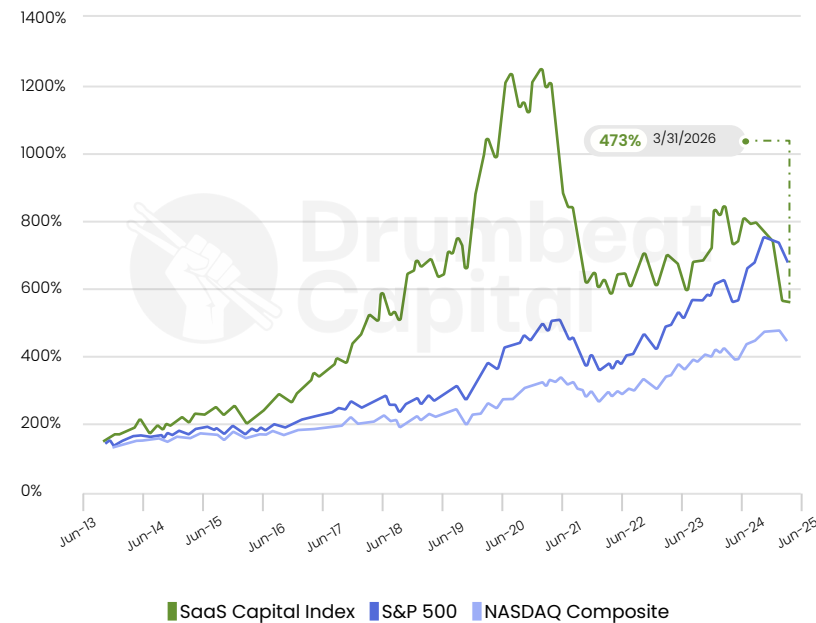


SaaS deployment is declining and much will get eroded by AI

SaaS Capital Index (SCI) valuation multiples

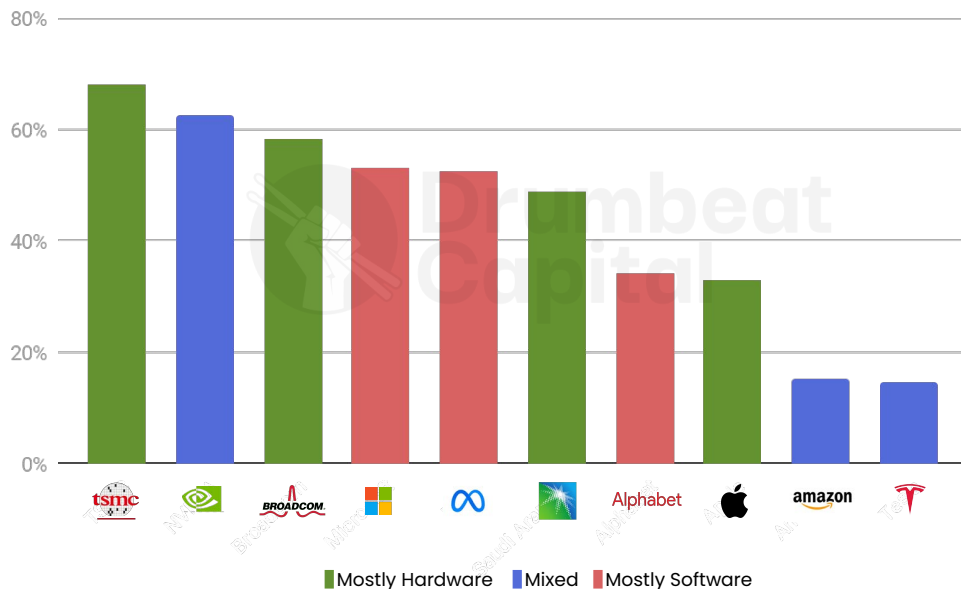


SaaS Capital Index (SCI) performance



Deep Tech infrastructure platforms have similar or better margins than SaaS

10 largest companies by market cap ranked by EBITDA %



The most profitable large-cap companies are not purely software businesses; many combine hardware, software, and infrastructure. What drives sustained high margins is ownership of a platform or critical ecosystem—not the absence of hardware. Several hardware-centric companies generate margins that rival or exceed leading software firms.

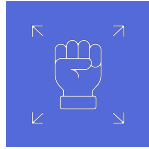
01



Financial argument

Deep Tech has always been the engine behind venture's biggest outcomes

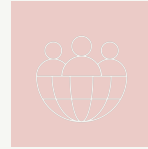
02



Power argument

Deep Tech secures geopolitical soft and hard power

03



Societal argument

Deep Tech has helped solve some of humanity's greatest challenges

Deep Tech secures geopolitical soft and hard power

Every dominant global power has led 3+ Deep Tech domains simultaneously. The U.S. held all 5-6 from 1991–2010, the most complete technological dominance in history. The current era is the first since 1914 where 3+ domains are actively contested.

	1870–1914 Industrial age	1914–1945 World wars	1945–1970 Cold war phase I	1970–1991 Cold war phase II	1991–2010 Unipolar	2010–today Multipolar
Materials & chemicals	 Germany BASF, Bayer, Haber	 Germany IG Farben, synth fuel	 U.S. Dupont, Dow, polymers	 U.S. Advanced composites	 U.S. Nanomaterials	 China Rare earths, batteries
Energy	 UK Coal, steam empire	 U.S. Oil, Standard Oil	 U.S. / USSR Nuclear fission	 U.S. LNG, oil majors	 U.S. Shale revolution	 China Clean Energy
Aerospace & space	 France Early aviation	 Germany V-2, jet engines	 U.S. / USSR Apollo, Sputnik	 U.S. Shuttle, GPS, SR-71	 U.S. ISS, Mars rovers	 U.S. SpaceX, Starlink
Semiconductors & compute	—	 UK Colossus, Turing	 U.S. Fairchild, Intel	 Japan / U.S. DRAM wars	 U.S. / Taiwan Fabless + TSMC	 U.S. / Taiwan / EU NVIDIA, TSMC, ASML
AI & software	—	—	 U.S. DARPA, early AI	 U.S. Expert systems	 U.S. Google, cloud	 U.S. / China AI models
Defense systems	 UK Royal Navy, Maxim	 U.S. Manhattan Project	 U.S. / USSR ICBMs, MAD	 U.S. Stealth, precision	 U.S. F-22, drones, cyber	 U.S. F-35, autonomous
Domains led →	Europe 4	U.S. 2 · Europe 3	U.S. 6 (shared 3)	U.S. 6 (shared 1)	U.S. 6	U.S. 3 · China 3 (shared 1)

Current examples highlight the importance of winning strategic technologies



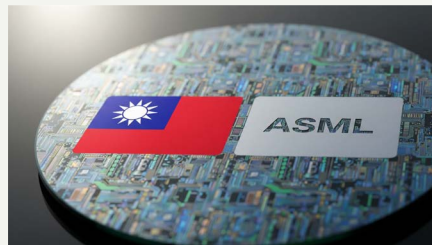
SPACE DOMINANCE

SpaceX catapulted the U.S. to clear leadership in orbital access – 80%+ of total mass **launched to orbit by the U.S.**



ENERGY SUPPLY CHAIN

China controls 80% of the global battery market and 90% of rare earth refinery.



SILICON CHOKE POINTS

Over 90% of the world's most advanced chips are manufactured in Taiwan & 100% of the EUV machines are produced by ASML.

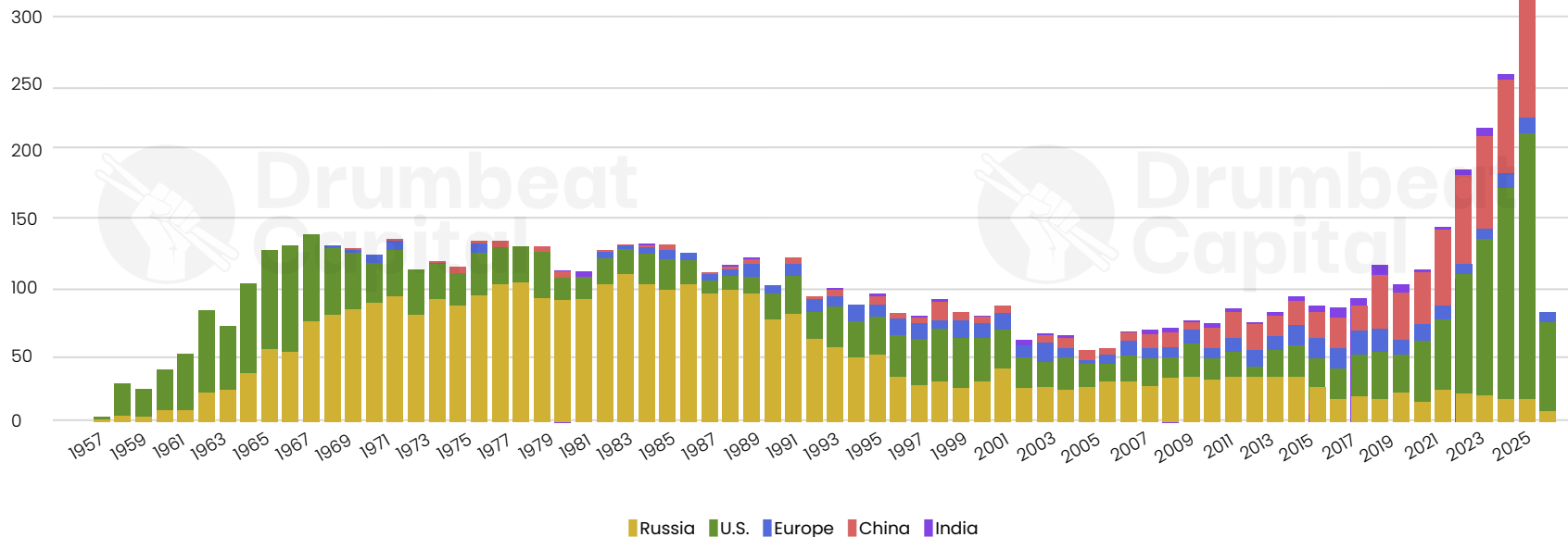


AI INFRASTRUCTURE

The U.S. leads in the compute capacity essential for the AI era – around 90% of compute capacity in H100.

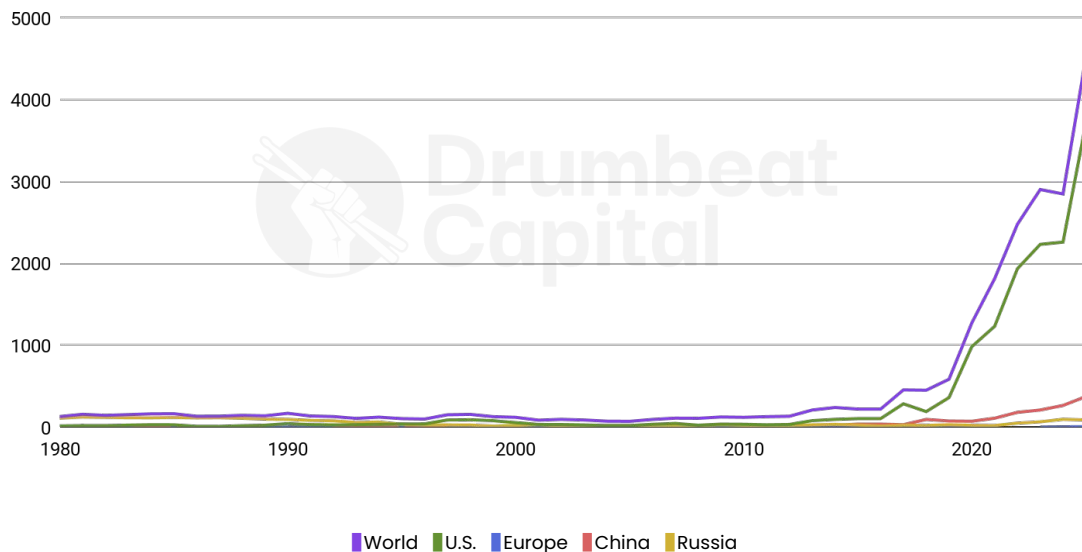
Who controls access to space shapes the balance of power; The U.S. seized the lead

Orbital launches by year and country



Launch leadership translates into geopolitical influence

Annual number of objects launched into space



The U.S. controls 80%+ of all objects launched into space. Satellite networks provide real-time intelligence, secure communications, and battlefield awareness; for example, Starlink proved critical to Ukrainian military and civilian communications during the Russia–Ukraine war.

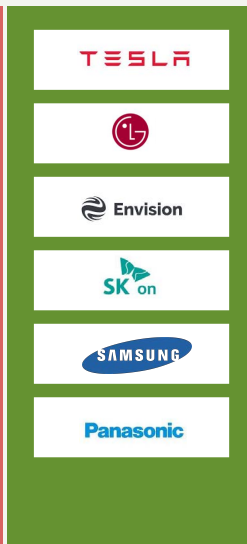
China is projected to hold nearly 70% of global battery capacity by 2030

Top 6 countries by Lithium-Ion Battery Capacity by 2030

CHINA 6,268 GIGAWATT-HOURS (GWh)



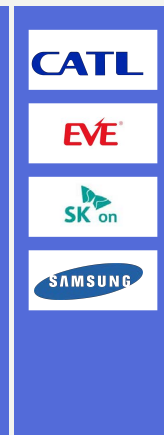
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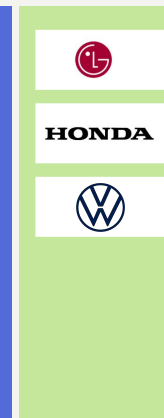
GERMANY 262



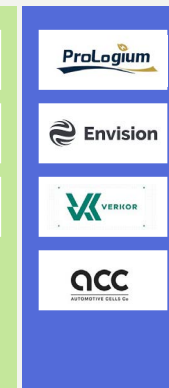
HUNGARY 210



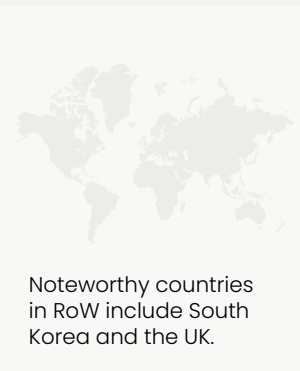
CANADA 204



FRANCE 162

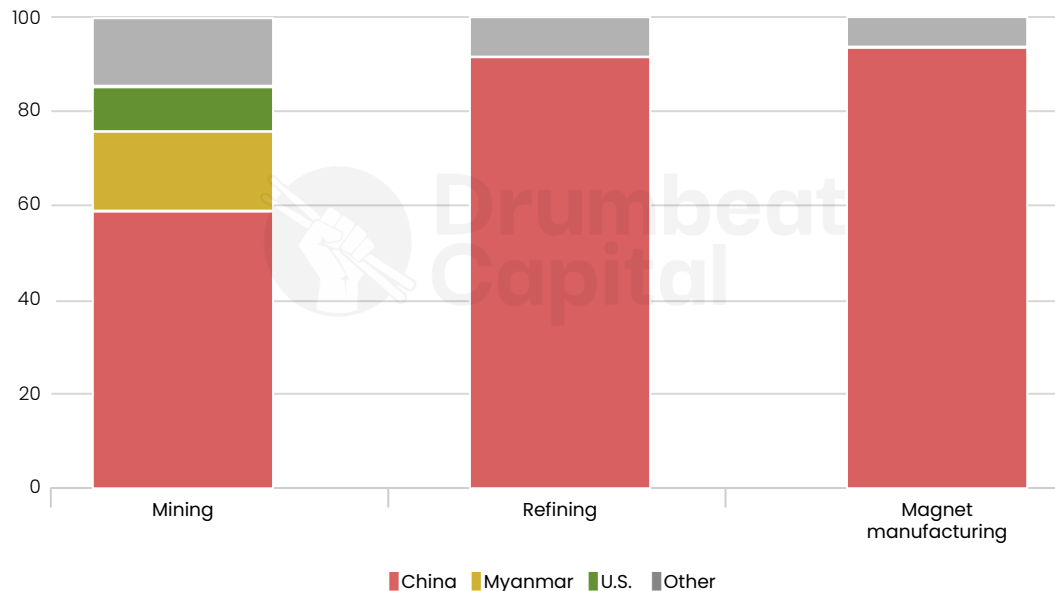


REST OF WORLD 947



China dominates rare-earths; Deep Tech is required to regain supply chain control

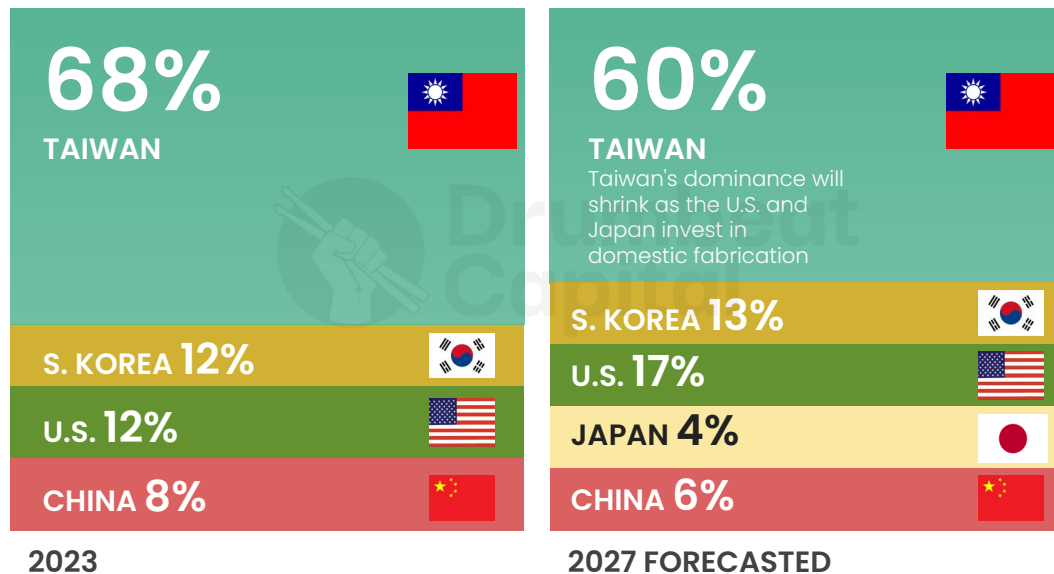
Rare earths & permanent magnet production, 2024



China controls the vast majority of rare-earth refining and permanent magnet production, creating a critical supply-chain chokehold. These magnets are indispensable for EVs, aircraft, drones, wind turbines, industrial robots, radar systems, missiles, and satellites. Regaining strategic autonomy will require Deep Tech innovation across the stack — from next-generation mining and refining technologies to alternative materials and breakthrough designs that reduce dependence on concentrated supply chains.

Leadership isn't just about chip design but about owning the manufacturing tech

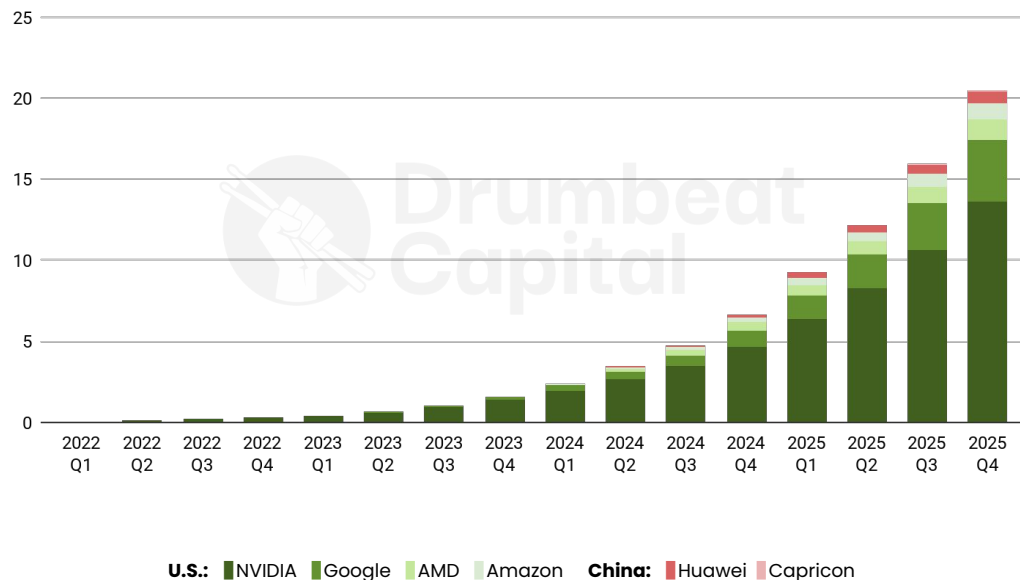
Share of advanced foundry capacity for semiconductors



Taiwan produces most of the world's advanced semiconductors, creating a major geopolitical vulnerability as China pushes for reunification. The dependence is even greater in manufacturing equipment: every leading-edge chip relies on EUV lithography machines made by a single company, ASML. Reducing these chokeholds will require Deep Tech breakthroughs in lithography, metrology, deposition, and next-generation semiconductor manufacturing.

The U.S. dominates in AI compute capacity

AI chip sales – Share of cumulative compute capacity (M H100)



U.S. companies dominate AI chip sales with over 90% of cumulative AI compute capacity. This concentration translates directly into geopolitical leverage, as recent export controls on advanced AI chips to China have demonstrated. In the AI race, owning the chips means controlling the compute that powers models, applications, and future innovation. Staying ahead will require Deep Tech breakthroughs in next-generation computing from optical and quantum computing to novel chip architectures that move beyond the limits of the traditional von Neumann model.

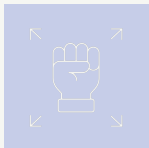
01



Financial argument

Deep Tech has always been the engine behind venture's biggest outcomes

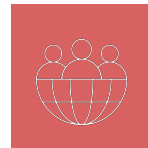
02



Power argument

Deep Tech secures geopolitical soft and hard power

03



Societal argument

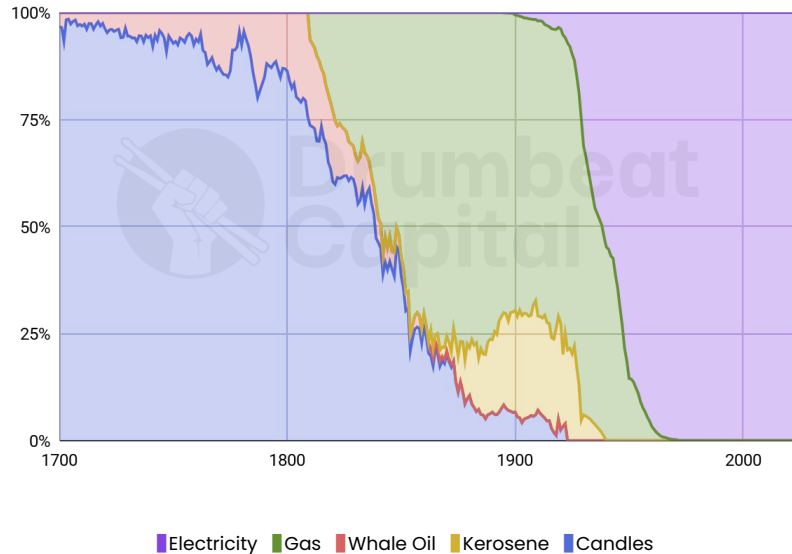
Deep Tech has helped solve some of humanity's greatest challenges

Deep Tech unlocks societal change

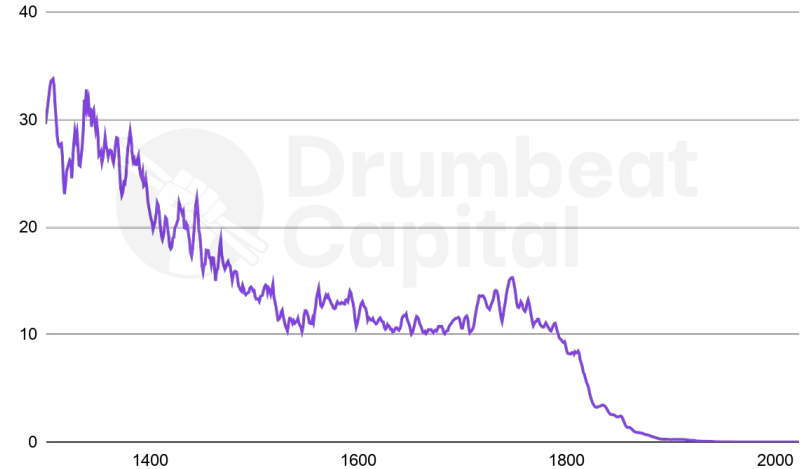
Technology	Scientific Domain	Societal Shift
 Light bulb	Material Science	Temporal Freedom: Created the 24/7 industrial world.
 Haber-Bosch	Chemical Physics	Demographic Expansion: Enabled a 4x population surge.
 Internal Combustion Engine	Thermodynamics	Geospatial Compression: Made global travel/trade a baseline.
 Transistor	Quantum Mechanics	Cognitive Scaling: Automated intelligence and data.

The light-bulb has decoupled human productivity from the solar cycle

Lighting sources in the UK, 1700–2020

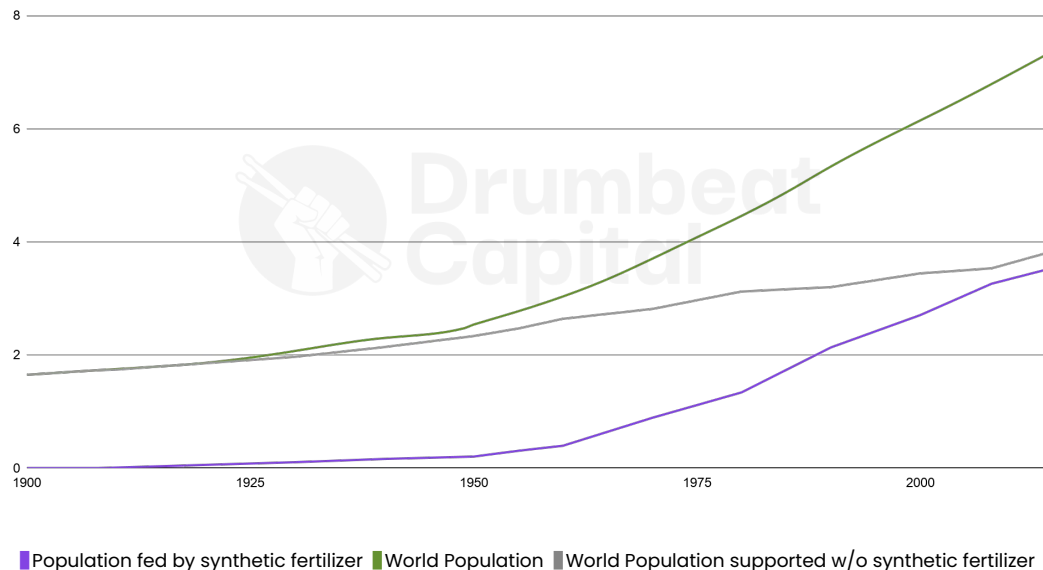


Price for lighting in the UK, per million lumen-hours in k£



Haber-Bosch enabled the largest expansion of human prosperity ever recorded

World population with and without synthetic nitrogen fertilizer



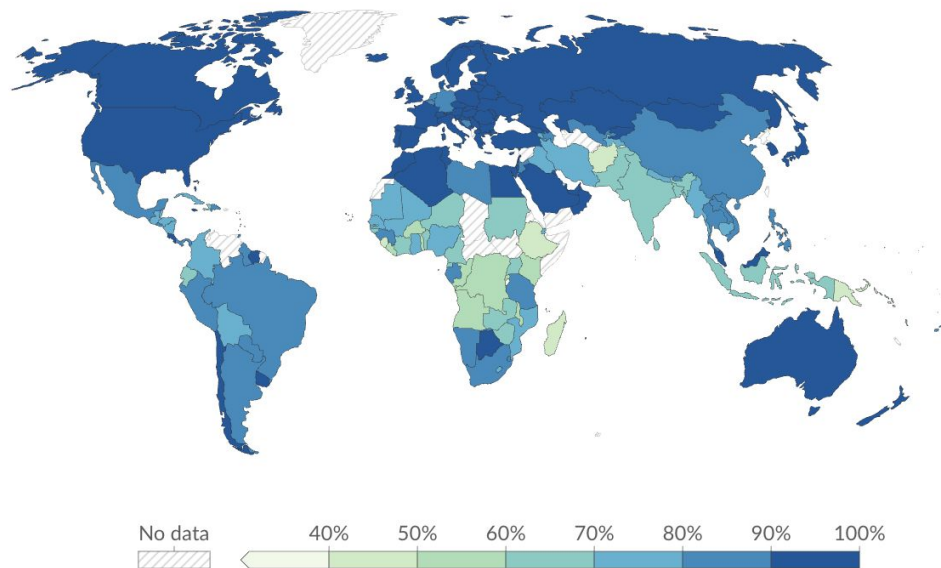
The Haber-Bosch process is one of the most important Deep Tech breakthroughs in human history. By enabling the large-scale production of synthetic nitrogen fertilizer, it dramatically increased agricultural yields and made it possible to feed billions of people. The resulting population growth expanded the global workforce and consumer base, becoming a powerful driver of economic growth throughout the 20th century.

The internal combustion engine is the invisible infrastructure that powers the global economy across most sectors

Sector	ICE Type	Role
 Road Transport	Spark-ignition (Petrol) & Diesel	Cars, trucks, buses. The backbone of "last-mile" and long-haul logistics.
 Maritime	Massive Two-Stroke Diesels	Powering container ships. 90% of global trade is moved by ships using ICEs the size of houses.
 Aviation	Turbofans / Turboprops	While technically "gas turbines," they are internal combustion engines. They enabled global tourism and high-speed trade.
 Agriculture	Heavy-duty Diesel	Tractors and Harvesters. This is where the ICE meets Haber-Bosch—one creates the fertilizer, the other mechanizes the planting/reaping.
 Off-Grid Power	Portable Generators	Providing electricity to hospitals and disaster zones where the grid fails.

The invention of the transistor underpinned the digital revolution

Share of the population that owns a mobile phone, 2024



The mobile phone is a powerful example of Deep Tech transforming society. Built on breakthroughs in radio engineering, semiconductors, batteries, telecommunications networks, and software, it evolved from bulky analog devices in the 1980s into today's smartphones – pocket-sized computers connected to a global digital infrastructure. It solved one of humanity's oldest challenges: communication across distance. It gave billions of people access to information, finance, healthcare, education, and markets. Today, more than 5.7 billion people use a mobile phone, making it one of the most impactful technological innovations ever created.

1.3

Why *Now*?

*The **challenges of our generation** require
fundamentally **new science & engineering**:*

*Slowing economic growth, aging populations,
strained healthcare systems, rising energy demand,
deteriorating infrastructure, and the battle for
sovereignty in a multipolar world.*

***Solving** these challenges will **require Deep Tech**.
Governments have woken up to this reality and
are investing accordingly.*

Deep Tech will enable us to solve the biggest problems humanity faces today

01



Economic Growth

AI, robotics, and automation can reignite productivity growth when debt is high and demographics are working against us.

02



Resilience & Sovereignty

From cyber defense and autonomous systems to satellites and advanced materials, Deep Tech is becoming the foundation of national security.

03



Energy & Climate

The future, from AI to industry, runs on power; Deep Tech will determine if we can generate enough of it.

04



Societal

As populations age and birth rates fall, healthcare innovation and robotics can help sustain living standards.

Lior Susan

Founder and Managing Partner,
Eclipse



“We started Eclipse in 2015 to boost economic competitiveness, resiliency, and productivity by uniting our greatest strengths – innovation, advanced technology, and sophisticated talent – with our biggest markets: The physical industries. It was a necessary undertaking, as years of domestic industrial neglect (coupled with the rapidly improving Chinese innovation ecosystem) created a perfect storm to erode the West’s technological sovereignty, leaving the U.S. and Europe incredibly vulnerable.

An ecosystem approach to progress is the answer. This is how China advanced so far, so quickly: The country’s integrated model for economic growth was built on the strategic coordination of the public and private sectors, with government initiatives and business roadmaps developed in close alignment.

Today, Eclipse’s Deep Tech ecosystem is becoming equally deeply integrated. Guided by an “Operators with Capital” approach to investing and company building, the Eclipse – and other U.S. and European Deep Tech – ecosystems are becoming engines of economic transformation. They are also talent networks, R&D labs, production lines, customer acquisition channels, and government access points for people building ambitious companies in critical industries. Ecosystems are accelerants, enabling startups to move from blueprint to breakthrough to fully built products, manufactured at scale, faster than ever. **What once took decades takes years (or less).** What once took months now happens in weeks, days, or even hours.

Thriving Deep Tech ecosystems help ensure our security, resiliency, and prosperity.”

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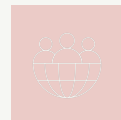
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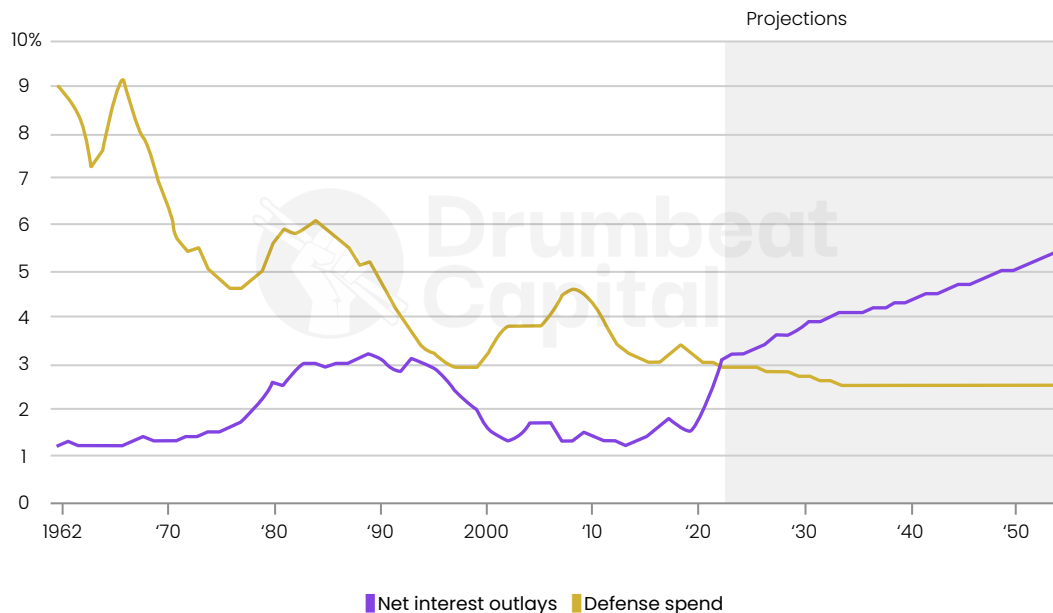


Societal

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Debt has historically been the ruin of great powers

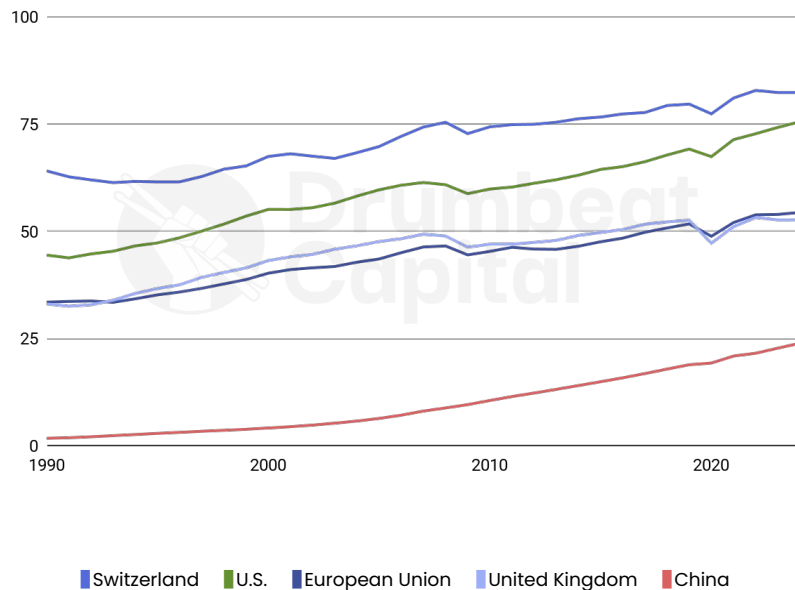
U.S. net interest payments and defense spending as % of GDP



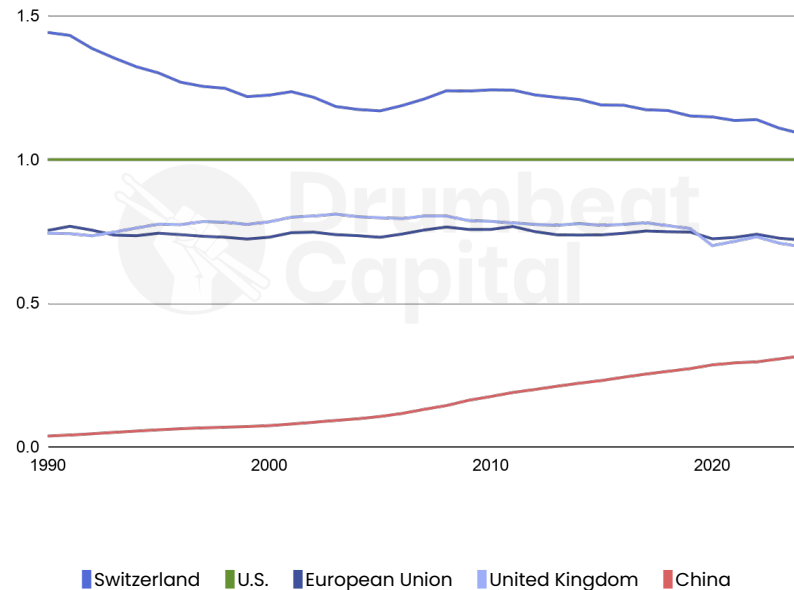
The U.S. now spends more on interest payments than for defense. Rising debt is increasingly funding consumption and asset inflation rather than productive investment, leaving critical infrastructure and industrial capacity underfunded. As interest costs absorb a growing share of public resources, governments have less room to invest in long-term growth drivers. To break this cycle, economies must generate a step-change in productivity. AI, robotics, advanced manufacturing, and other Deep Tech innovations can help rebuild productive capacity, accelerate growth, and create the economic surplus needed to sustainably manage debt burdens.

Per capita GDP remains stable in the west; China is ascending rapidly

GDP per capita PPP (constant 2021) in \$k

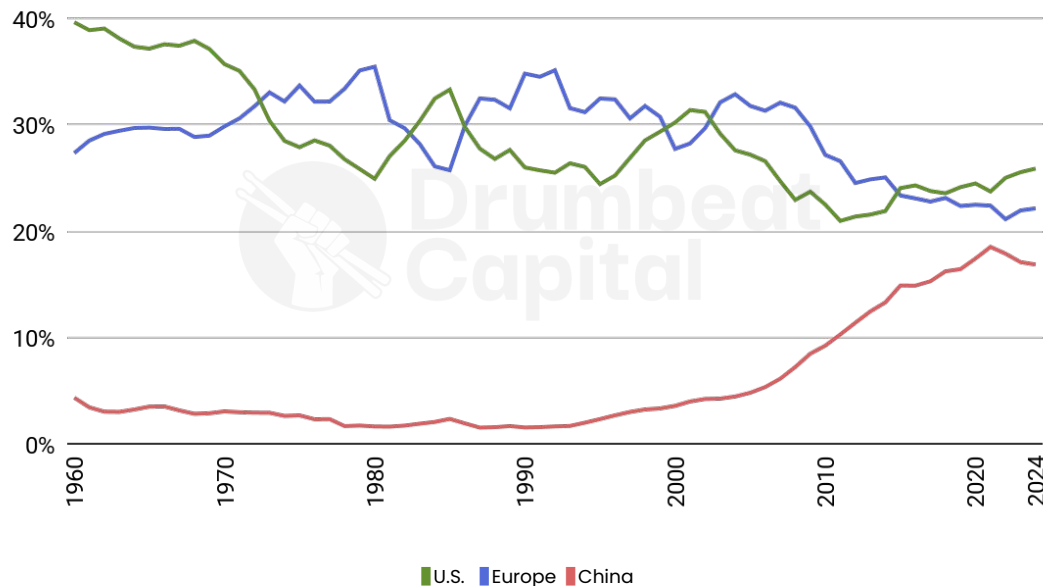


GDP per capita PPP indexed U.S. = 100



Europe is losing its weight on the global stage; China's rise has faltered

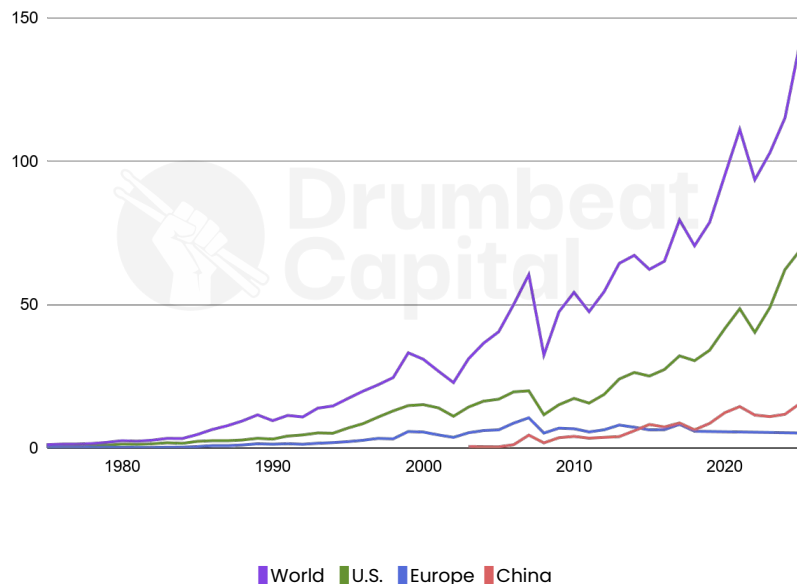
Share of World GDP (current \$USD)



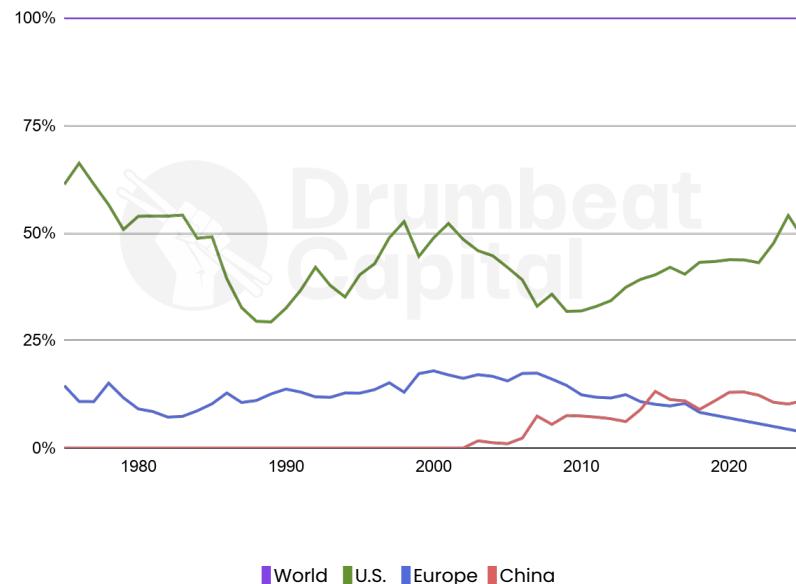
The U.S. has had its longest period of global GDP dominance since the 1970s due in large part to its software dominance. Europe's shrinking share of global GDP means less influence over global rules, trade, and geopolitics. Economic strength underpins strategic relevance. Historically, Europe earned that strength through Deep Tech, from the steam engine and chemicals to automotive and industrial innovation. China has leveraged its manufacturing strength to vie for top position. To remain competitive in the 21st century, each power must attempt to lead in the next wave of foundational technologies.

The U.S. stock market dominates public equities; Europe remains heavily private

Market cap of listed companies (current USD\$, \$T)

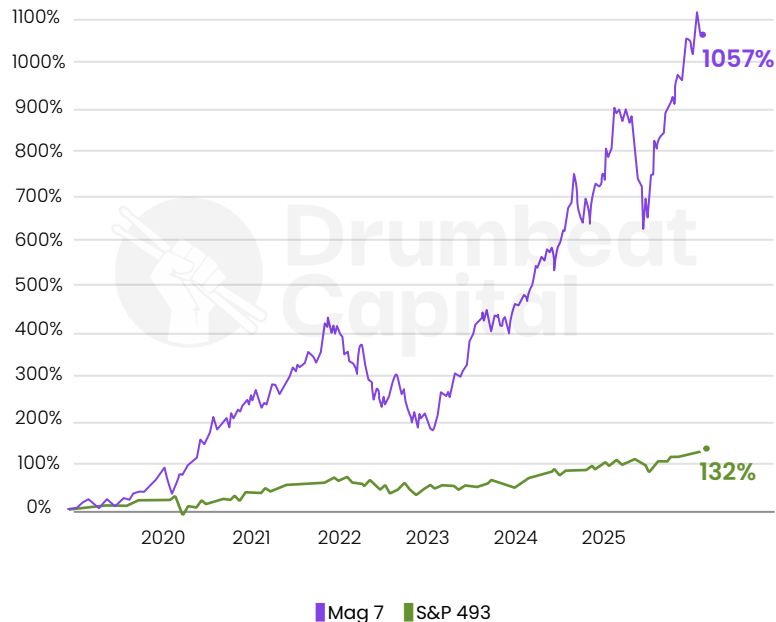


Share of World Market Capitalization of listed companies

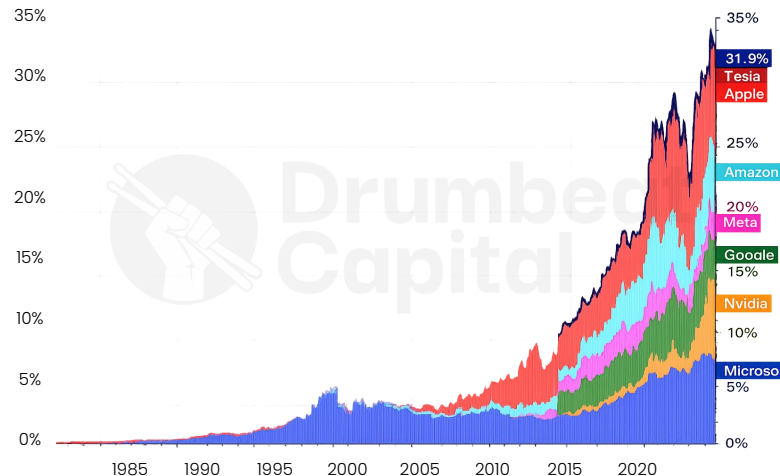


Most growth is driven by the Mag 7 raising concerns of high concentration risk

Stock market performance since Jan 2019



Mag 7 Concentration in S&P 500



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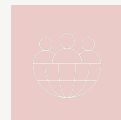
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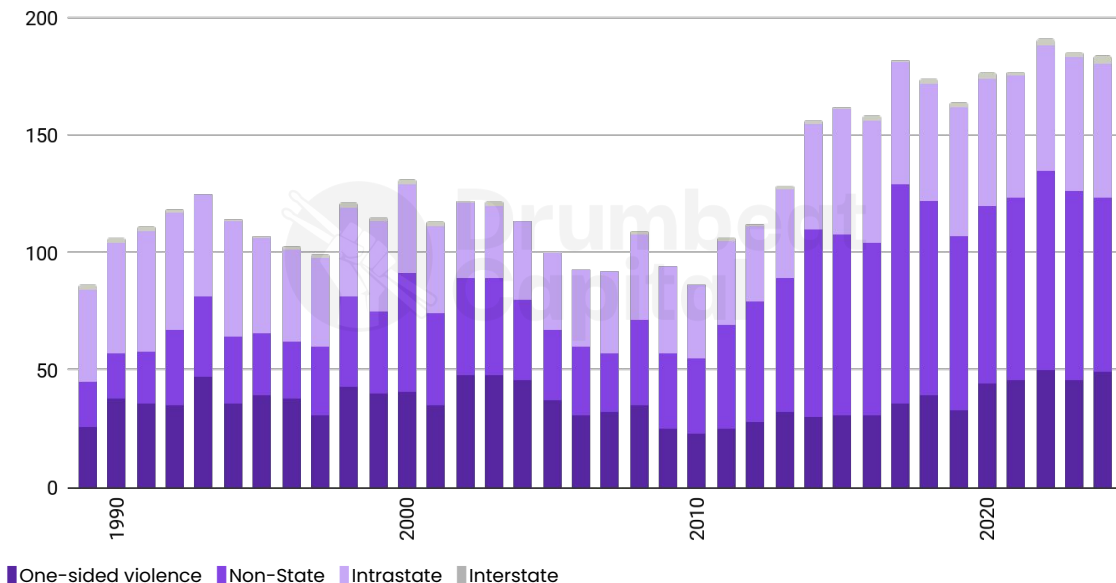


Societal

As populations age and birth rates fall, healthcare innovation and robotics can help sustain living standards.

Global conflict is rising and Deep Tech is increasingly determining the edge

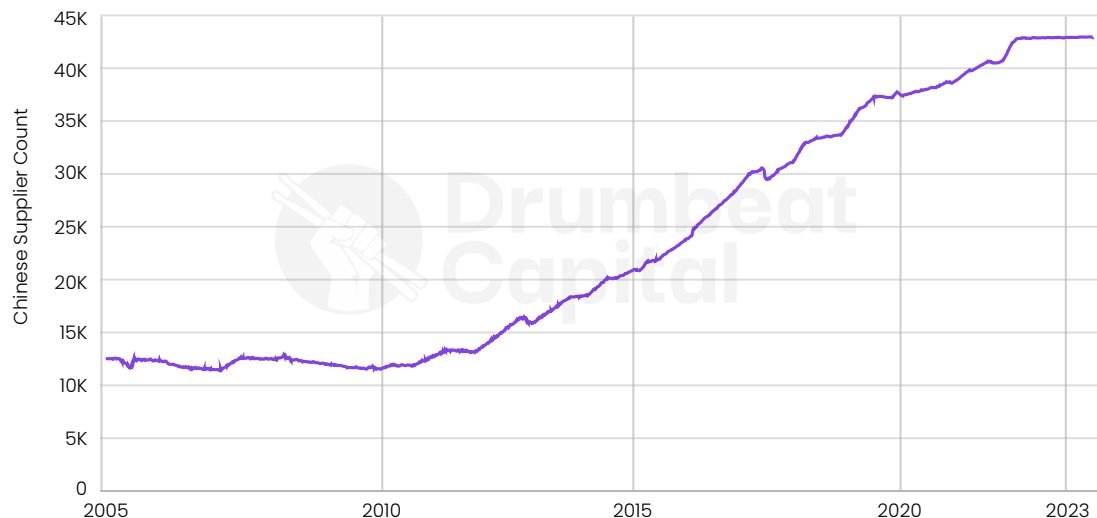
Number of armed conflicts in the World



As the number of armed conflicts reaches historic highs, technology is becoming the decisive factor in military power. Autonomous systems from drones to AI-enabled targeting networks are increasingly replacing traditional manned platforms and dominating modern battlefields. Low-cost, attritable assets have fundamentally changed the economics of warfare. This shift is exposing the limitations of legacy weapon systems. Platforms designed for previous generations of warfare are increasingly vulnerable to autonomous attacks, electronic warfare, and ubiquitous battlefield surveillance.

U.S. supply chain dependencies are increasing

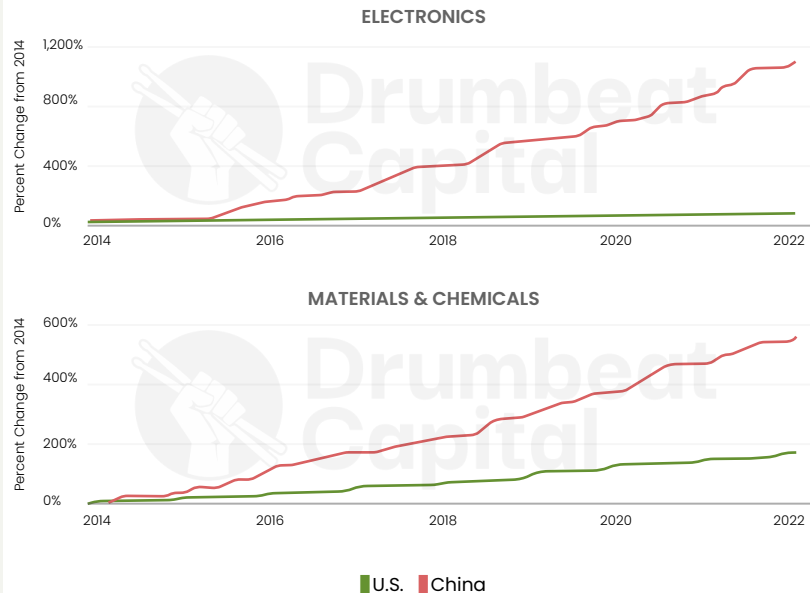
Chinese Suppliers in U.S. Supply Chains, 2005–2023



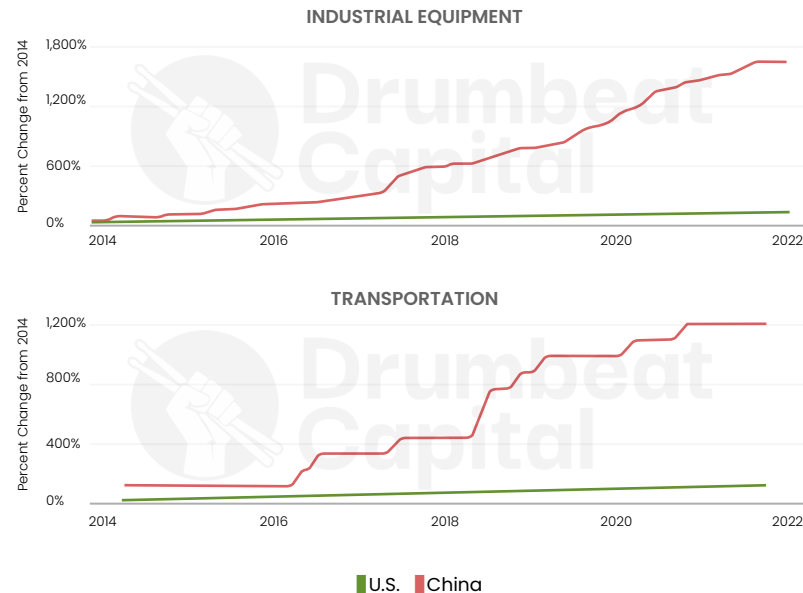
U.S. dependence on Chinese supply chains has grown steadily across strategic sectors—including electronics, transport, industrial equipment, and advanced materials. These inputs power not only weapons systems, but also semiconductors, batteries, energy infrastructure, and other critical technologies, making supply chain resilience a matter of national security.

Dependency on China is increasing across a wide range of strategic industries

Percent change in Supply Chain Dependencies, 2014–2022

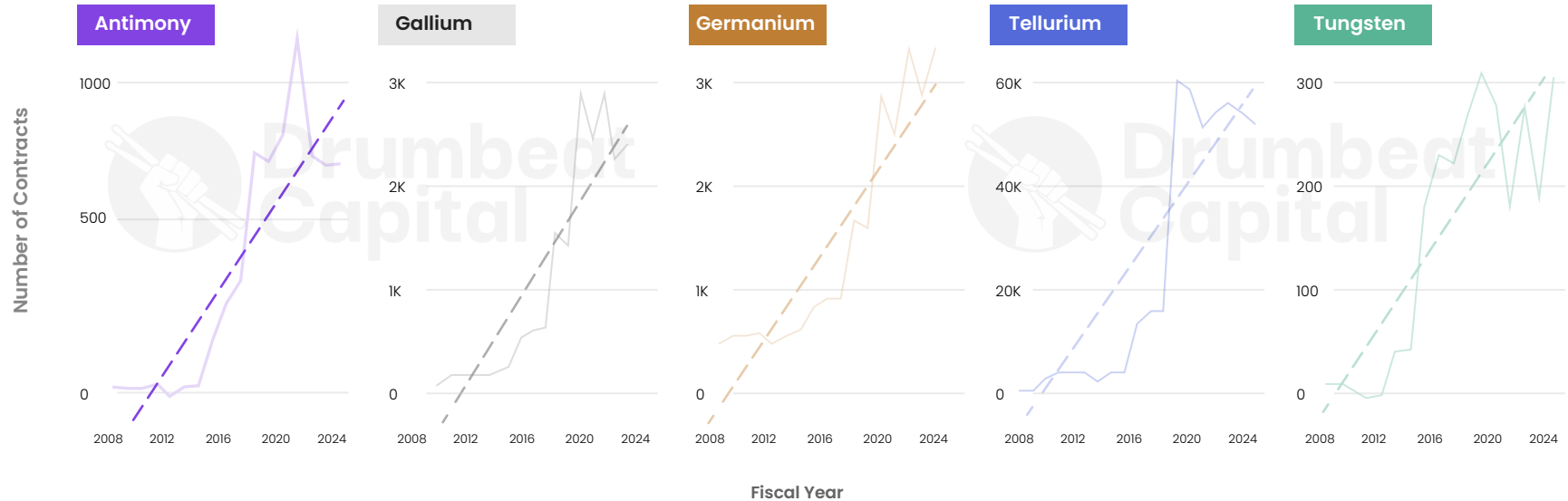


Percent change in Supply Chain Dependencies, 2014–2022



The U.S. Department of Defense demand for critical minerals is increasing

Annual Contract Trends of U.S. DoD by Critical mineral, FY08-FY24



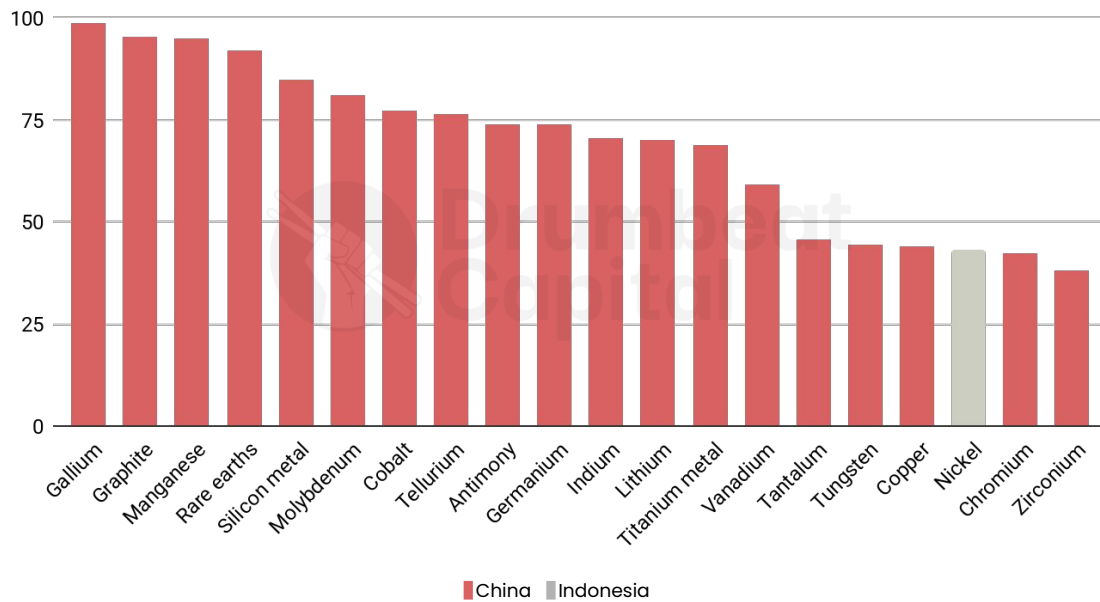
More than 1,900 DoD weapon systems contain these critical minerals

Overview of DoD weapon systems containing critical minerals

Service	Parts Containing Minerals	Weapons Systems Impacted	Percentage of Weapon Systems Impacted
 Navy	51,468	739	91.6%
 Air Force	29,769	302	85.1%
 Army	17,904	575	70.3%
 Marine Corps	5,802	292	61.7%
 All Services	80,006	1,908	77.7%

China is the leading refining country for 19 out of 20 important minerals

Share of top refining country for 20 energy-related minerals, 2025



While many of these materials are critical for defense platforms and weapons systems, their importance extends far beyond the military domain. The same minerals are also fundamental to electric vehicles, data centers, consumer electronics, energy storage, and digital infrastructure. Resilience and sovereignty spans far wider than just defense.

Deep Tech plays a critical role in strengthening resilience by enabling alternative materials, more efficient extraction and refining processes, advanced recycling, AI-driven supply chain monitoring, and next-generation energy systems.

Trillions of \$ are being allocated to strategic technologies that require Deep Tech



J. TRUMP

The WHITE HOUSE

MAJOR INVESTMENT ANNOUNCEMENTS

Made possible by President Trump's leadership — The U.S. has seen a surge of private and foreign investment that are fueling job growth, innovation, and opportunity across every corner of the country.

Total U.S. and Foreign Investments: **\$9.6 Trillion**

Company ▲	Investment ▼	Sector ▲	Investment Focus ▲
UAE (Foreign Investment)	\$14 Trillion	Manufacturing & Industry	Technology, aerospace and energy
Qatar (Foreign Investment)	\$12 Trillion	Manufacturing & Industry	Technology and manufacturing
Japan (Foreign Investment)	\$1 Trillion	Manufacturing & Industry	Auto plants and U.S. Steel
Meta	\$600 Billion	Technology & AI	AI infrastructure and workforce expansion
Apple	\$600 Billion	Technology & AI	Manufacturing and training
Saudi Arabia (Foreign Investment)	\$600 Billion	Manufacturing & Industry	Technology and manufacturing
EU Firms (Trade Deal)	\$600 Billion	Various sectors	General investment
Softbank, OpenAI, and Oracle	\$500 Billion	Technology & AI	AI infrastructure (Project Stargate)
NVIDIA	\$500 Billion	Technology & AI	AI infrastructure and supercomputers
India (Foreign Investment)	\$500 Billion	Manufacturing & Industry	Mutual trade expansion
South Korea (Foreign Investment)	\$450 Billion	Energy & Environment	U.S. energy products



EU Sets Out \$200 Billion AI Spending Plan in Bid to Catch Up With U.S., China

Germany Set for Trillion-Euro Defense and Infrastructure Splurge

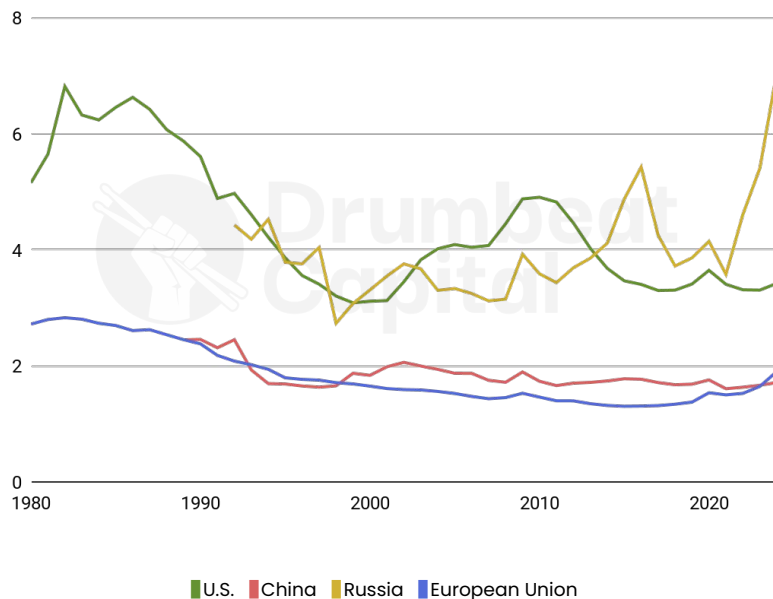
U.K. Approves \$37 Billion in Funding for Energy Grid

France Taps Nuclear Power in Race for AI Supremacy

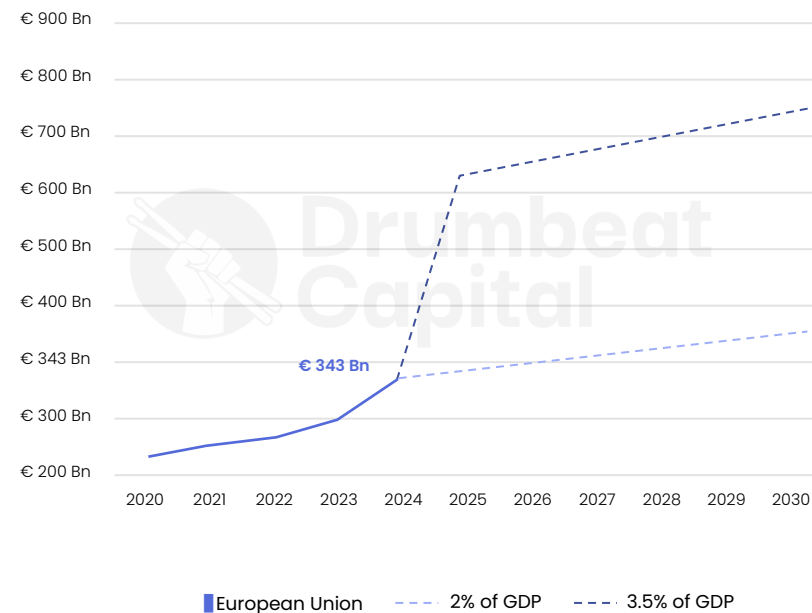
Macron signals investments of 109 billion euros in French AI by private sector

Europe's defense underinvestment is ending

Military spending as % of GDP



European Defense Spending forecasted



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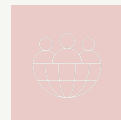
03



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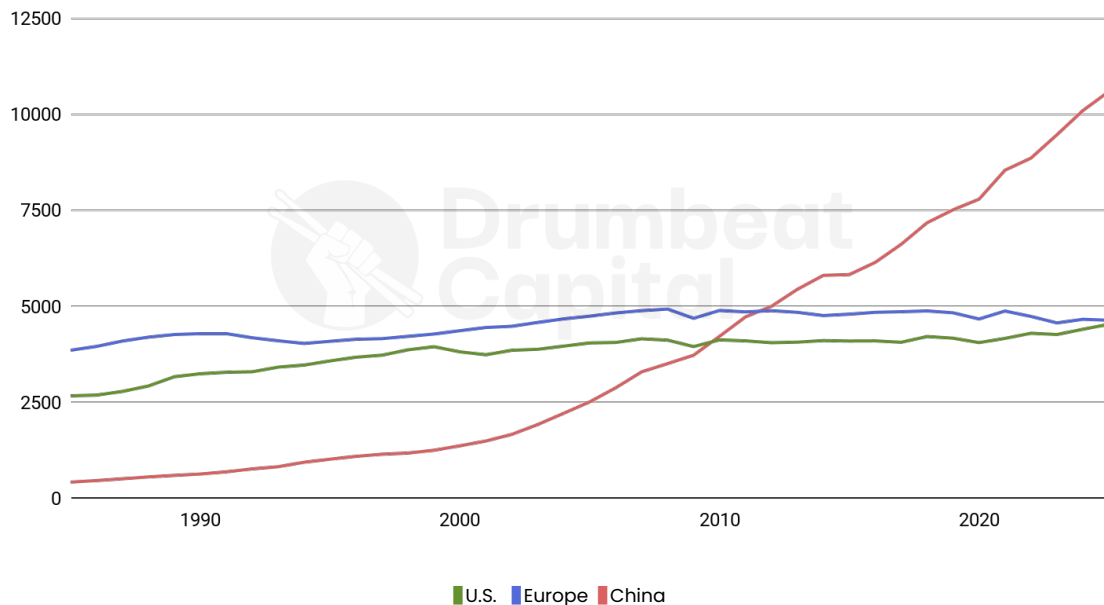


Societal

As populations age and birth rates fall, healthcare innovation and robotics can help sustain living standards.

China vastly outpaces other regions in terms of absolute energy production

Electricity generation by country in Terawatt-hours



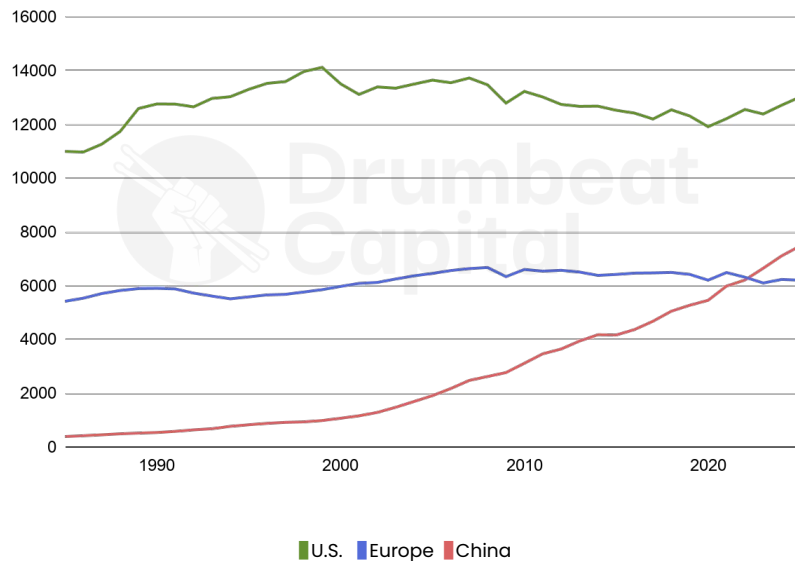
China's electricity generation has more than tripled since 2010, rising from roughly 4,000 TWh to over 10,000 TWh, while U.S. and European output has remained largely flat.

Much of China's new capacity comes from solar and wind, where it leads the world in annual installations, alongside continued investments in hydro, nuclear, and coal to ensure reliability.

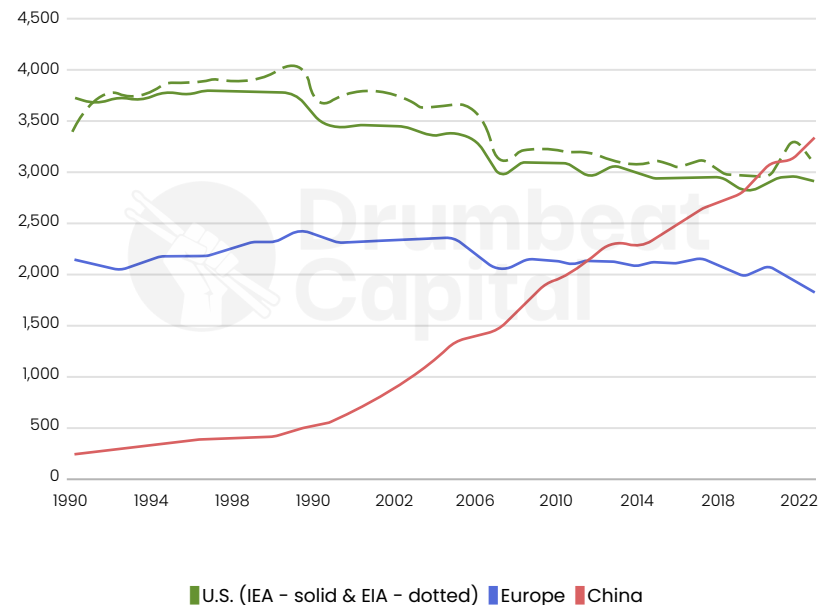
This energy expansion is becoming a strategic advantage: abundant electricity underpins industrial production, AI datacenters, electrification, and economic growth.

The U.S. still generates more power per capita, but China uses more for industry

Per capita electricity generation in kWh

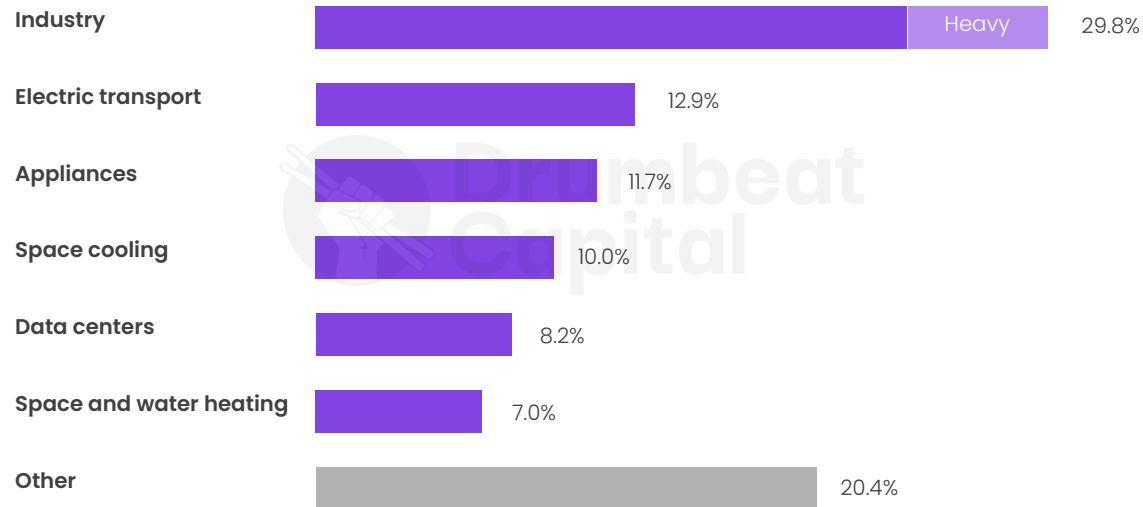


Industrial electricity use per capita in kWh



The surge in electricity demand is about far more than AI and data centers

Share of increase in global electricity demand by sector, 2024–30

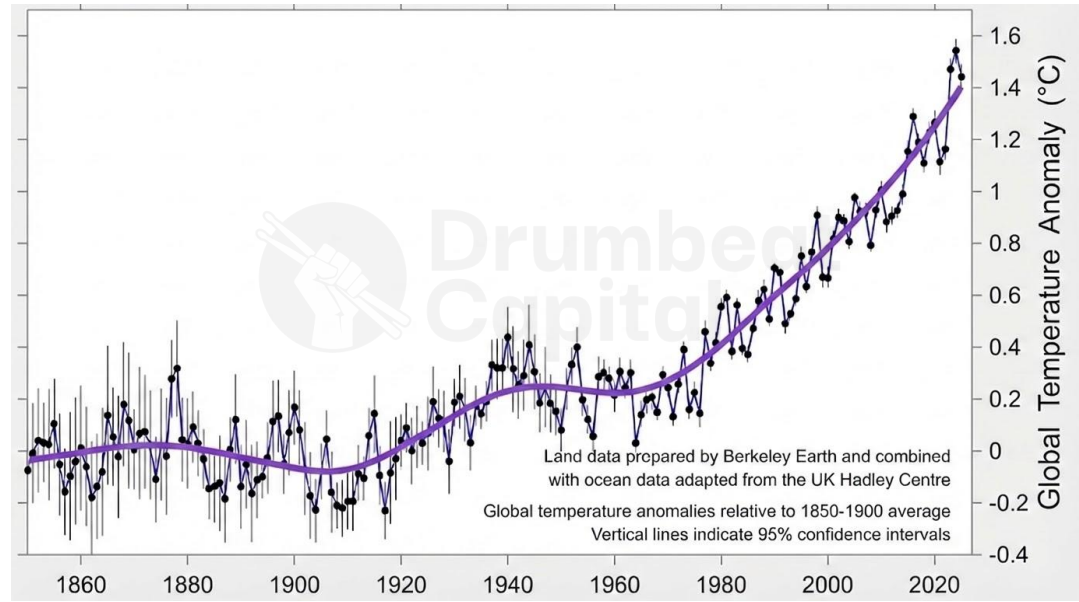


Energy abundance is becoming a prerequisite for economic growth, industrial competitiveness, and technological leadership. Meeting this demand will require Deep Tech breakthroughs across the energy stack – from SMRs and advanced nuclear to enhanced geothermal, long-duration storage, next-generation grids, and power electronics. Nations that can generate, store, and distribute abundant low-cost energy will have a decisive advantage in the industries of the future.

Climate change is accelerating while simultaneously posing new challenges

Rising global temperatures are amplifying extreme weather, destabilizing food and water systems, and pushing infrastructure beyond its limits — creating cascading risks across economies and societies. We have a direct tension between a need for energy (to increase GDP and quality of life) and the need to address climate change (altering livability of Earth). The solution is faster, cheaper, domestic energy that doesn't adversely affect the environment. Electrification using modern technologies are as much about sovereignty as they are about reducing climate change. Fossil fuels require massive global trade networks. Renewables can be totally internal at a national level.

Global Average Temperature 1850 – 2025



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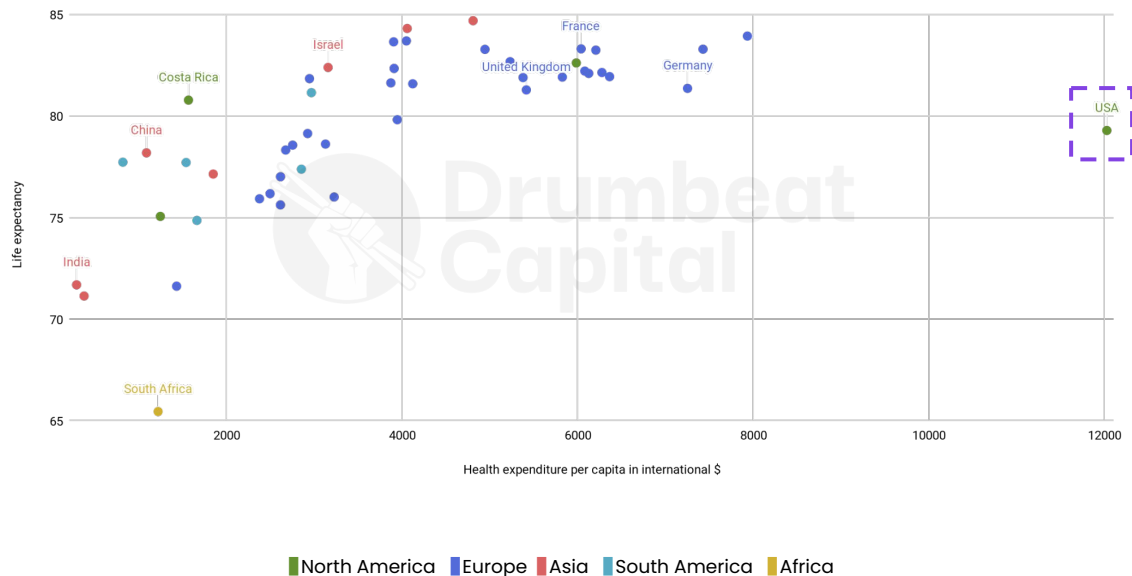


Societal

As populations age and birth rates fall, healthcare innovation and robotics can help sustain living standards.

The U.S. spends more on healthcare than any country in the world, yet life expectancy trails

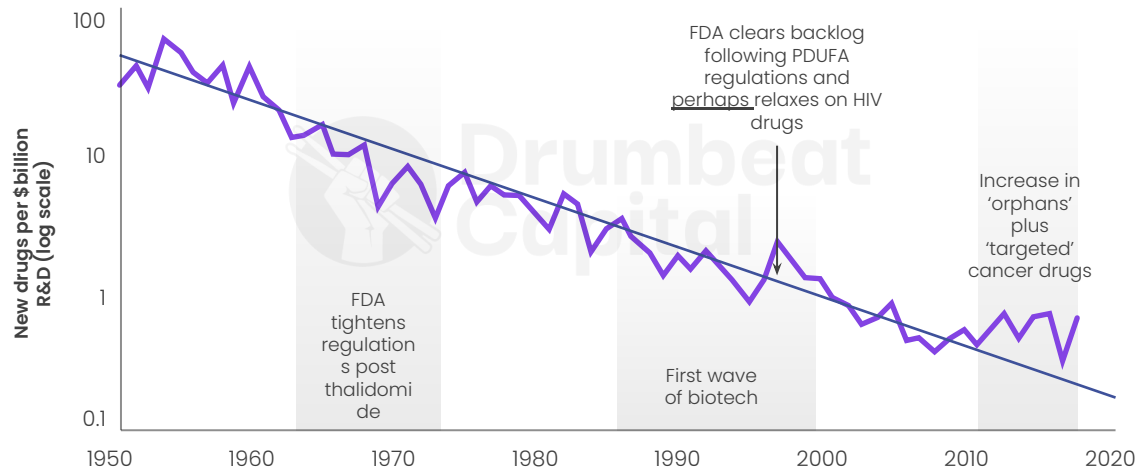
Life expectancy vs. health spending, 2023



The U.S. spends nearly 6× more per person on healthcare than Costa Rica, yet achieves a lower life expectancy. While structural and political factors play a big role, innovation continues to enable the transition from reactive to preventative medicine. Deep Tech, from AI-powered diagnostics and drug discovery to precision medicine and medical robotics, offers a path to dramatically better outcomes at lower cost.

The cost per approved drug has risen ~100x since the 1950s

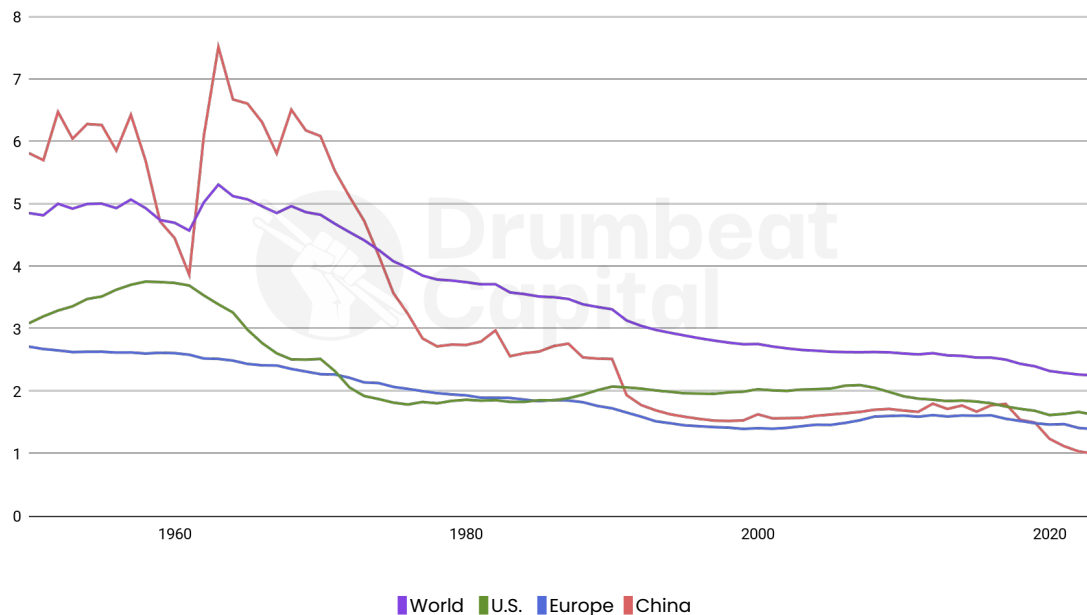
Eroom's law: New drugs approved by the FDA per \$Bn R&D spend



Eroom's Law describes the steady decline in drug-discovery productivity: despite more spending, fewer drugs are approved per R&D dollar. Today, developing a single new drug typically costs \$2–3 billion and takes 10–15 years. Part of the challenge is regulatory complexity, but much of the obvious chemical space has already been explored. AI could change this by searching vast unexplored molecular spaces and predicting promising drug candidates far faster than traditional methods. If biology is computational, AI could turn drug discovery from trial-and-error into prediction.

Fertility rates are converging globally below the replacement level of 2.1

Total fertility rate: Births per woman

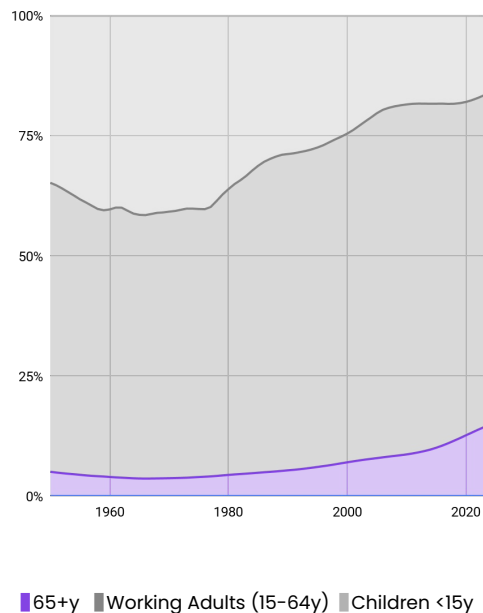


Falling fertility rates are reshaping the global economy. For most of modern economic history, growth was fueled by more people. That demographic engine is now stalling. As populations age and labor forces shrink, long-term economic growth increasingly depends on productivity gains rather than demographic expansion.

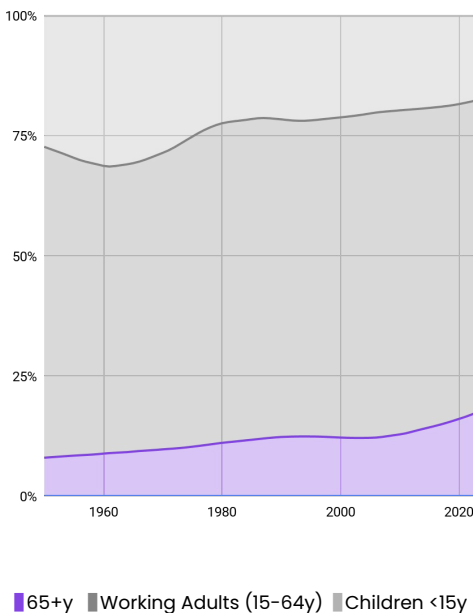
Deep Tech can help offset demographic decline through robotics & automation while advances in reproductive medicine, fertility treatments, and women's health may help address some of the biological barriers to family formation.

Workforces are aging at an accelerating rate

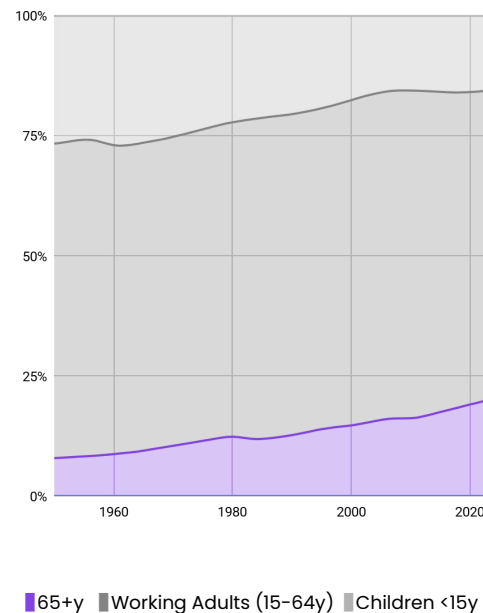
China: Population Distribution



U.S.: Population Distribution

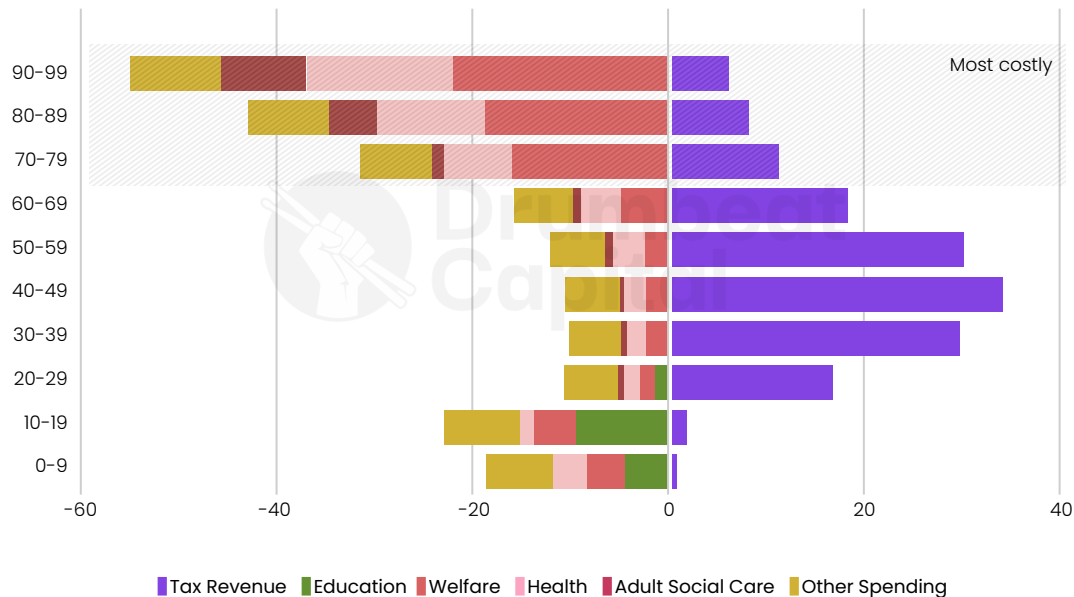


Europe: Population Distribution



Aging societies are putting additional stress on public finances

UK: Government spending profile by age group, 2028-9 (k GBP)



As populations age, governments face rising healthcare, pension, and care costs while the working-age tax base shrinks, creating growing pressure on public finances. Deep Technologies can help offset this challenge by boosting productivity, reducing service delivery costs, and extending healthy working lives.

1.4

Why *Transatlantic*?

To build a globally dominant Deep Tech company, you need 7 key resources

Talent

Research
(TRL 1-4)

Commercialization
(TRL 5-10)

Capital

Private
(Venture Capital)

Public
(Exit Markets)

Ecosystem Partners

Suppliers

**Industrialization
Partners**

Customers

Bridges are built between complimentary ecosystems to access all 7 resources



The modern **consumer electronics** industry relies on a bridge between the U.S.-based R&D, design, and software ecosystem paired with **Taiwanese** manufacturing expertise.

**FOXCONN****PEGATRON****wistron**

For **cybersecurity**, a bridge was established between the R&D ecosystem in **Israel** and the capital and customers in the U.S..

10/10 of the largest cybersecurity companies have major R&D centers in Israel while targeting the massive U.S. enterprise and government market.

Wiz, an Israeli-American company, was the largest venture backed startup acquisition of 2025 at ~\$32B.

**WIZ**

For **software**, a bridge was built between the incredibly deep and highly trained Software Engineering ecosystem in **India** and the U.S.

Over 70% of H-1B visas, which are frequently used to hire foreign talent for high-skill roles, go to Indian SW eng.

India's \$280B SW industry derives 57% of its total revenue from U.S. clientele.

2 of the 4 largest companies in the world, both American software companies, have Indian born CEOs.

**Microsoft**

44% of U.S. Unicorn Founders are from outside the U.S.

While Europe remains the dominant source for Unicorn Immigrant Founders, India and Israel bubble to the top.

Region	Percentage	Count
United States	56.4%	608
Europe	15.8%	170
India	8.3%	90
Israel	4.8%	52
Canada	3.9%	42
China	2.5%	27
ROW	8.3%	89

 India 90	 United Kingdom 31	 China 27	 Germany 18	 France 17													
 Israel 52	 Russia 14	 Belgium 9	 Netherlands 7	 New Zealand 6	 Denmark 5	 Italy 5	 Poland 5										
 Taiwan 12	 Brazil 9	 Romania 5	 Switzerland 4	 Japan 3	 Pakistan 3	 Sweden 3											
 Ukraine 12	 Iran 9	 South Africa 5	 Greece 2	 Iceland 2	 Turkey 2	 Uzbekistan 2	 North Macedonia 2										
 Canada 42	 Spain 9	 Argentina 5	 Lebanon 4	 Portugal 4	 Australia 8	 Austria 1	 Belgium 1	 Canada 1	 China 1	 Denmark 1	 France 1	 Germany 1	 Greece 1	 India 1	 Italy 1	 Japan 1	 Korea 1

*To Industrialize Scientific
Breakthroughs, Deep Tech
startups must utilize the bridge
between the **U.S.** and **Europe***

U.S. & Europe are the largest economies in the world

● U.S. & Europe are **50% of Global GDP**.

● **U.S. GDP: \$31T** (2.1% growth)

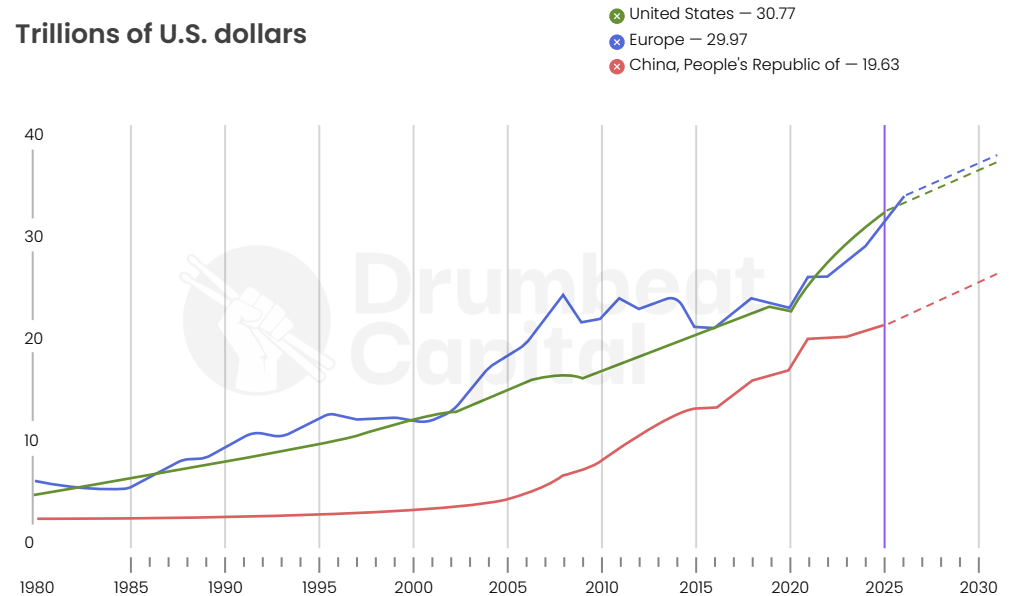
● **Europe GDP: \$27T** (1.3% growth) (ex. Russia)

● **China GDP: \$20T** (4.8% growth)

● **ROW: \$39T**

The U.S. and Europe form a **\$9.8 trillion transatlantic economy**, representing the largest and wealthiest market in the world.

Trillions of U.S. dollars



U.S. & Europe are the largest trading partners in the world

#1 in Goods Trade:

\$617B

U.S. goods exports to Europe

\$840B

European goods exports to the U.S.

1 in Services Trade:

\$489B

U.S. exports of digitally deliverable services to Europe

\$350B

European exports of digitally deliverable services to the U.S.

#1 Information Services Trade:

\$420B

Information services supplied in Europe by U.S. companies

\$148B

Information services supplied in the U.S. by European companies

Europe exports 36% more goods and the U.S. exports 38% more services, especially Information Services (2.8x).

U.S. & Europe are the 2nd and 3rd largest manufacturing economies in the world

1st

China Manufacturing: \$4.8T
(28% of GDP)

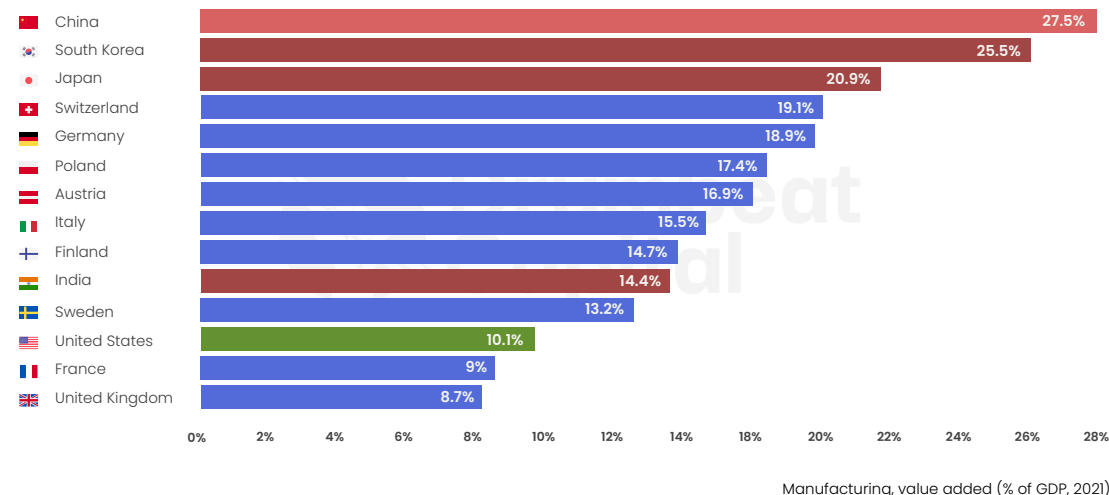
2nd

European Manufacturing: \$3.3T
(15% of GDP)

3rd

U.S. Manufacturing: \$3.0T
(10% of GDP)

U.S. Manufacturing as % of GDP Far Below Most Other Industrialized Countries



U.S. & European supply chains are deeply embedded in each other's markets

Intra-firm trade that stays within the same company, shows how deeply U.S. and European supply chains are embedded in each other's markets.

40%

of U.S. exports to Europe are intra-firm trade.

65%

of U.S. imports from Europe are intra-firm trade.

"In short, deep U.S. and European investment ties in each other's market are another conduit for trade. The synergistic relationship between trade and investment is a notable channel through which the two sides of the North Atlantic remain deeply intertwined and embedded in each other's markets. This is not likely to change any time soon, despite current transatlantic political turbulence, given that shareholders and stakeholders on both sides of the pond directly benefit from deep transatlantic integration."

U.S. & European companies make more money in each other's markets than they do in the entire rest of the world

U.S. companies in Europe and **European companies in the U.S.** are among the largest and most advanced economic forces in the world.

\$835B

Gross product (output) of U.S. company affiliates in Europe

4x

U.S. affiliate sales in Europe (\$3.9T): **4x greater** than U.S. exports to Europe (\$998B)

\$900B

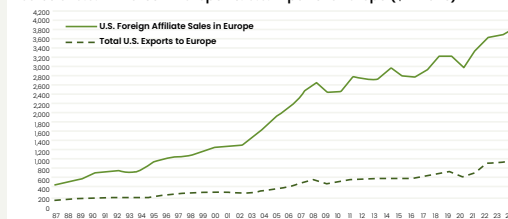
Gross product (output) of European company affiliates in the U.S.

3x

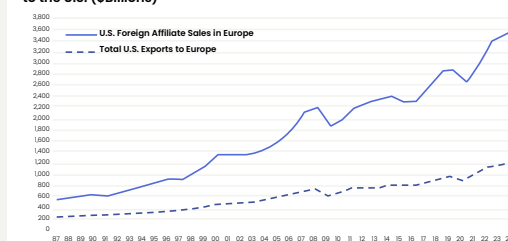
European affiliate sales in the U.S. (\$3.5T): **3x greater** than European exports to the U.S. (\$1.1T)

Affiliates contribute significantly more to sales than exports do.

Sales of U.S. Affiliates in Europe vs. U.S. Exports to Europe (\$Billions)



Sales of European Affiliates in the United States vs. European Exports to the U.S. (\$Billions)



U.S. & Europe are the largest foreign direct investors in each other (and globally)

Europe is the primary destination for U.S. investment abroad and the largest source of foreign direct investment in the United States.

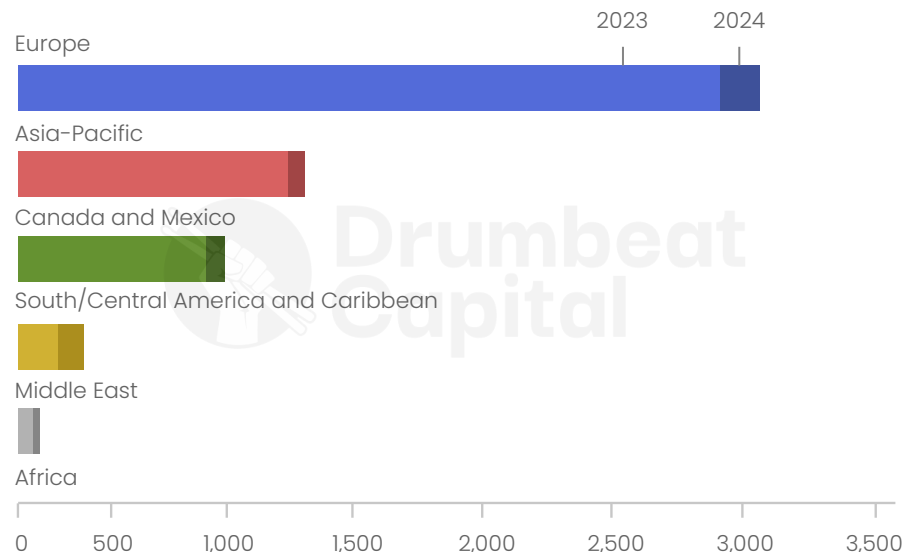
56%

of U.S. foreign direct investment goes to Europe

56%

of foreign direct investment in the U.S. comes from Europe

Foreign Direct Investment in the United States, by Source Region (\$Billions)



By country of ultimate beneficial owner. Source: U.S. Bureau of Economic Analysis.

U.S. & Europe are the largest foreign source of jobs for each other

#1 Leading foreign source of jobs

5.3M

Employees of European companies in the U.S.

4.6M

Employees of U.S. companies in Europe

Transatlantic Jobs (Thousands of Employees, 2024*)

Country	U.S. Companies in Europe	European Companies in the U.S.
 Austria	30.8	48
 Belgium	122.9	77.8
 Czech Republic	70.1	3.4
 Denmark	31	63.1
 Finland	21	37.4
 France	496	805.4
 Germany	610	952.9
 Greece	20.1	3.9
 Hungary	60.1	7.7
 Ireland	178	391.4
 Italy	249.5	100.1
 Luxembourg	21.1	82.6
 Netherlands	224.3	588
 Norway	36.9	9.6
 Poland	241.4	1.6
 Portugal	38.9	2.8
 Spain	63.9	89.1
 Sweden	101.7	301.4
 Switzerland	98.4	410.8
 United Kingdom	1,383	1,340.4
 Europe	4,563.5	5,347.7

The U.S. and Europe are the #1 partners in R&D

#1 Innovation Spending

The strongest innovation spending is between the U.S. and Europe.

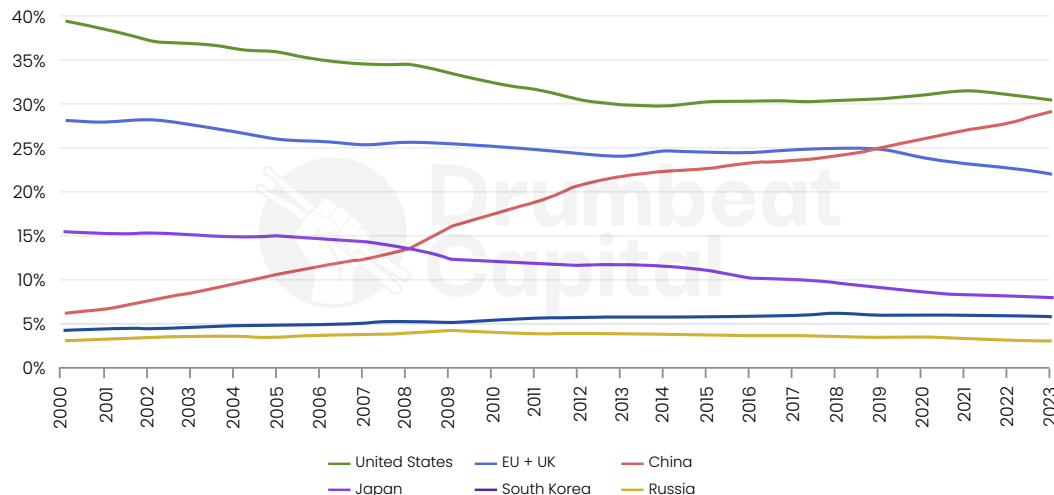
53%

of U.S. affiliated global R&D spend was in Europe. (**\$43.1B**)

70%

of the total R&D spending by foreign affiliates in the U.S. was from Europe. (**\$61.2B**)

Global R&D Expenditures and the Rise of China (% of Total)



R&D share calculated in terms of current purchasing-power parity dollars. Global R&D is a sum of the OECD countries plus Argentina, China, Russia, Singapore, South Africa, Chinese Taipei and Romania.*2023 authors' estimate for the following countries: Russia, Singapore, South Africa, & UKData as of January 2026. Source: OECD.

The U.S. and Europe are the #1 partners in Energy

The U.S. and Europe are critical to each other's Energy security.

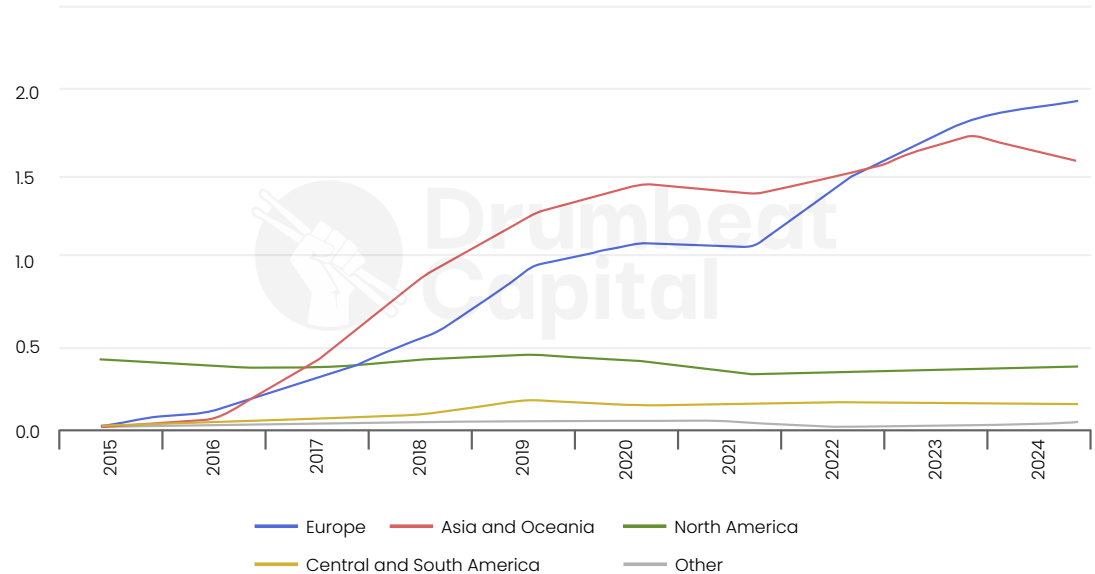
60% of Europe's LNG supplied by the United States (**66%** of total U.S. LNG exports)

50%+ of all foreign direct investment in greenfield U.S. energy projects are from European companies

Europe is the largest destination for U.S. crude oil exports.

U.S. and European companies are the largest foreign investors and foreign suppliers of jobs in each other's energy economy.

Annual U.S. Crude Oil Exports by Destination Region (Million barrels per day)



The U.S. and Europe are the #1 partners in Communications

Submarine cable capacity across the Atlantic is:

2.5x

that of transpacific routes,

3x

that of intra-Asian routes

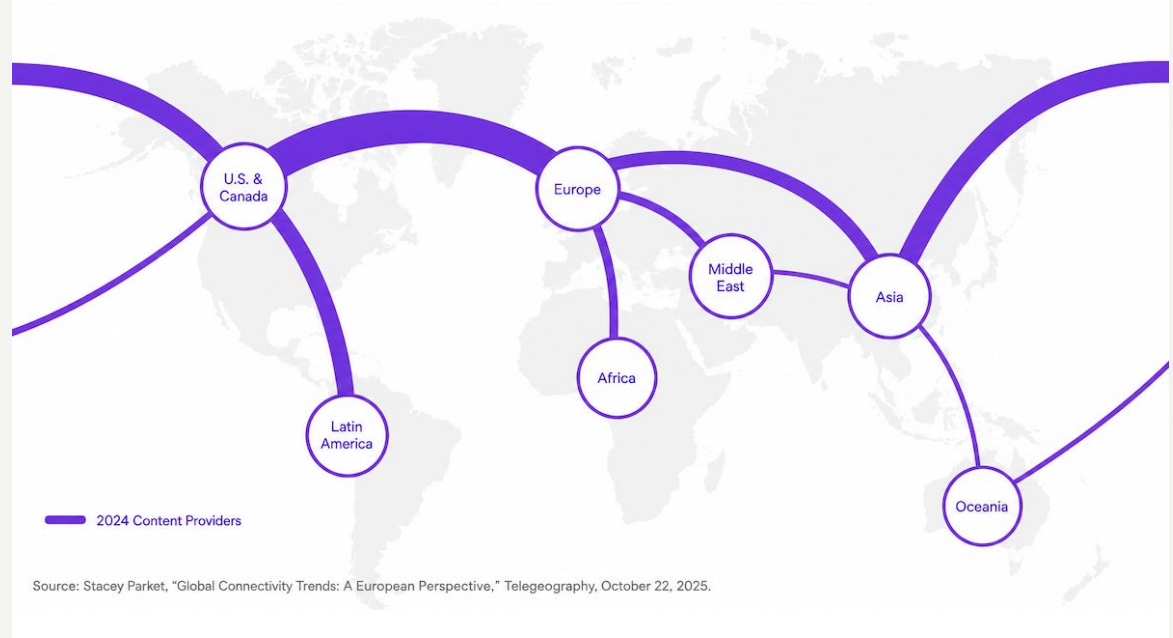
3.9x

more than Europe-Africa routes, and

2x

that of U.S.-Latin American routes.

Used Interregional Bandwidth (2024)

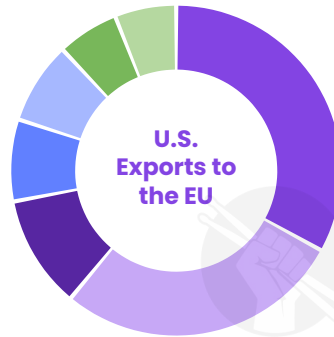


The U.S. and Europe are the #1 partners in Digital Services

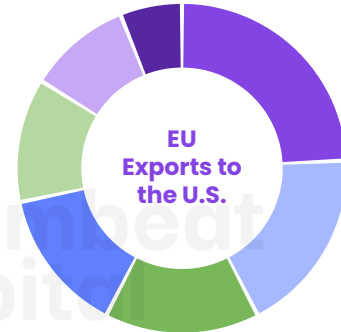
The EU and the U.S. are each other's top trading partner in digitally deliverable services.

Europe accounted for **50%** of all U.S. digitally deliverable exports to the world, **2.3 times more** than U.S. exports to the entire Asia Pacific region.

Structure of U.S.-EU Services Trade



- Other business services 33%
- Charges for the use of intellectual property 28%
- Financial services 11%
- Telecommunications, IT and information services 8%
- Transport services 8%
- Travel services 6%
- Other services 6%



- Other business services 24%
- Transport services 18%
- Travel services 15%
- Telecommunications, IT and information services 14%
- Other services 12%
- Charges for the use of intellectual property 10%
- Financial services 6%

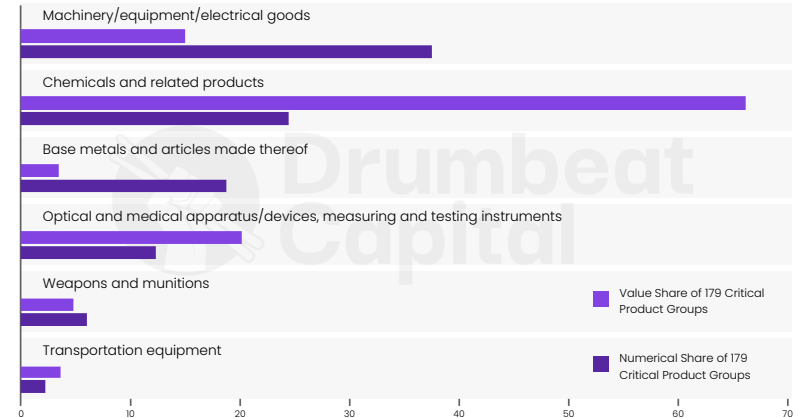
Where is the U.S. dependent on Europe?

American consumers might be able to live without French champagne, Italian pasta, or German luxury cars, but it would be much harder for the U.S. to do without British parts for F-35 fighter jets or Dutch lithography equipment producing the high-end microchips that power AI and high-performance computing (for which there is no substitute).

European companies supply the active ingredients for nearly half of all brand-name drugs and 90% of the insulin that Americans use every day. Europe provides over a third of U.S. chemical imports critical to a range of industries. American factories rely heavily on European precision machinery for which there are few, and in some cases no, equivalent substitutes.

U.S. companies rely on European suppliers for 100% of their imports of 293 different product groups. European suppliers provide 90% of all U.S. imports for another 726 product groups and 75% for 1,440 further product groups. These product groups are widely distributed across the entire U.S. economy, ranging from industrial capital and intermediate goods to food and textiles.

Critical U.S. Imports from the EU, by Product Group



As of 2024. Note: Shares by number and value of 179 strategic industry-related product groups with a U.S. import share from the EU of at least 50% consistently over the past five years. Sources: U.S. Department of Commerce, August 2025; Institut der deutschen Wirtschaft.

Where is Europe dependent on the U.S.?

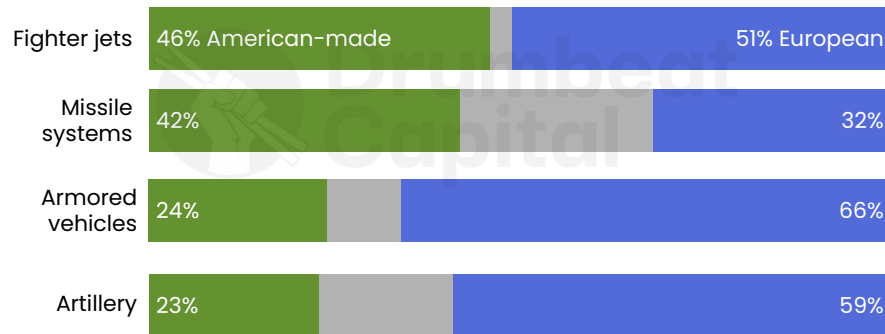
There are critical products where both the import volume and the concentration on U.S. imports are high. These include certain food items like soybeans, energy resources like LNG, software for critical digital services, and strategic raw materials like Beryllium, Helium, and Molybdenum ores, used in steel production and the chemical industry.

The EU also relies on the U.S. for specific chemical and pharmaceutical products such as hormone preparations and vaccines, and specialized equipment and components for industry, such as medical products and parts for aircraft and spacecraft manufacturing.

Europe also imports high volumes of electrical equipment, including for power generation and optical equipment used in medical devices and other industries.

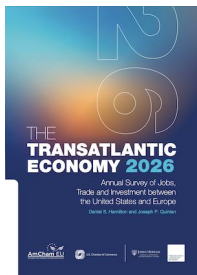
Europe's militaries depend on American hardware

Equipment currently used by EU27, British and Norwegian militaries, broken down by share that is made in the **U.S.**, **Europe** and the **rest of world**



Do Europe and America still need each other?

School of Advanced
International Studies,
Johns Hopkins University



Daniel S. Hamilton



Joseph P. Quinlan

"In a transatlantic climate marked by trade tensions and questions about the strength of the security partnership, a growing chorus of voices argues that the other side of the Atlantic has become more problem than solution. Some Americans talk as if the United States has little need for Europe; some Europeans say it is time to "de-risk" and become "autonomous" from America.

In fact, there is substantial evidence that Europe and the United States each gain considerably from a flourishing transatlantic economy. Some Europeans are right to want to mitigate excessive dependencies, but wrong to think decoupling from America would cost little; some Americans are right to want Europeans to do more on security, but wrong to think they don't need Europe.

Europe and America are constituent parts of a densely intertwined \$9.8 trillion transatlantic economy and members of the most successful alliance in history – each indispensable to the other. European and American companies not only profit from those interconnections; they use the transatlantic economy as a common geoeconomic base to compete in a fractious world."

Global Champions in Deep Tech leverage strong Transatlantic relationships

No **NVIDIA** chip leaves the factory without Dutch **ASML** lithography

No **Tesla** hits the road without German **Bosch** sensors

No **Apple** iPhone ships without British **ARM** chip designs

No **Boeing** 787 lands safely without anti-skid brakes from France's **Safran**

No German **BioNTech** COVID vaccine reaches patients without America's **Pfizer**

No modern quantum computer at **IBM** or **Google** operates without Finland's **Bluefors**

No **Intel** advanced fab comes online without German **Zeiss** mirrors

No **Lockheed Martin** F-35 Lightning II stealth fighter deploys without British **BAE Systems**

No American **ATT** or **Verizon** 5G networks function without radios built by Sweden's **Ericsson** and Finland's **Nokia**

No **STMicroelectronics** (Switzerland) or **NXP** (Netherlands) automotive chips are designed without Electronic Design Automation (EDA) software monopolies based in the U.S.: **Synopsys** and **Cadence**

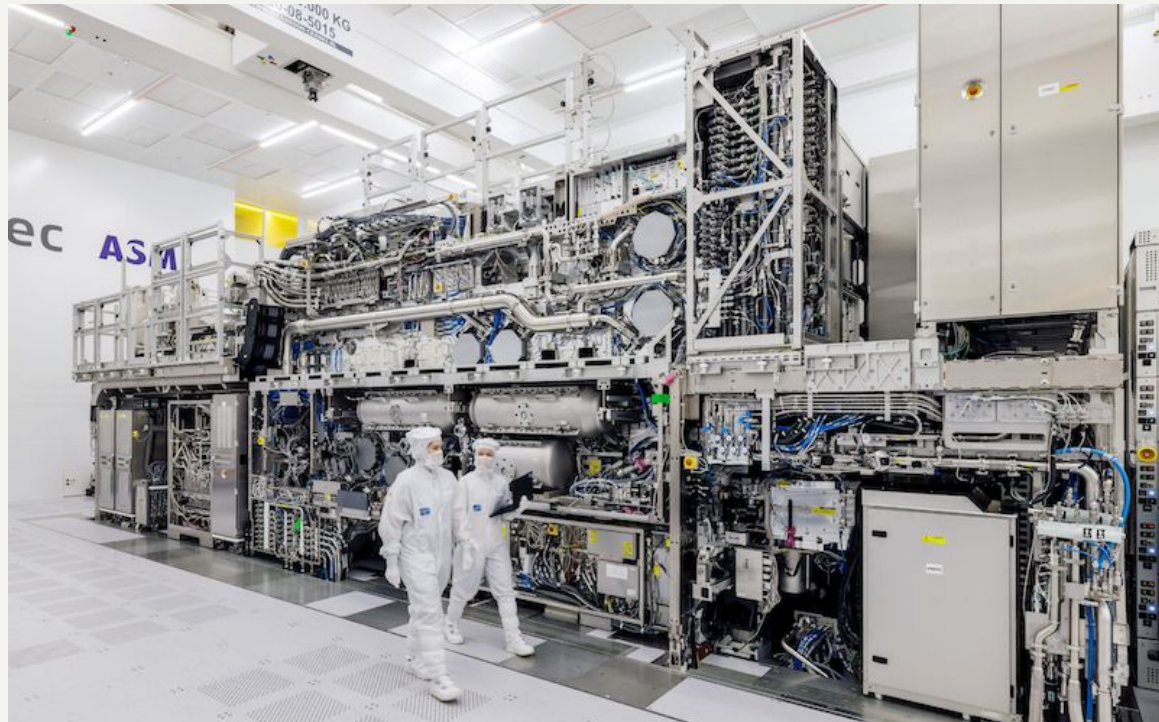
Global Champion Spotlight: ASML

ASML (Semiconductor Lithography)

The Bridge: Leveraged European precision optics (Germany's Carl Zeiss) and acquired U.S.-based Cymer in 2012 for \$3.3B to master the EUV light source.

The Win: Achieved 100% market share in High-NA EUV lithography, becoming a \$580B company.

The Losers: Nikon and Canon remained insularly focused on Japanese ecosystems, failed to crack EUV, and lost over 80% of the high-end lithography market.



Global Champion Spotlight: DeepMind

DeepMind (Artificial Intelligence)

The Bridge: Pioneering UK deep-learning and neuroscience talent acquired and scaled by U.S.-based Google (\$500M in 2014).

The Win: Nobel prize in Chemistry for protein folding (AlphaFold) and achieved AI supremacy with hardware and infrastructure resources no VC could provide.

The Losers: Early fragmented AI labs, and insular tech giants like Baidu (which failed to globalize its early AI efforts), lost the first-mover advantage in AGI research.



Global Champion Spotlight: CFM International

CFM International (Aerospace):

The Bridge: A 50/50 joint venture between U.S.-based GE Aviation (core engine tech/capital) and France's Safran (fan/turbine engineering).

The Win: Produced the CFM56 and LEAP engines, delivering over 40,000 units and capturing ~70% of the narrow-body commercial market.

The Loser: Pratt & Whitney (U.S.-only at the time) tried to build engines in isolation and lost their dominant market share in the 1980s and 90s, forcing them into massive structural overhauls.



To build a globally dominant Deep Tech company, you need to be Transatlantic

Talent

Research
(TRL 1-4)

Commercialization
(TRL 5-10)

Capital

Private
(Venture Capital)

Public
(Exit Markets)

Ecosystem Partners

Suppliers

**Industrialization
Partners**

Customers

■ U.S. strength ■ Europe strength

Stef van Grieken

Co-founder & CEO, Cradle



"European customers are way harder to close than American ones. But once you get them, they stick around forever. This creates a fascinating strategic dilemma for European startups.

At Cradle, we learned this the hard way. Our early sales approaches in Europe were brutal. Meanwhile, U.S. customers would be more open to chat, even if we didn't have the proof points yet. I used to think European buyers were just more conservative. Turns out, it's more nuanced than that.

European customers are relationship buyers. They want to understand not just your product, but your company, your team, your long-term vision. They're making a bet on you, not just buying a tool.

American customers are experiment buyers. They're more willing to try new tech that might give them an edge over their competition. That's why our early design partners were mostly from the U.S..

"Move fast and break things" can be a great motto, but might not fly if you try to sell into European enterprises.

Our customer split is now 40% Europe, 40% U.S., 20% rest of world. The Americans got us started. The Europeans are catching up. And we love working with both.

Different markets, different strategies. Both valuable."

Liz Duijves

Sr. Investment Manager,
Invest-NL



INVESTNL

"U.S. capital involvement does not necessarily result in a full relocation, but it can shift strategic influence. While U.S. capital is often assumed to pull companies across the Atlantic, recent research shows that only 3.1% of Dutch startups move their parent entity abroad.

Instead, companies often adopt a layered expansion model: they establish a U.S. subsidiary for commercial activity and U.S. expansion, while generally keeping their technical teams, R&D activities and core capabilities anchored in their Dutch headquarters – a choice that is often also economically driven, as engineering in the Netherlands is often considered to be more capital-efficient than building large technical teams in the U.S.

However, legal restructuring can still occur in specific stages, and, even without full relocation, deeper U.S. links may affect the regulatory environment, freedom to operate and long-term strategic optionality."

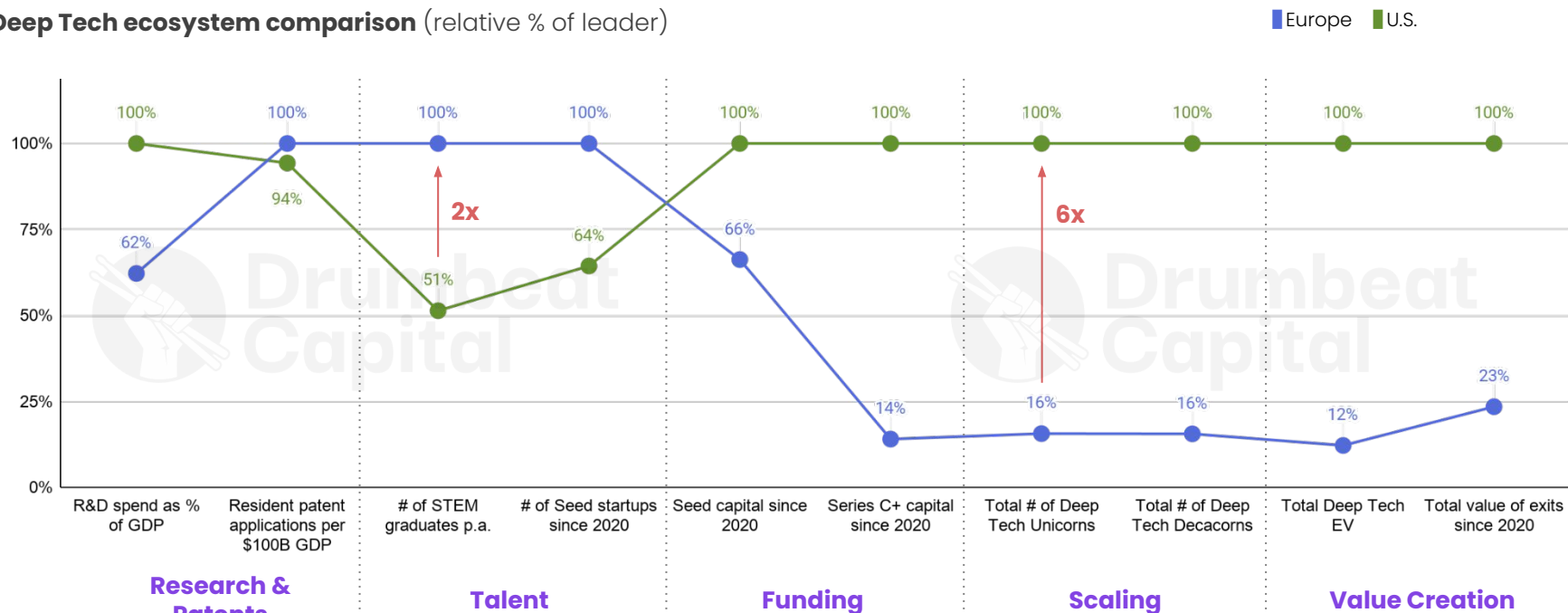
*To build a global champion in Deep Tech, founders need to take advantage of the strengths of both the **U.S.** and **Europe**, or they will be beaten by a company who does.*

PART 2

The Global State of Deep Tech

The Deep Tech conveyor belt: Europe leads in talent; U.S. in scale & value creation

Deep Tech ecosystem comparison (relative % of leader)

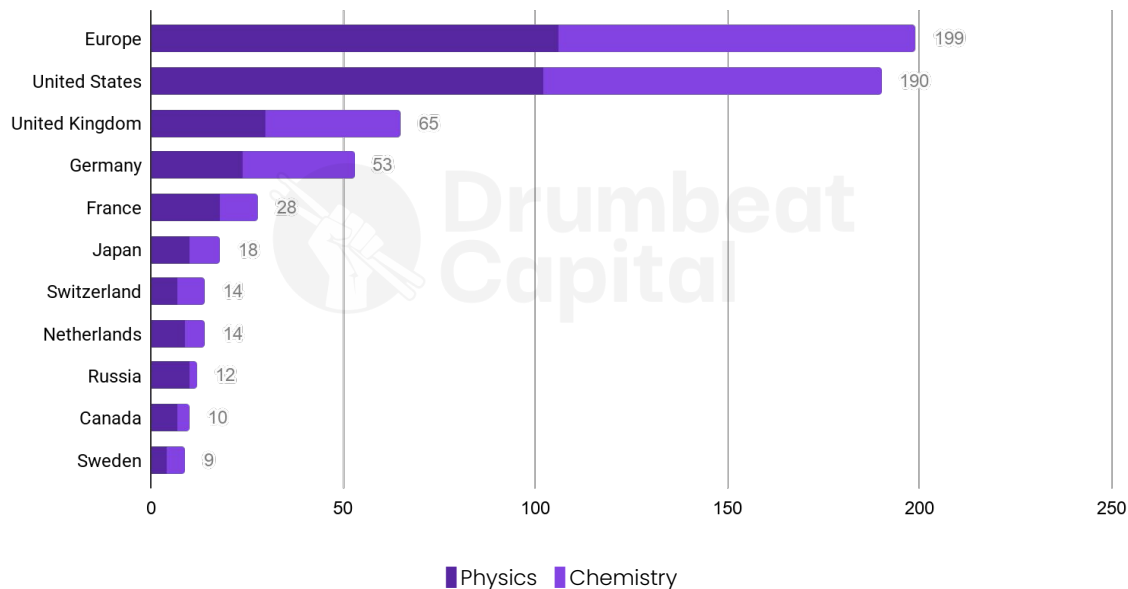


2.1

Research & Patents

Europe and the U.S. dominate scientific research with Europe slightly ahead

Nobel Prizes by Country in Chemistry and Physics, 1901–2025

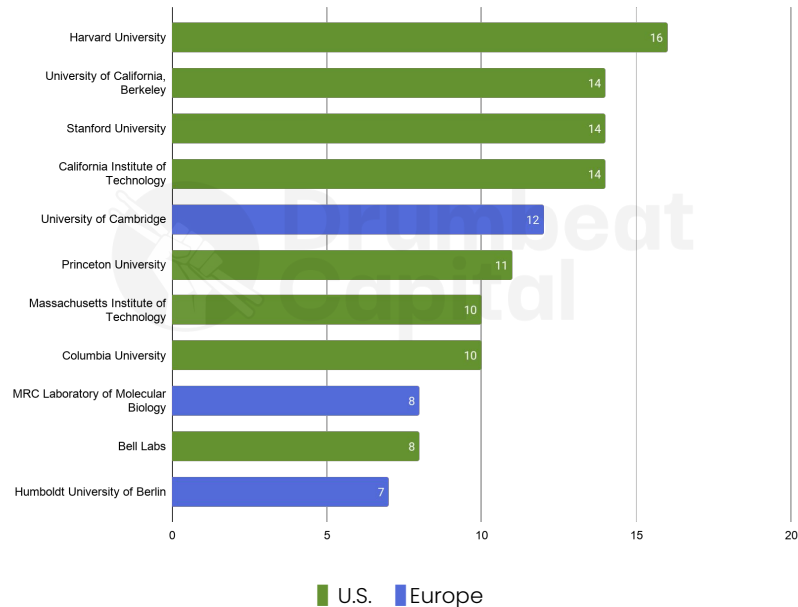


Europe remains one of the world's leading centers for fundamental scientific discovery and engineering excellence. The region has produced more Nobel Prize winners in Physics and Chemistry than any other geography, reflecting a long tradition of breakthrough research.

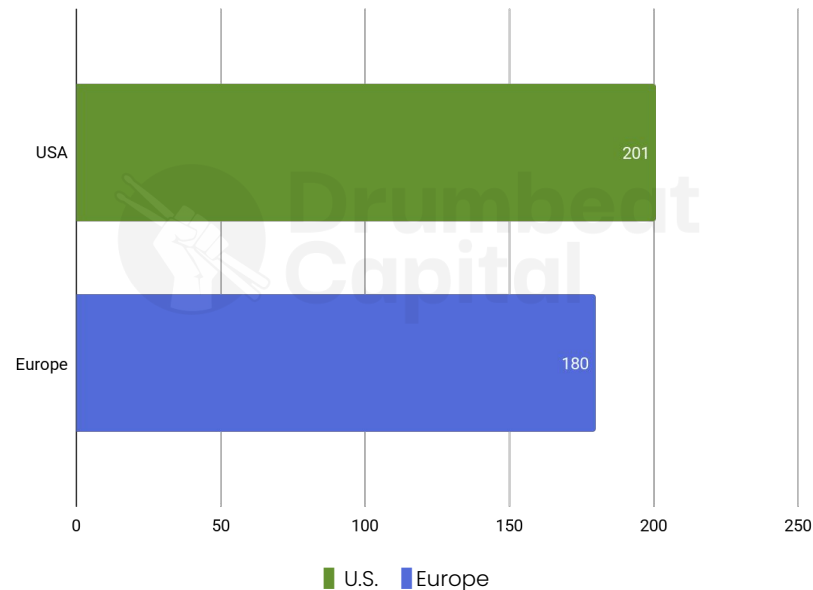
Europe's strength is reinforced by world-class universities, research institutes, and deep industrial capabilities that continue to generate innovations in advanced materials, energy, aerospace, biotechnology, and quantum technologies.

However, U.S. institutions take the lead over Europe for affiliations

Nobel prizes Chemistry & Physics by affiliation

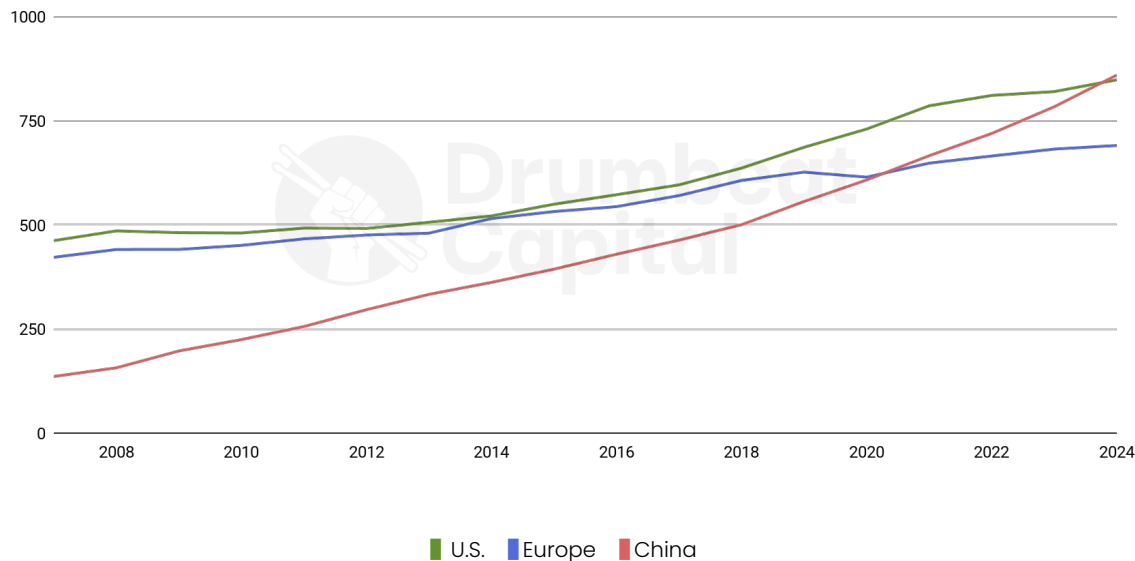


Nobel prizes Chemistry & Physics by country of affiliation



China is overtaking the U.S. in Gross Domestic Expenditure on R&D

Gross Domestic Expenditure on R&D, in PPP \$M, 2020 constant

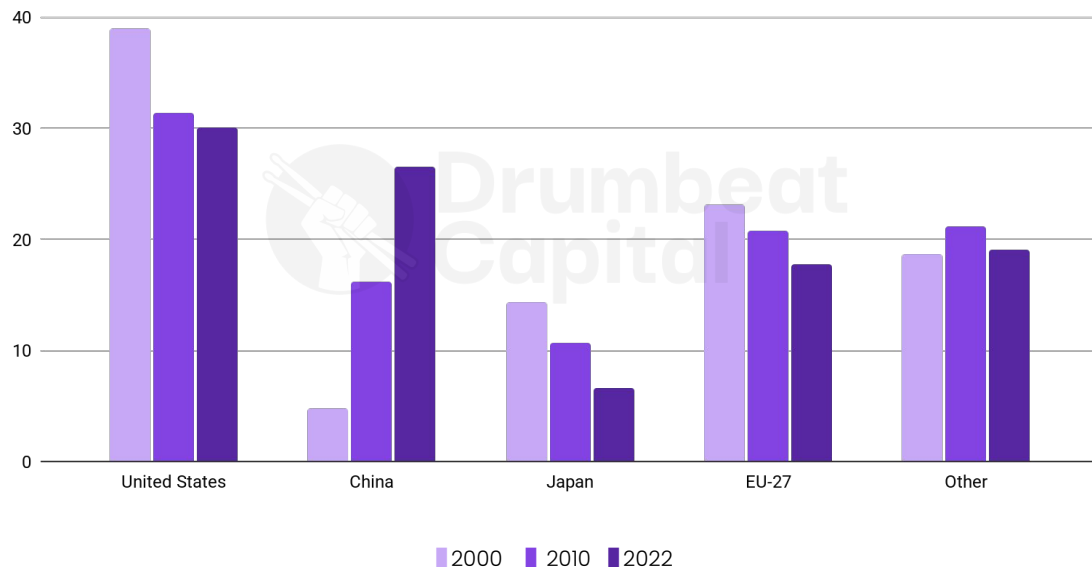


Gross Domestic Expenditure on R&D (GERD) measures a country's total investment in research and development. It is a key indicator of future innovation, scientific leadership, and economic competitiveness.

China has rapidly closed the gap with the United States and is now matching and beginning to surpass U.S. R&D spending. Today, both countries invest roughly \$1 trillion annually in R&D in real terms and about \$800B in PPP-adjusted, underscoring the scale of the global technology race.

The U.S. and the European Union account for about 50% of total R&D spend

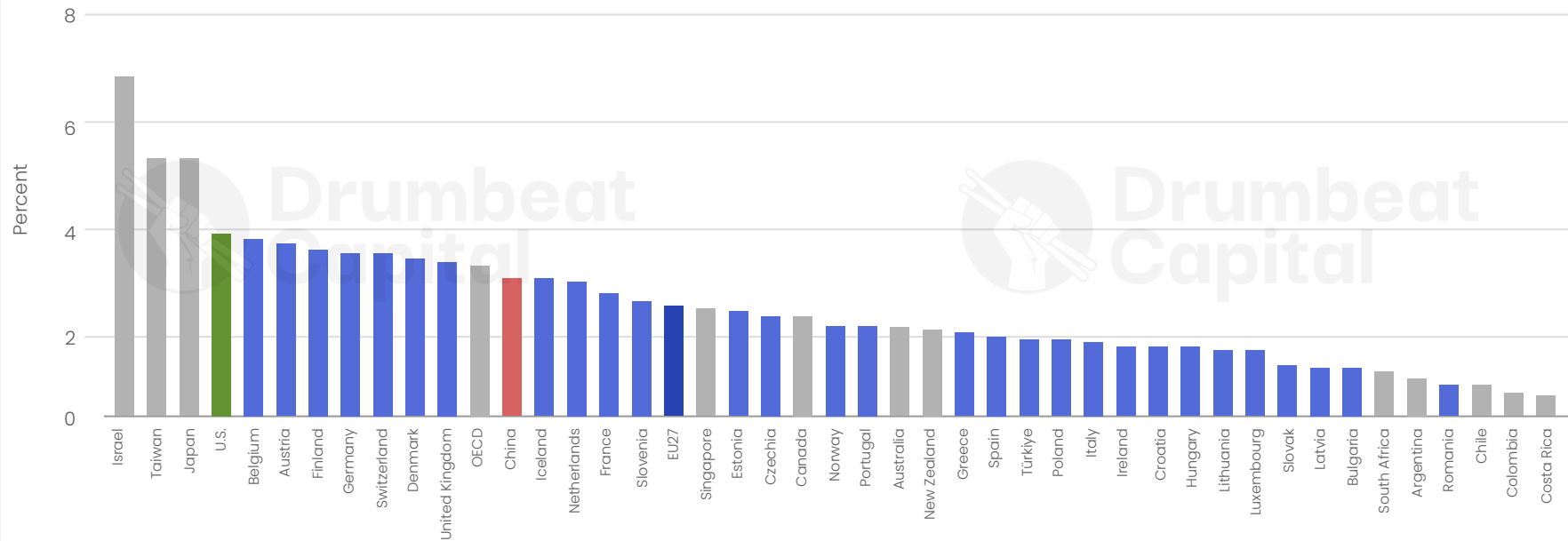
Share of global Gross Domestic Expenditure on R&D (GERD)



The global R&D landscape has been transformed by China's rise. While the U.S. share of global R&D spending declined from 39% in 2000 to 30% in 2022, China's share expanded rapidly through two decades of double-digit annual growth in research investment. Backed by long-term national technology strategies, China consistently increased R&D spending faster than its economy, making it the largest contributor to global R&D growth and bringing its annual investment close to U.S. levels.

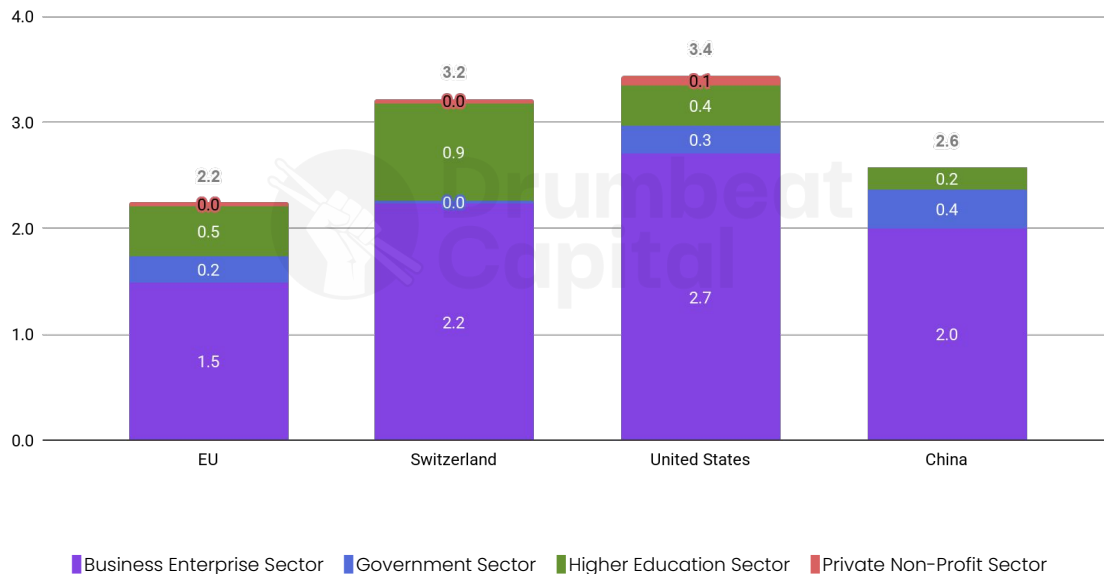
The U.S. spends more on R&D than Europe

Gross domestic expenditures on R&D as a percentage of GDP, 2024 or latest available



The main difference in R&D spend comes from a higher business R&D spend

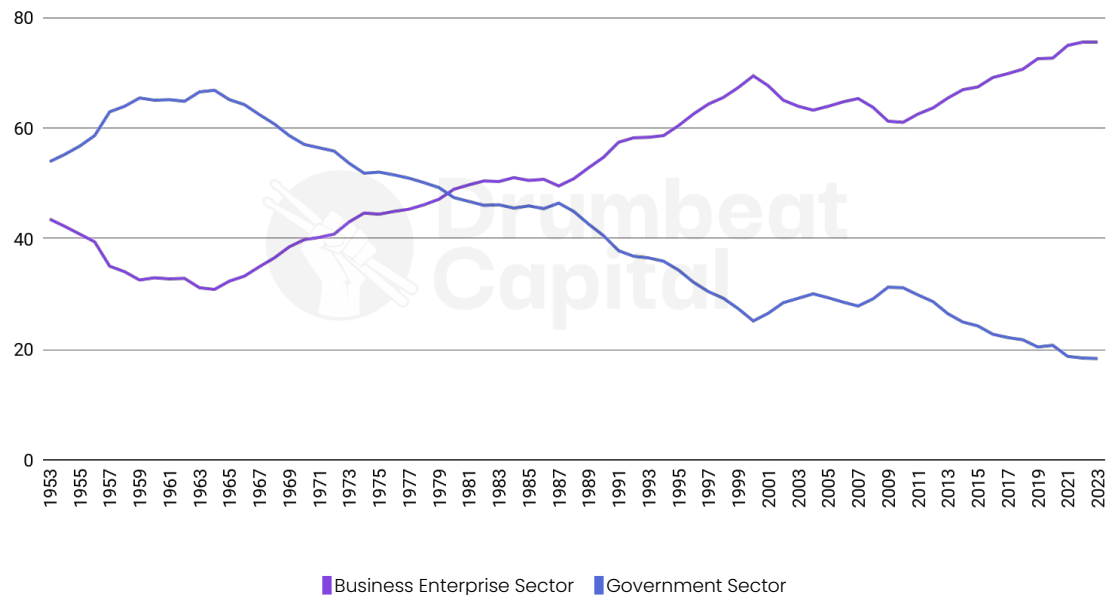
Gross domestic expenditure on R&D by sector as % of GDP, 2024



The gap is primarily driven by business R&D spending. The U.S. benefit from large technology, pharmaceutical, and industrial companies that invest heavily in research at scale – 2.7% vs. 1.5% in the EU. Europe’s public and academic research base is strong, but it has fewer global firms capable of sustaining multi-billion-dollar R&D programs, resulting in lower overall R&D intensity.

Business became the dominant R&D funder in the 1980s, now accounting for ~80%

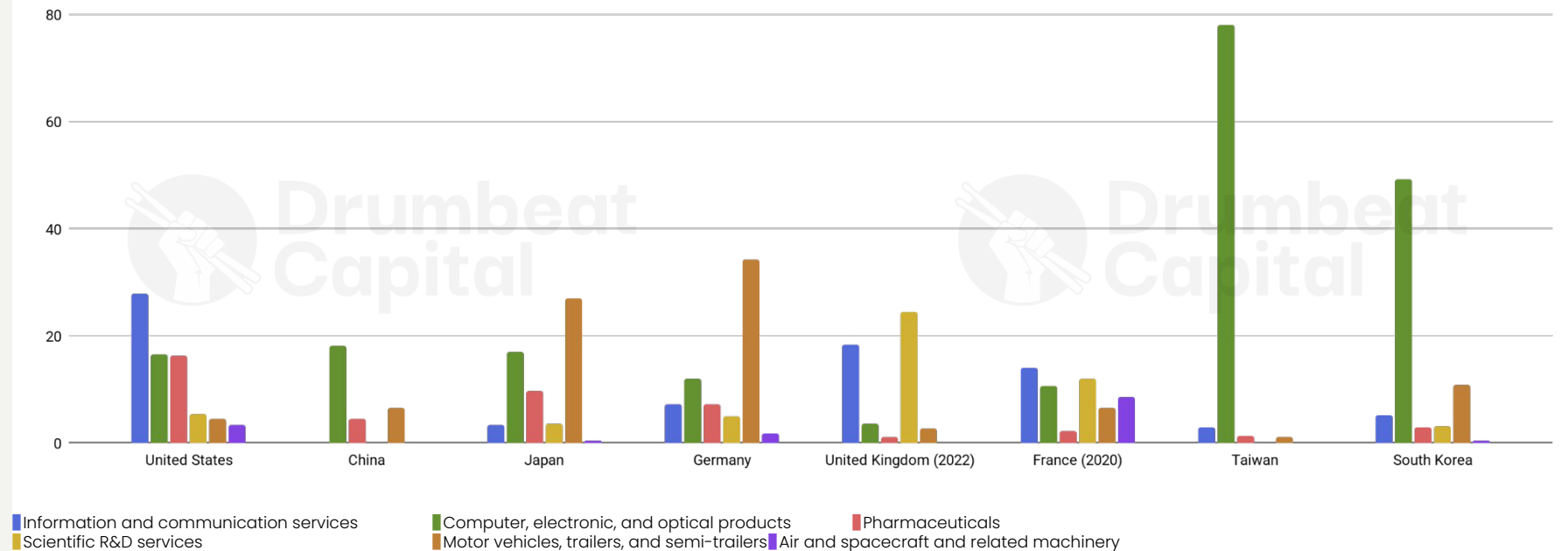
Share of U.S. R&D expenditures by funding sector



The U.S. innovation system has undergone a fundamental shift from government-led to business-led R&D. In the 1950s and 1960s, government funded the majority of research, driven by defense, space, and basic science programs. Since the 1980s, private industry has become the dominant source of funding, accounting for nearly 80% of total R&D today. This reflects the growing role of technology, pharmaceutical, and industrial companies in driving innovation and commercializing new technologies.

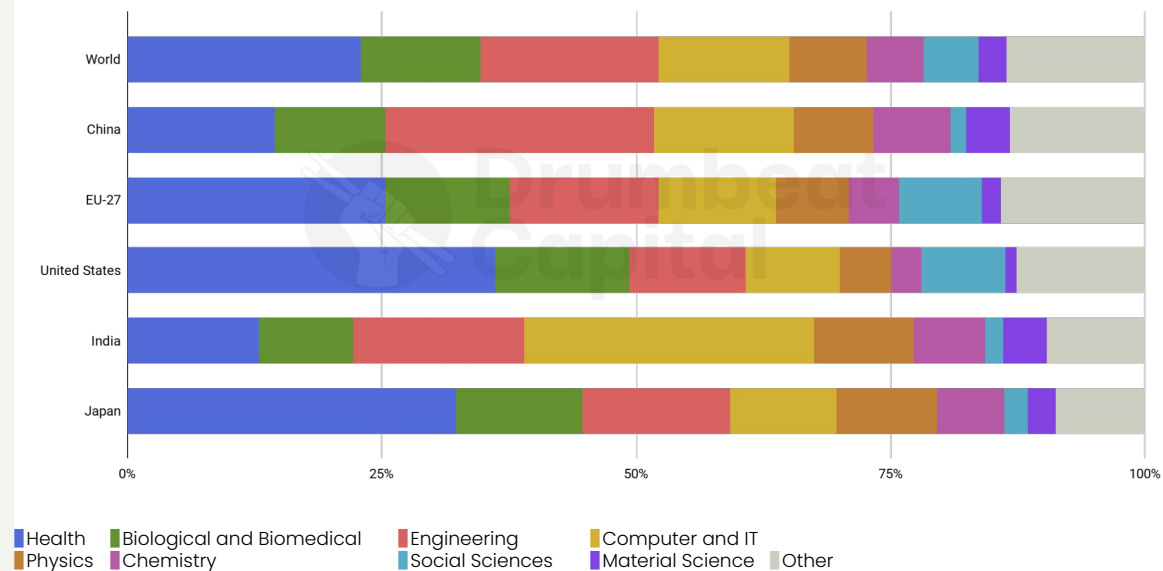
Each country has a different R&D and technology focus

Share of total R&D expenditures, by selected industry and selected region (%), 2021



Publication patterns vary by geography reflecting research strengths and priorities

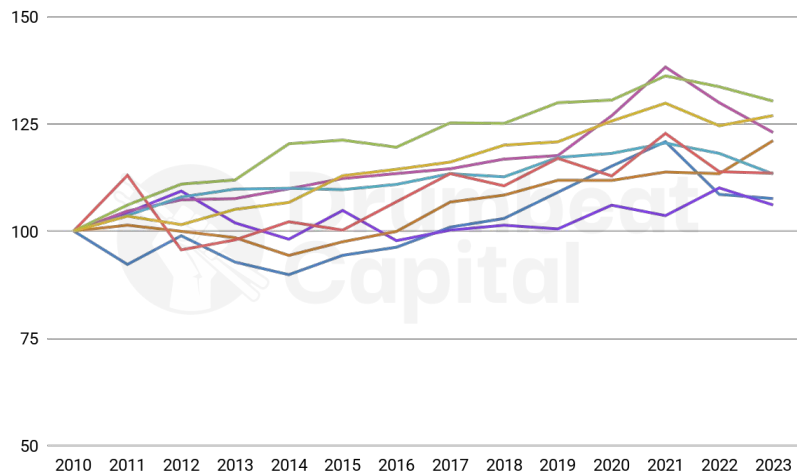
Distribution of national S&E research portfolios across S&E fields



While health sciences was the largest field globally in 2023 (23% of all publications), it was especially dominant in the United States (36% of publications), Japan (32%), and the EU-27 (25%). In contrast, China's research output was most concentrated in engineering (26%), and India's in computer and information sciences (28%), highlighting distinct national areas of specialization.

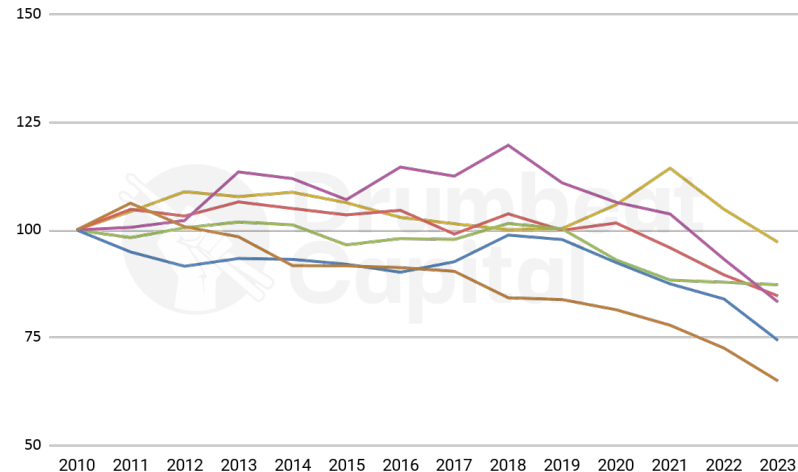
Social Sciences drive U.S. publication growth as natural sciences lose momentum

of S&E articles: Fields showing overall increase



Agriculture Psychology Natural resources Social Sciences
Computer & IT Health Sciences Math & Statistics Astronomy & Astrophysics

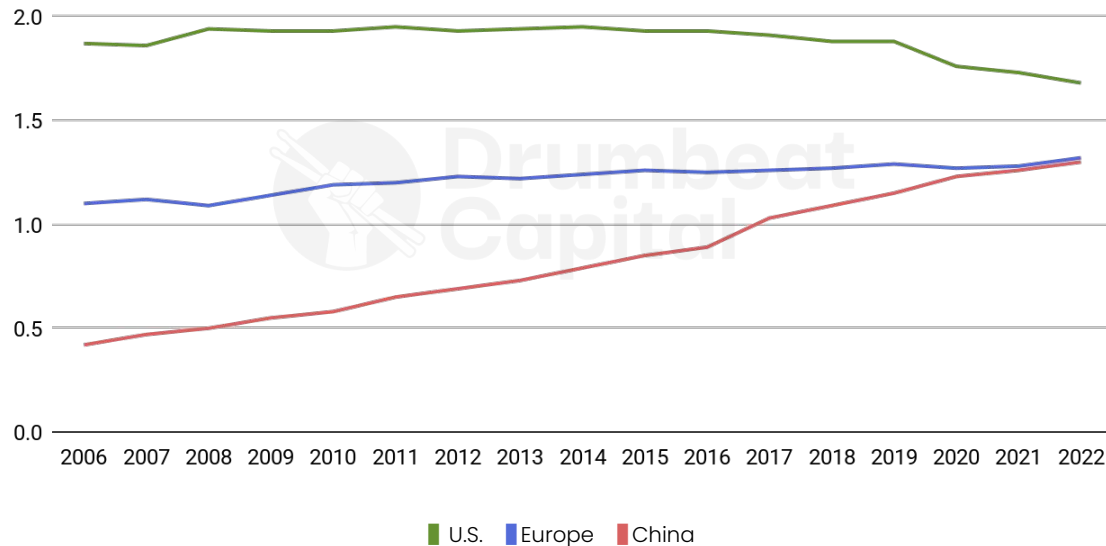
of S&E articles: Fields showing overall decrease



Material Science Engineering Chemistry
Physics Geoscience Biological & Biomedical

U.S. research impact remains highest, but China is rapidly closing the gap

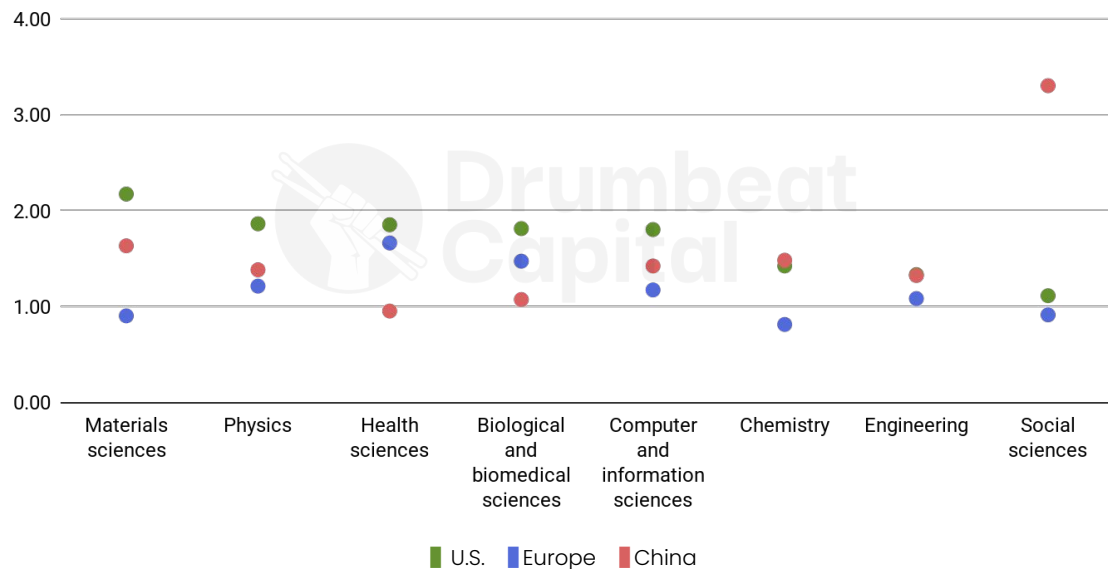
% of S&E publications in the top 1% most-cited journal articles



Highly cited articles (HCAs) are articles that rank in the top 1% of all publications for a given year and field. For each geographic location—such as a region, country, or economy—the HCA share measures HCAs as a proportion of that location's total publication output. Because it reflects scientific impact relative to publication volume, this indicator can be compared across producers of different sizes. An HCA share above 1.00 indicates that more than 1% of the country's articles qualified as HCAs, meaning its research has an impact that is disproportionately high relative to the total number of articles produced by its researchers.

The U.S. leads across a variety of disciplines

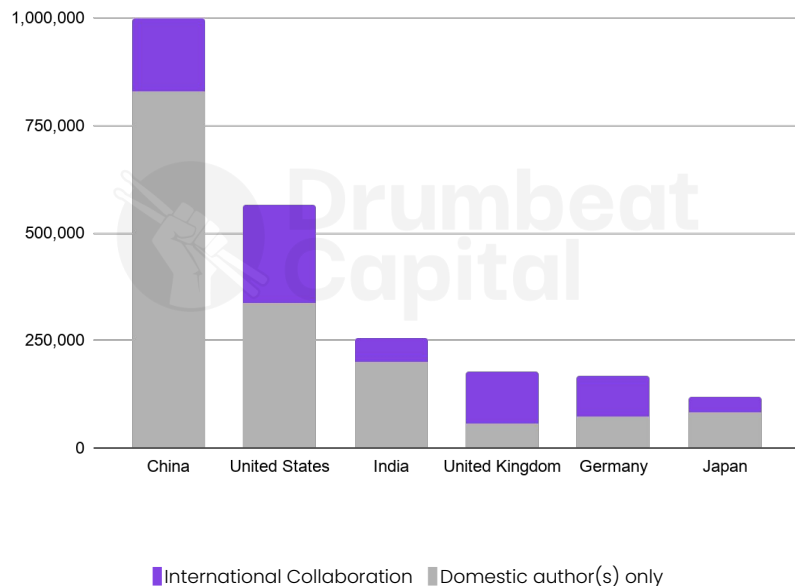
% of S&E publications in the top 1% most-cited journals by field



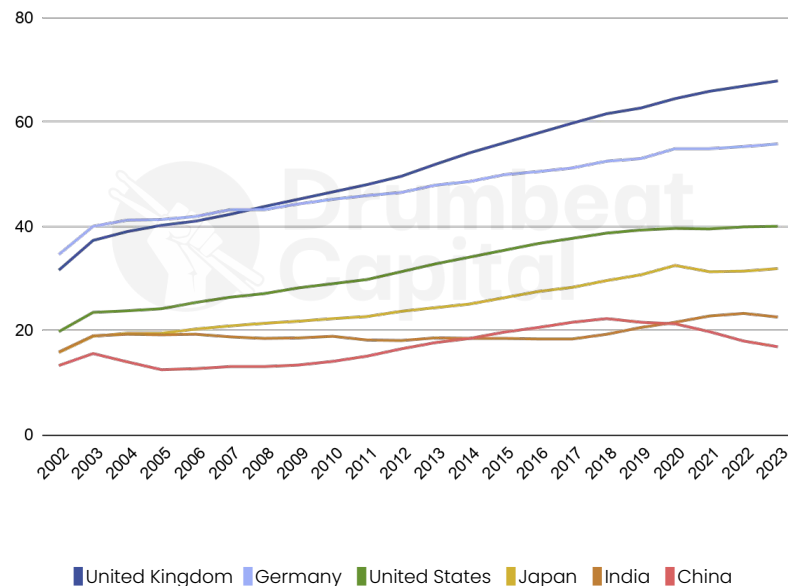
The U.S. remains the global leader in scientific excellence, generating the highest share of top-cited research across most disciplines. Its strength is especially evident in physics, materials science, biomedical research, and computer science. Interestingly, China stands out in the social sciences, where it surpasses both the U.S. and Europe. While scientific excellence is becoming more geographically distributed, the U.S. continues to set the benchmark across the majority of frontier research fields.

International collaboration rises, China partnerships decline

of S&E articles by authorship in 2023



% of publications with international coauthors by region



Gerard de Graaf

Senior Envoy for Digital to the U.S.,
head of the EU office in San Francisco



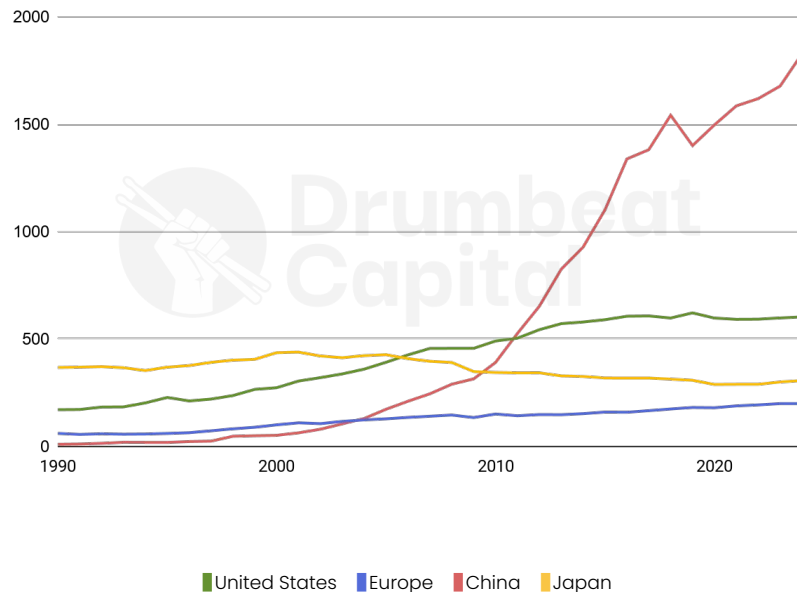
“Europe boasts huge tech talent and excellent research and education. Every year, it creates as many, if not more, startups than the United States. **Europe’s challenge is not startups, but scale-ups.**”

By simplifying rules and reducing regulatory burdens, building a network of (giga) AI factories open to startups to experiment and innovate, and by improving access to scale-up capital, the EU is unlocking this capacity. Moreover, we need to better connect Silicon Valley to Europe’s maturing startup and scaleup ecosystems by building a robust Transatlantic investment bridge, which will not only help inject fresh growth capital but also bring valuable expertise and company-building skills into Europe.

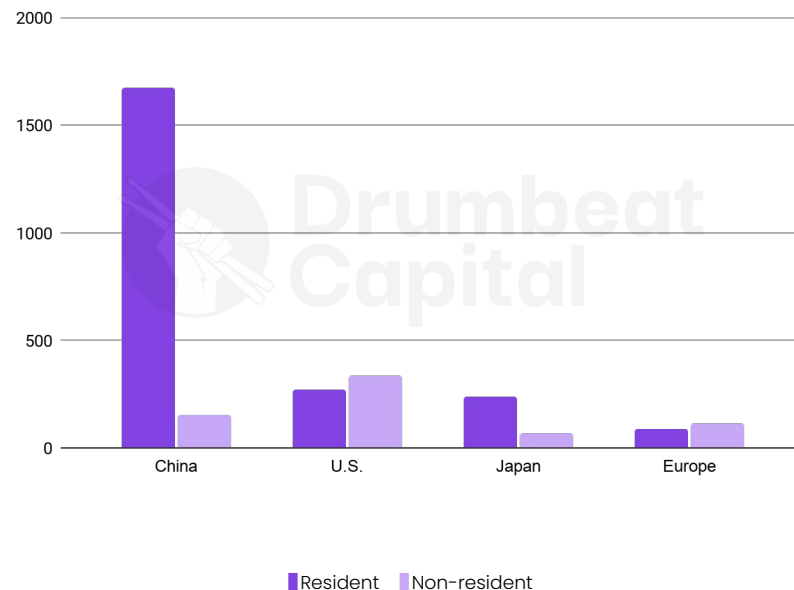
There is broad consensus that the direction is the right one. Now we need to double down on speedy implementation. Failure is not an option; the success of these startups and scaleups remains central to the achievement of Europe’s critical goals, from security and defense to energy, climate, health, and mobility to maintaining and enhancing our standard of living and sustaining our unique European model”

China files more patents than the rest of the world combined; overwhelmingly by residents

Patent applications by patent office in k

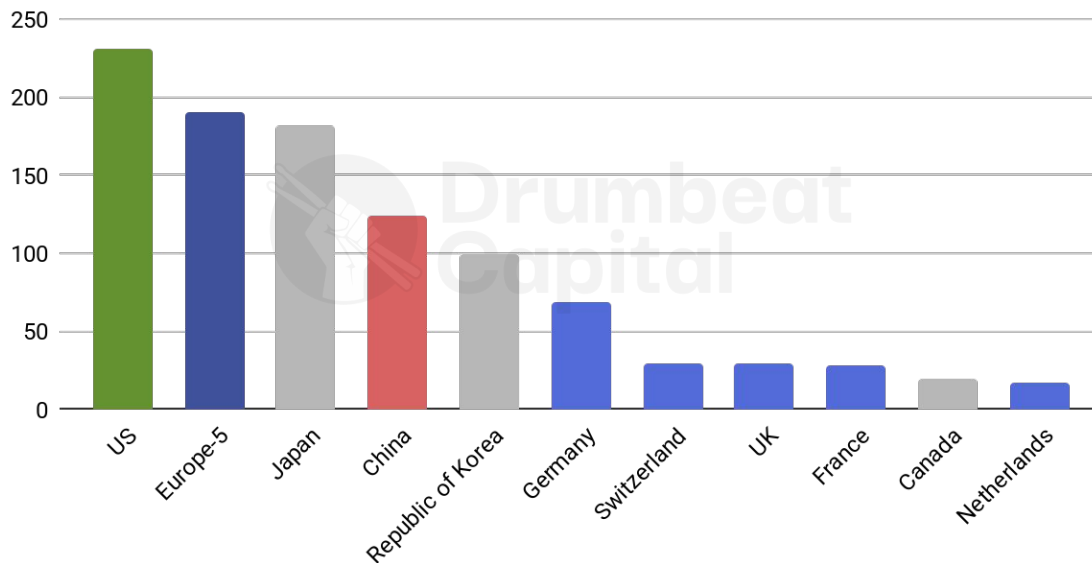


Patent applications by patent office & residency in k, 2024



The U.S. remains the leading source of abroad filings followed by Europe

Patent applications filed abroad by the top 10 origins in k, 2024

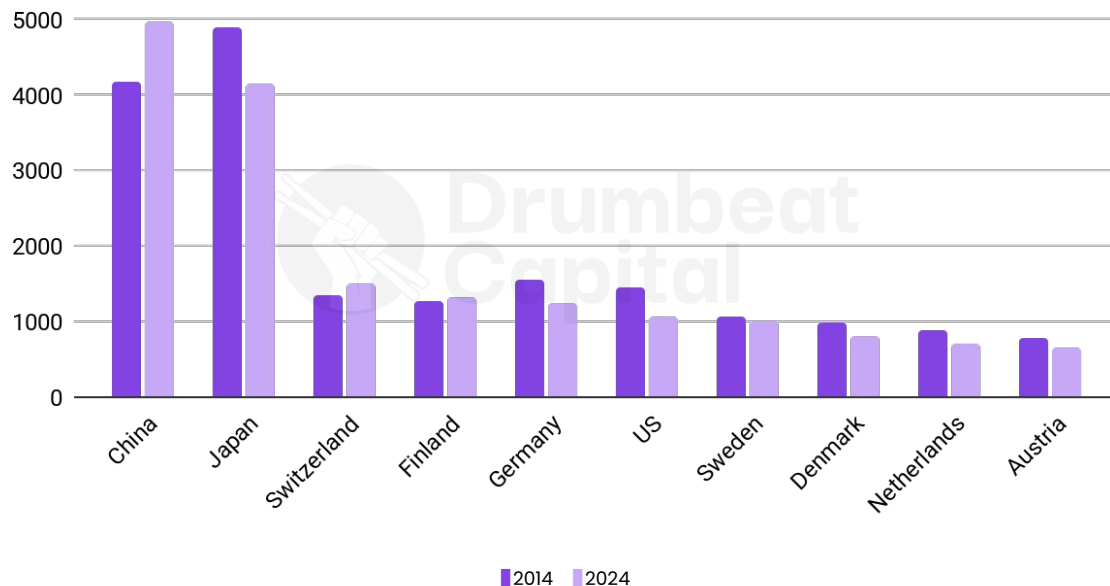


The U.S. remains the global leader in international patenting, with Europe collectively ranking second and Japan close behind. While China now dominates domestic patent filings, it trails the U.S. and Europe in patents filed abroad—a stronger indicator of technologies with global commercial ambitions. The data suggests that China excels at generating intellectual property at scale, while the U.S. and Europe remain the most internationally oriented innovation ecosystems.

China patents at home; the U.S. and Europe patent for the world.

Relative to GDP, European countries are on par with the U.S. patent output

Resident patent applications per \$100B GDP for top 10 origins



Europe's innovation output is stronger than headline patent totals suggest. Adjusted for economic size, several European countries match or exceed the U.S. in patent generation. While China and Japan lead on patents per GDP, Europe demonstrates a highly efficient innovation system that converts research and engineering talent into intellectual property at rates comparable to the world's leading economies. Europe may not win on scale, but it competes on innovation efficiency.

2.2

Talent

Tony Fadell

Principal at Build Collective,
Nest founder, iPod inventor



“Stop watching the models;
watch the builders.”

The true potential of AI lies in its collision with the physical world. We’re talking about rewriting the code of biology, chemistry, and industrial hardware. This isn’t a software play, it’s a Deep Tech revolution led by the engineers and scientists turning digital intelligence into physical progress.”

Christophe Maire

Founder & Managing Partner at
Atlantic & FoodLabs



“Europe needs more sovereign AI, Resilience, Robotics, and Energy companies. We believe these sectors are where global growth opportunities lie. We love seeing the increasing number of quality Deep Tech spinouts coming out of Europe.”

50% of the world's best universities are in the U.S., 30% in Europe

■ U.S. ■ Europe ■ Asia

Engineering

1	Harvard University
2	Stanford University
3	MIT
4	Oxford
5	University of California, Berkeley
6	Cambridge, UK
7	California Institute of Technology
8	Princeton University
9	National University of Singapore
10	ETH Zurich
11	Peking University
12	Imperial College London
13	Tsinghua University
14	Nanyang Technological University
15	Georgia Institute of Technology
16	University of California, LA
17	Delft University of Technology
18	Yale University
19	University of Michigan–Ann Arbor
20	Carnegie Mellon University

Computer Science

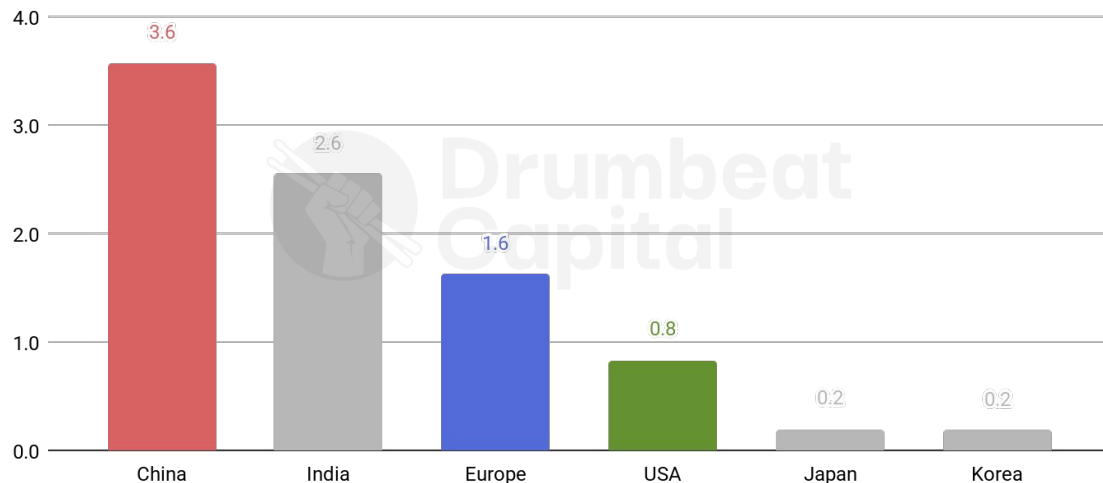
1	Oxford
2	Cambridge
3	MIT
4	ETH Zurich
5	Stanford University
6	Carnegie Mellon University
7	Princeton University
8	Imperial College London
9	University of California, Berkeley
10	Harvard University
11	National University of Singapore
12	Peking University
13	Tsinghua University
14	Technical University of Munich
15	California Institute of Technology
16	Cornell University
17	University of California, LA
18	University of Washington
19	Nanyang Technological University
20	EPFL

Physical Sciences

1	California Institute of Technology
2	Harvard University
3	Stanford University
4	MIT
5	Princeton University
6	University of California, Berkeley
7	Cambridge, UK
8	Oxford
9	ETH Zurich
10	National University of Singapore
11	Peking University
12	Tsinghua University
13	Yale University
14	Imperial College London
15	Columbia University
16	University of Chicago
17	University of California, LA
18	Cornell University
19	Technical University of Munich
20	EPFL

China graduates 4x and Europe graduates 2x more STEM students vs. the U.S.

of STEM university graduates in 2022 in M

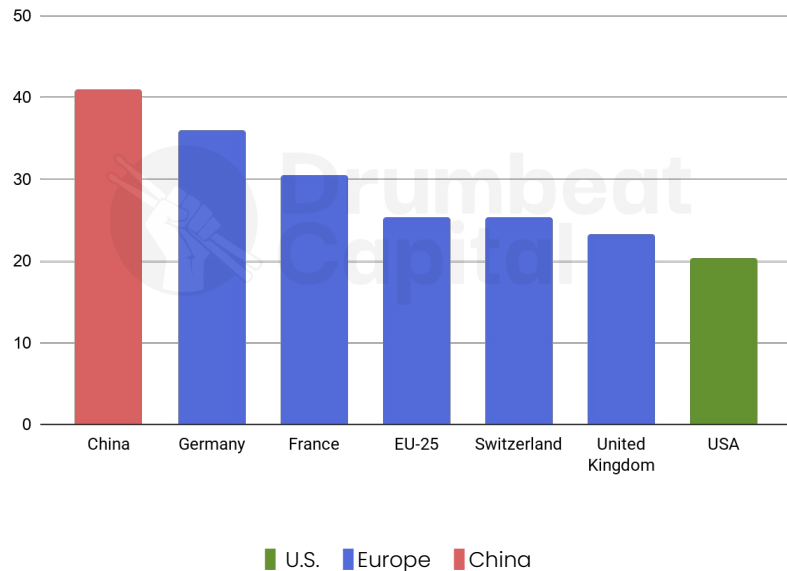


The race for technological leadership is increasingly a race for engineers, and Europe and China are producing them at scale.

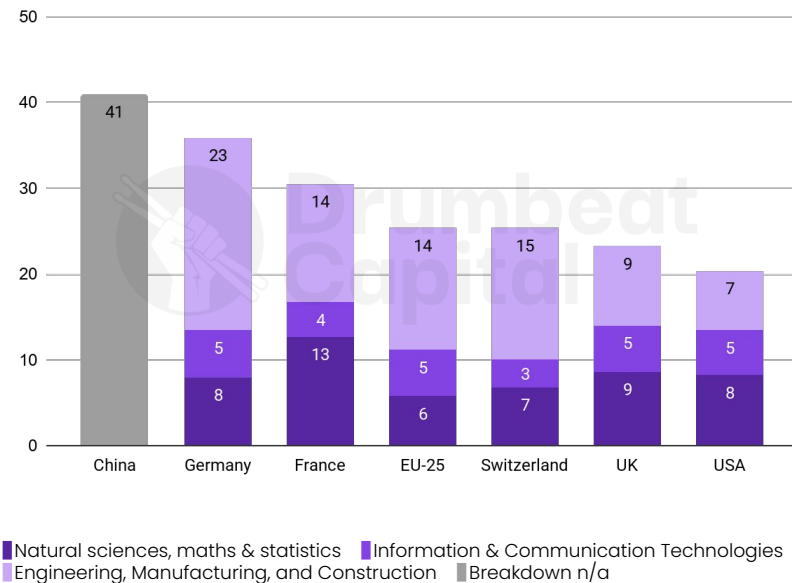
China graduates roughly 4x more STEM students than the U.S., while Europe produces 2x as many, giving both regions a significant scale advantage in scientific and technical talent. More importantly, Europe's STEM pipeline is highly engineering-focused: around 25% of all university graduates in the EU earn STEM degrees, compared with 20% in the U.S., with engineering and manufacturing accounting for the largest share.

Europe has a higher share of STEM students vs. the U.S.; mainly in Engineering

Share of university graduates in STEM as % of students



Share of university graduates in STEM by STEM field



Top 10 Universities: founder quantity split; U.S. dominates Unicorn founders

of alumni founded Deep Tech startups since 2010

#	University	Alumni-founded	University Spinouts
1	Stanford	665	97
2	MIT	603	133
3	Berkeley	432	67
4	Cambridge	327	69
5	Harvard	282	32
6	Imperial College London	242	25
7	Oxford	236	62
8	Technical University Munich	193	38
9	Cornell University	188	25
10	Carnegie Mellon	184	47

■ U.S. ■ Europe

of alumni founded Deep Tech **unicorns** since 2010

#	University	Above \$1B	Above \$10B	Above \$100B
1	Stanford	73	8	2
2	MIT	62	10	1
3	Berkeley	30	6	2
4	Harvard	30	7	2
5	Carnegie Mellon	20	6	2
6	Cambridge	16	3	0
7	Michigan	16	1	0
8	Cornell	15	2	0
9	NYU	14	3	1
10	Oxford	14	3	0

■ U.S. ■ Europe

The Bay Area has more Deep Tech unicorns than the rest of the top 10 combined

of Deep Tech startups since 2010

#	Region	# of Deep Tech Startups
1	Bay Area	1981
2	London	713
3	New York City	553
4	Boston	383
5	Los Angeles	380
6	Paris	279
7	Berlin	277
8	Seattle	180
9	Munich	172
10	Helsinki	155

■ U.S. ■ Europe

of Deep Tech unicorns since 2010

#	Region	Above \$1B	Above \$10B	Above \$100B
1	Bay Area	130	23	4
2	Los Angeles	23	1	—
3	New York City	21	2	—
4	Boston	18	—	—
5	London	13	2	—
6	Austin	9	1	1
7	Paris	6	1	—
8	Seattle	6	—	—
9	Munich	6	2	—
10	San Diego	5	1	—

■ U.S. ■ Europe

The Bay Area has the most companies in all segments; London leads Europe

Deep Tech Hubs ranked by number of VC-backed Deep Tech Startups, 2020–2025

■ U.S. ■ Europe

Rank	Overall	Space	Defense	Robotics	Semiconductors	Energy	Novel AI	Materials
#1	Bay Area 16.0%	Bay Area 9.2%	Bay Area 7.3%	Bay Area 18.2%	Bay Area 18.0%	Bay Area 9.3%	Bay Area 36.0%	Bay Area 9.1%
#2	London 5.5%	Los Angeles 8.4%	London 6.9%	New York 4.0%	Boston 4.0%	London 5.3%	London 12.3%	London 6.4%
#3	New York 4.9%	London 3.5%	Los Angeles 5.8%	Los Angeles 3.9%	New York 3.4%	Paris 4.0%	New York 6.3%	Boston 6.0%
#4	Boston 4.0%	Paris 2.6%	San Diego 4.2%	Boston 3.9%	Los Angeles 3.2%	Boston 3.9%	Paris 4.7%	New York 3.1%
#5	Los Angeles 3.2%	Munich 2.6%	Boston 3.9%	London 3.3%	London 2.1%	Los Angeles 2.6%	Boston 3.6%	Paris 2.7%
#6	Paris 2.6%	Washington DC 2.5%	New York 3.5%	Zurich 2.1%	Paris 1.9%	New York 2.1%	Berlin 2.4%	Cambridge (UK) 2.6%
#7	Berlin 2.1%	Oxford 2.5%	Paris 3.5%	Seattle 1.8%	Cambridge (UK) 1.9%	Berlin 2.0%	Los Angeles 1.6%	Berlin 2.1%
#8	Seattle 1.5%	Seattle 2.3%	Munich 3.5%	Pittsburgh 1.8%	San Diego 1.6%	Grenoble 1.9%	Zurich 1.6%	Helsinki 2.1%
#9	Munich 1.4%	Denver 2.1%	Austin 3.1%	Paris 1.6%	Rotterdam 1.5%	Cambridge (UK) 1.8%	Stockholm 1.6%	Los Angeles 1.5%
#10	Helsinki 1.2%	Boulder 2.0%	Tallinn 2.7%	Munich 1.6%	Eindhoven 1.5%	Lausanne 1.5%	Philadelphia 1.6%	Oxford 1.5%

Most funding still goes to U.S. hubs concentrating around the Bay Area & L.A.

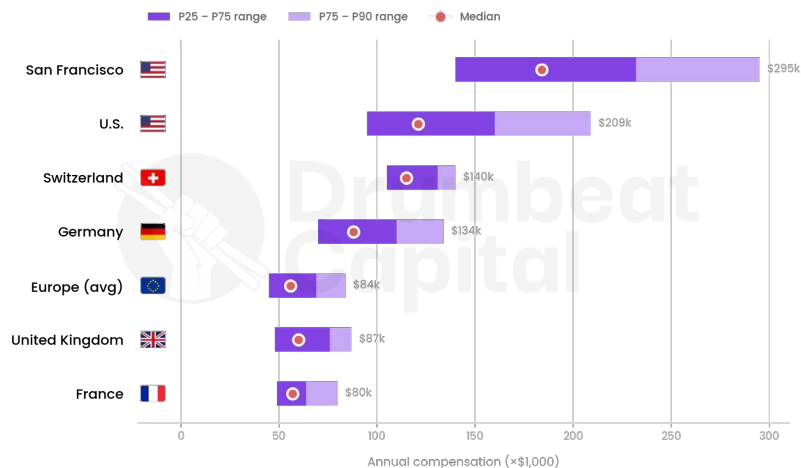
Deep Tech Hubs ranked by total VC capital raised, 2020–2025

■ U.S. ■ Europe

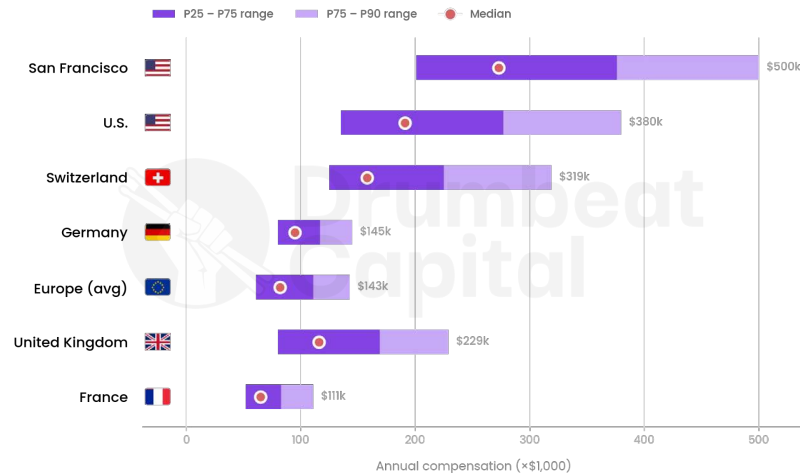
Rank	Overall	Space	Defense	Robotics	Semiconductors	Energy	Novel AI	Materials
#1	Bay Area 51.1%	Los Angeles 24.0%	Los Angeles 47.3%	Bay Area 50.4%	Bay Area 48.8%	Bay Area 16.4%	Bay Area 89.6%	Bay Area 24.7%
#2	Boston 6.1%	Bay Area 10.6%	Munich 10.6%	Los Angeles 6.7%	Boston 6.7%	Boston 16.4%	New York 2.7%	Stockholm 14.6%
#3	Los Angeles 4.6%	Boulder 8.6%	Bay Area 6.0%	Pittsburgh 4.5%	Cambridge (UK) 6.1%	Stockholm 8.5%	Paris 2.2%	Boston 12.3%
#4	New York 4.2%	Seattle 6.5%	San Diego 5.6%	Boston 4.5%	Miami 2.8%	Los Angeles 6.6%	London 1.9%	Los Angeles 5.0%
#5	London 2.2%	Munich 5.1%	Austin 5.2%	Austin 4.2%	Los Angeles 2.3%	Seattle 4.1%	Pittsburgh 0.9%	Houston 4.7%
#6	Stockholm 2.1%	Washington DC 4.5%	Boston 1.8%	New York 2.6%	Paris 2.2%	Houston 3.2%	Boston 0.8%	Austin 3.5%
#7	Paris 2.0%	Austin 4.2%	Seattle 1.7%	Seattle 1.9%	San Diego 2.1%	London 2.7%	Austin 0.3%	Cambridge (UK) 3.3%
#8	Austin 1.7%	Denver 3.5%	Pittsburgh 1.5%	Munich 1.6%	Austin 1.7%	San Diego 2.6%	Stuttgart 0.3%	Research Triangle 2.7%
#9	Munich 1.5%	Helsinki 3.3%	Washington DC 1.3%	Zurich 1.6%	Helsinki 1.7%	Austin 2.4%	Oxford 0.2%	Chicago 1.9%
#10	Seattle 1.2%	Houston 3.3%	New York 1.0%	Boulder 1.5%	New York 1.6%	Denver 1.8%	Lausanne 0.1%	Paris 1.9%

Top-end U.S. salaries are 2-5x higher than in Europe

Mechanical Engineer: Salary distribution by country



Software Engineer: Salary distribution by country

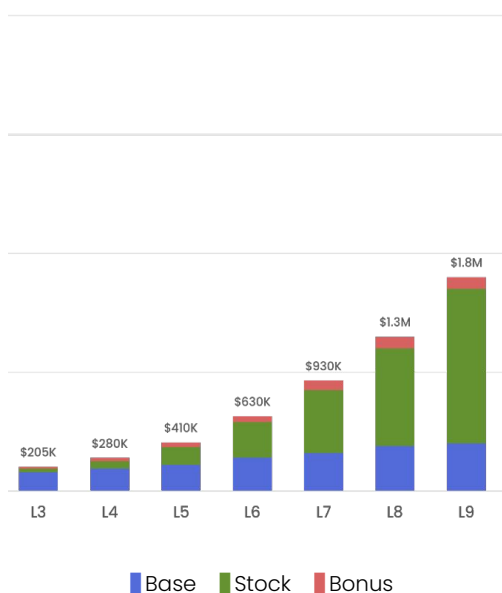


Total comp packages for experienced U.S. Software engineers are several million \$

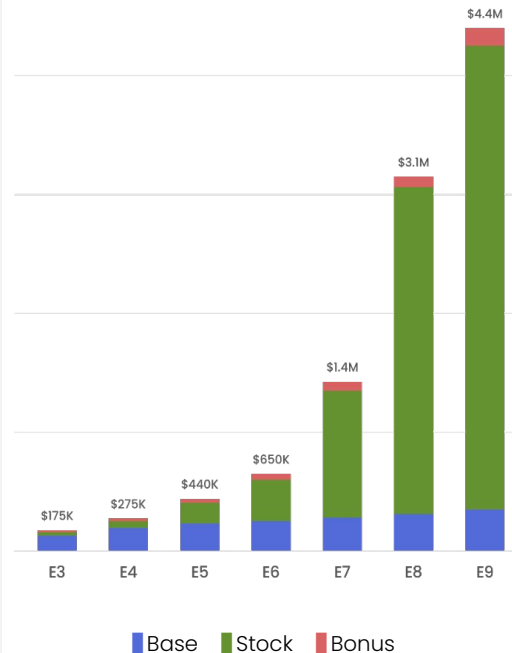
OpenAI: Software Engineer



Google: Software Engineer



Meta: Software Engineer



European employees are on average 2x as loyal across all age groups

The U.S. job market excels in agility and talent velocity, whereas the European market prioritizes long-term loyalty—offering companies a massive cost advantage by minimizing re-hiring and retraining expenses.

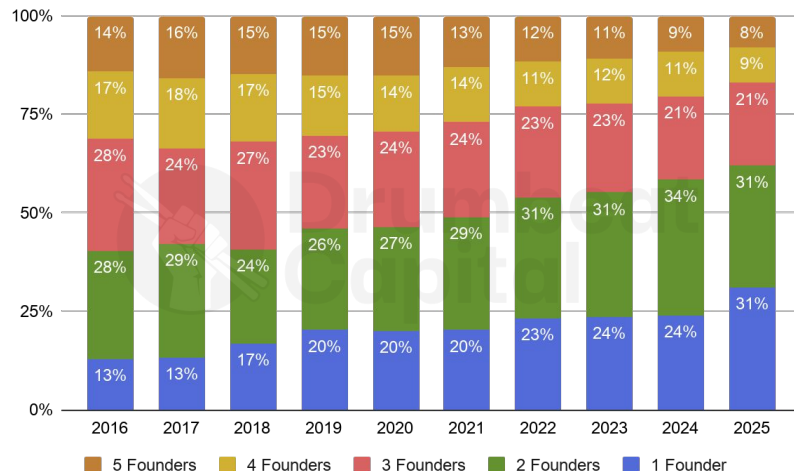
This velocity drives an intensely competitive hiring ecosystem in the U.S., where companies face a non-stop talent war to retain top performers. Conversely, European labor markets are structurally more rigid, governed by strong employee protections.

Average job tenure, U.S. vs. EU-27

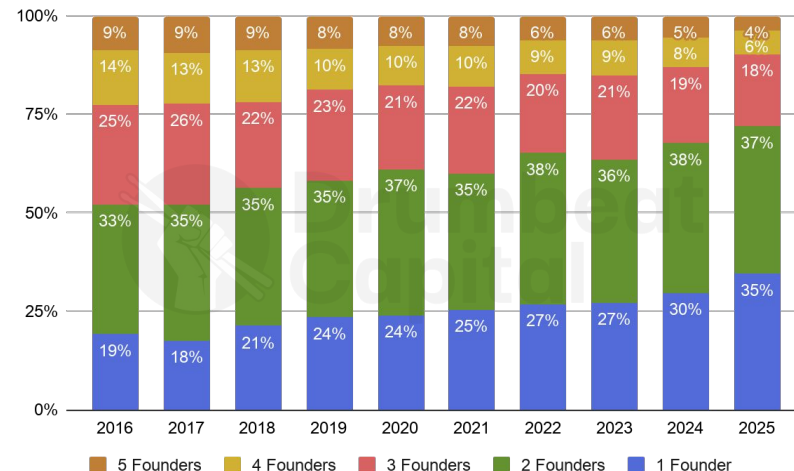


Deep Tech founding teams trend larger, but solo founders are becoming more common

Deep Tech # of founders

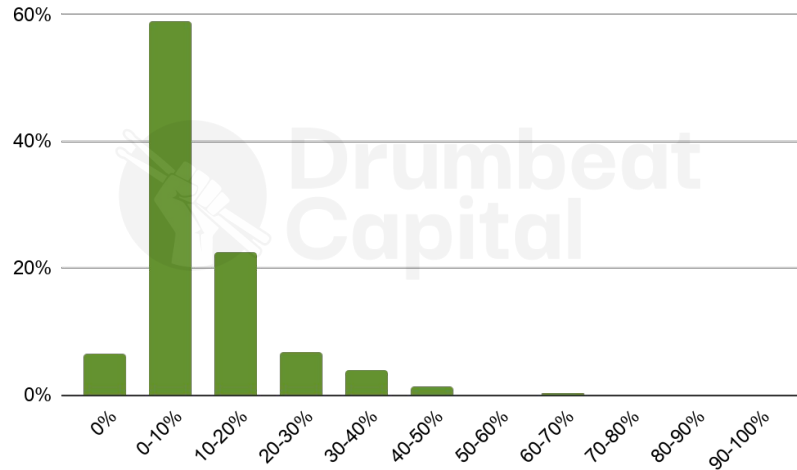


Regular Tech # of founders

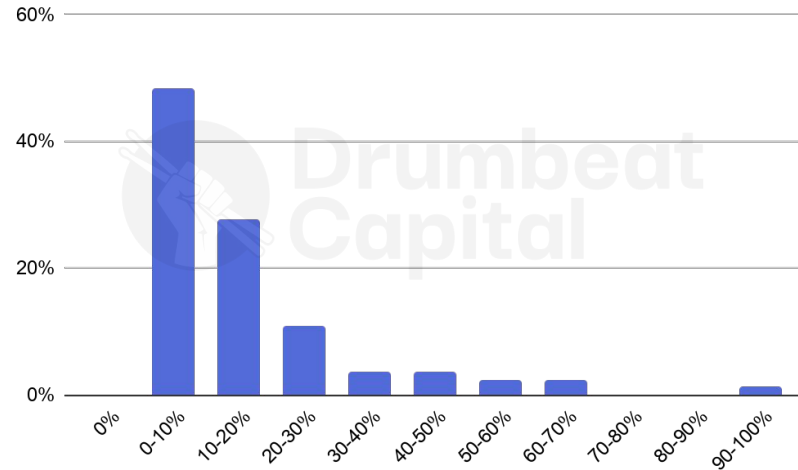


Transatlantic workforce integration is slightly higher for European companies

% of U.S. unicorn employee base located in Europe



% of European unicorn employee base located in U.S.



Ilya Strebulaev

The David S. Lobel Professor of Private Equity and Professor of Finance; Director of the Venture Capital Initiative, Graduate School of Business, Stanford University



Yana Pavlovskaya

Head of Communications and Impact, Venture Capital Initiative, Graduate School of Business, Stanford University



“When we built the unicorn founder dataset, one finding kept resurfacing: a small number of research universities account for a disproportionately large share of the most successful companies, and the founders behind them are older, more experienced, and more often repeat founders than is commonly believed.

In Deep Tech, these characteristics are not just an advantage, but a necessity: you cannot build these companies with two people in a garage. The science demands sustained proximity to research institutions, specialized human capital, long development cycles, and considerable capital.

Deep Tech should not be treated as yet another category. It operates under a fundamentally different mindset, and capital allocation should reflect that. Hopefully, this report represents a step in that direction.”

Matt Rappaport

Co-Founder & Director, UC Berkeley
Deep Tech Innovation Lab



“What makes Berkeley exceptional isn't any single program or lab — it's the density of talent, capital, and institutional support that surrounds founders at every stage. We work to make sure that density is accessible: connecting researchers to real commercialization pathways and giving early-stage Deep Tech founders the IP strategy, regulatory clarity, and investor relationships they need to build companies that last. The ecosystem here is thriving, and it's only accelerating.”

Notable Berkeley Spin-Outs in the Deep Tech Ecosystem

- **Databricks** — Founded by 7 UC Berkeley AMPLab researchers (Ali Ghodsi, Ion Stoica, Matei Zaharia, et al.). Built on Apache Spark. Valued at \$62B (Dec 2024). The largest company to emerge directly from Berkeley research.
- **Ayar Labs** — Co-founded from Berkeley/MIT/CU Boulder DARPA research. Optical I/O chiplets replacing copper with light. \$870M total funding, \$3.75B valuation (Feb 2026). Backed by Nvidia, AMD, Intel, TSMC.
- **Rigetti Computing** — Quantum computing. Raised \$350M in 2025 second public offering on Nasdaq.
- **KoBold Metals** — Proprietary AI for critical mineral discovery (copper, lithium, nickel, cobalt). Raised \$280M in 2025.
- **Terabase** — AI/robotics-assisted assembly for utility-scale solar plants. \$147M raised in 2025.

Connor Farrell

Program Manager, Founders at
the University of Cambridge



“Cambridge has been home to 862 startups and spinouts, including 27 unicorns. Pair that with 126 Nobel Prizes and an IP policy regarded as one of the most founder-friendly in research, and what follows is no surprise.

Cambridge has now trained or been home to many of Europe’s greatest recent Deep Tech founders: Alex Kendall (Wayve), Clare Grey and Sai Shivareddy (Nyobolt), Carmen Palacios-Berraquero (Nu Quantum), Steve Brierley (Riverlane), Piotr Dabkowski (ElevenLabs), Steven Barrett (Cambridge Aerospace), Ilyas Khan (Quantinuum), with many more from DeepMind to ARM that came before them.

Cambridge might be a small city, but its innovation ecosystem is having a phenomenal impact on the state of European Deep Tech.”

FOUNDERS.
At the University of Cambridge

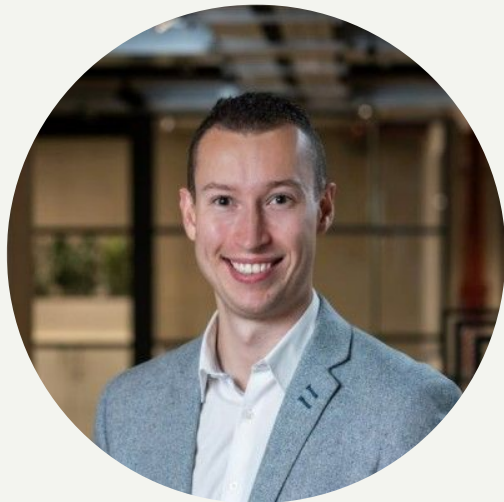
ACCELERATING BRILLIANCE.

Delivered by
CAMBRIDGE Enterprise



Sam Harman

Partner, Head of Deep Tech,
Oxford Science Enterprises



"The key highlight for Deep Tech during the year was the exit of **Oxford Ionics** for \$1.075bn which delivered an impressive 30x MM.

Some key areas of interest for us include:

Energy & climate: Clean hydrogen, smart infrastructure, decarbonisation, sustainable food systems – science powering a net-zero future.

Industrials: Advanced materials, sensors, robotics, space tech – reinventing how the physical world is built and maintained.

Future of compute: Quantum, photonics, semiconductors, cybersecurity – building the infrastructure of the AI era and unlocking a new wave of global innovation.

Our portfolio enhances UK resilience by developing companies in strategically critical sectors: AI, quantum, climate, healthtech, life sciences, with ~25% directly supporting national security.

Oxford Science Enterprises is the world's largest single university venture-builder. A proven company-building engine, optimised over 10 years, now creating ~1 new deep science company a month – aiming to rise to 20 pa in 2030."

Helmut Schoenenberger

Co-Founder & CEO UnternehmerTUM,
VP Entrepreneurship TUM



UNTER
NEHMER
TUM



"Munich has emerged as a premier Deep Tech hub, powered by the synergy between TUM—a world-class entrepreneurial university—and a dense cluster of innovative industry leaders."

1. What was the hardest thing about building up the ecosystem?

"The hardest thing is getting all key stakeholders – universities, corporates, investors, government and startups – to align and to collaborate. Turning strong research and talent into industrial value creation at scale is a joint long term mission."

2. Can it serve as a blueprint for other ecosystems?

"TUM and UnternehmerTUM can serve as blueprints – e.g. for the German lighthouse competition "Startups Factories". But it needs adaptation to local strengths rather than copying the full Munich stack."

3. Should we have more of these ecosystems or should we concentrate on very few selected centers of excellence (i.e. like Silicon Valley)?

"Europe needs more ecosystems with excellent talent and research. Nevertheless, these "gravity centers" should specialize instead of trying to cover everything to win in the global competition."

4. Is there something that is still missing in the Munich ecosystem that we need to overcome?

"What's still missing in Munich is hyperscaling: Super-fast and focused translation into industrial value creation plus scaling. Government can be of great help by setting startup-friendly conditions, activating demand, and mobilizing growth capital across stakeholders."



Alex Ilic

Co-Founder & Executive Director,
ETH AI Center

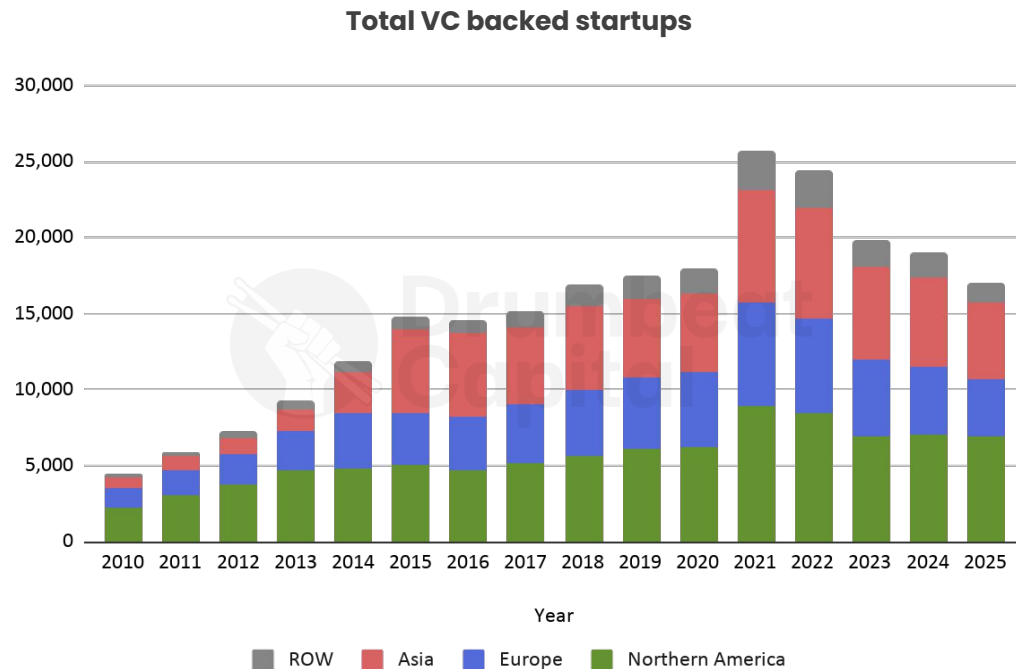


“We believe AI is the key to unlock the next Deep Tech wave. Zurich has become Europe’s #1 AI hotspot — nowhere else are all the major tech players, industry, frontier labs, and a fast-growing wave of startups concentrated in such a dense area. Together with EPFL, ETH is currently the only university worldwide to practically educate talents for large-scale, frontier AI. Especially in the areas of trustworthy AI, AI for science, and physical AI, we will see several new global champions coming out of Zurich with frontier AI at their core.”

2.3

Funding

Total Global VC Backed startups grew 3.8x since 2010



Hermann Hauser

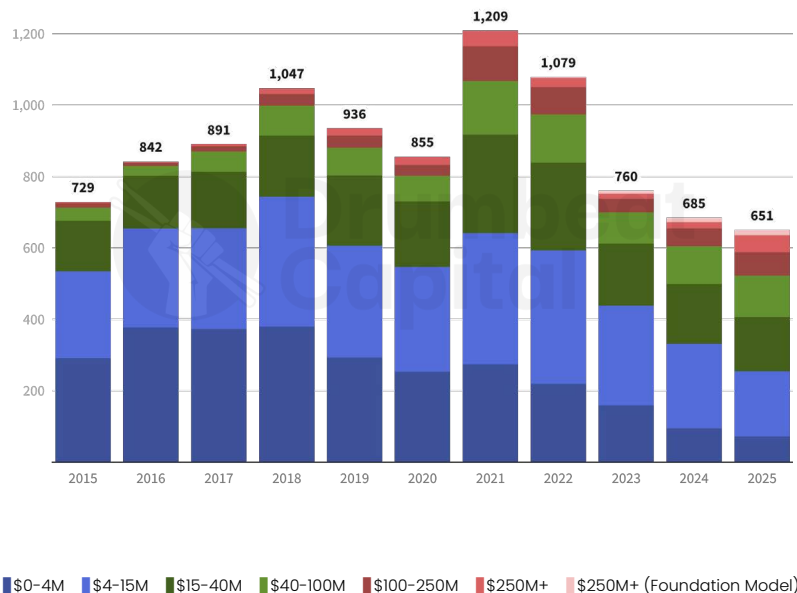
Director, Amadeus Capital Partners



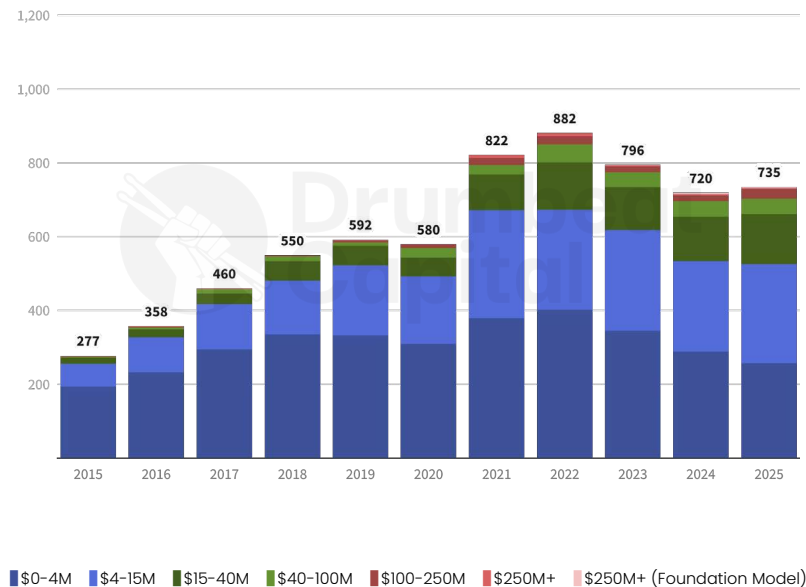
"This is the most exciting time for Deep Technologies in Europe. Never before has progress been more rapid not just in AI but also in quantum computing and Synthetic biology finally also in Europe."

Europe has overtaken the U.S. the in number of Deep Tech rounds

U.S.: Total number of VC rounds in Deep Tech startups

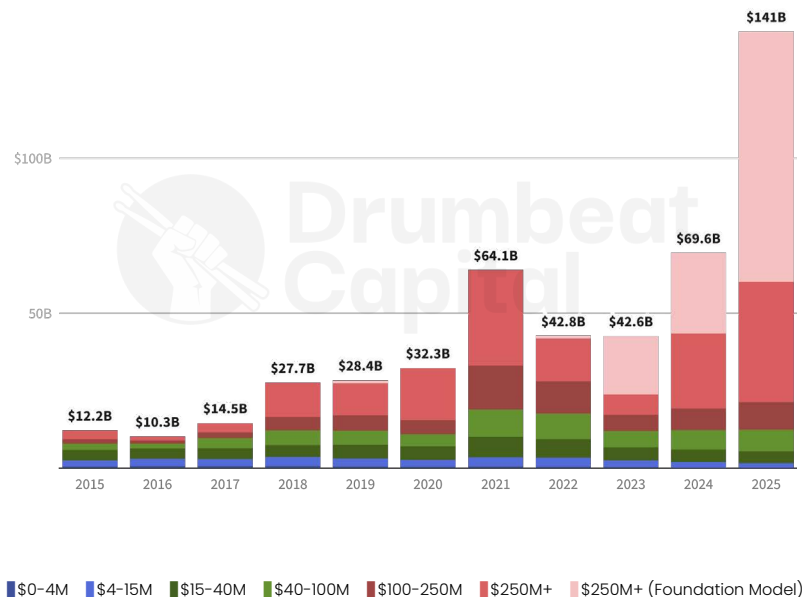


Europe: Total number of VC rounds in Deep Tech startups

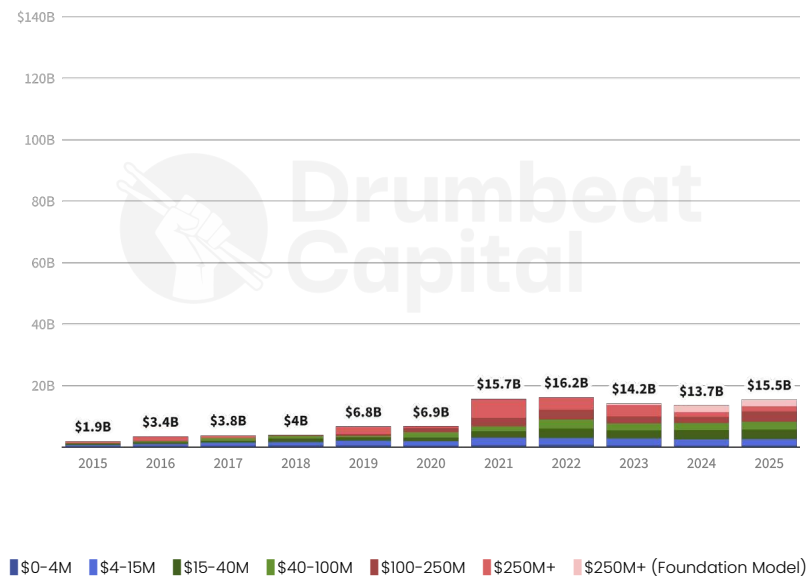


Total U.S. Deep Tech funding at record highs and 9x vs. Europe

U.S.: Deep Tech funding

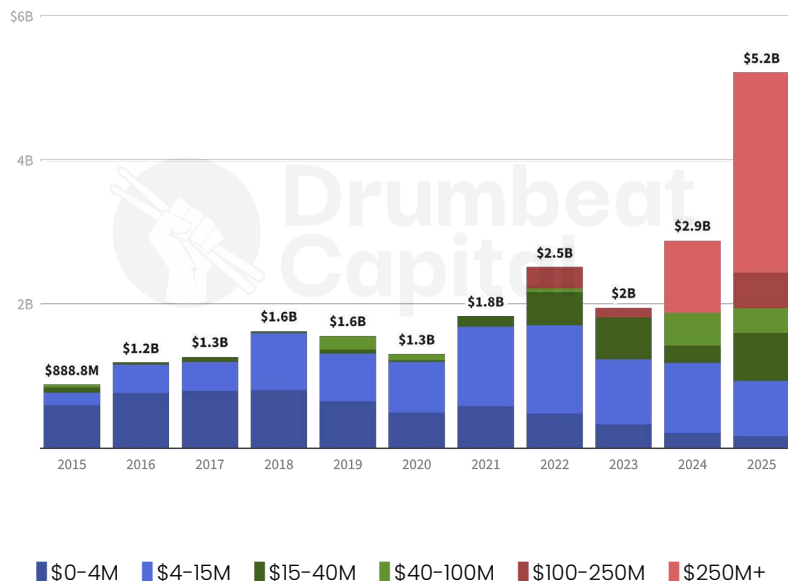


Europe: Deep Tech funding

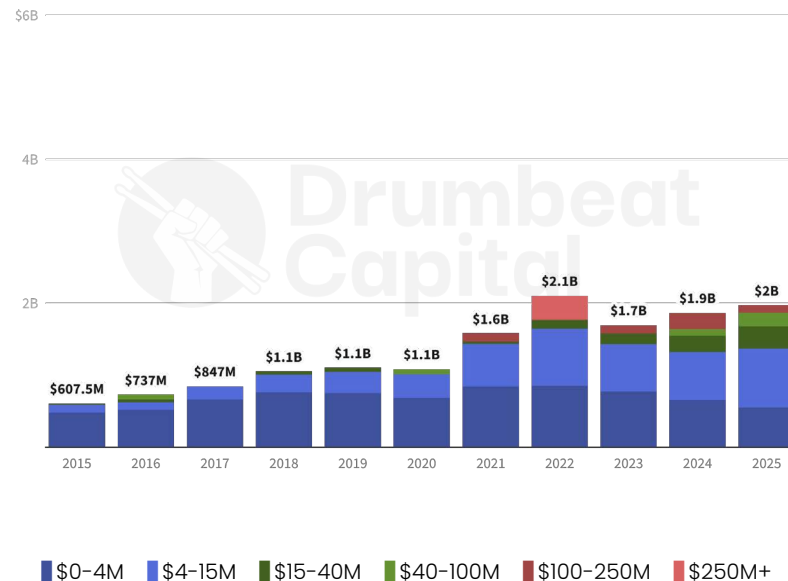


Seed funding is at record highs mainly driven by U.S. mega-rounds

U.S.: Seed Deep Tech funding

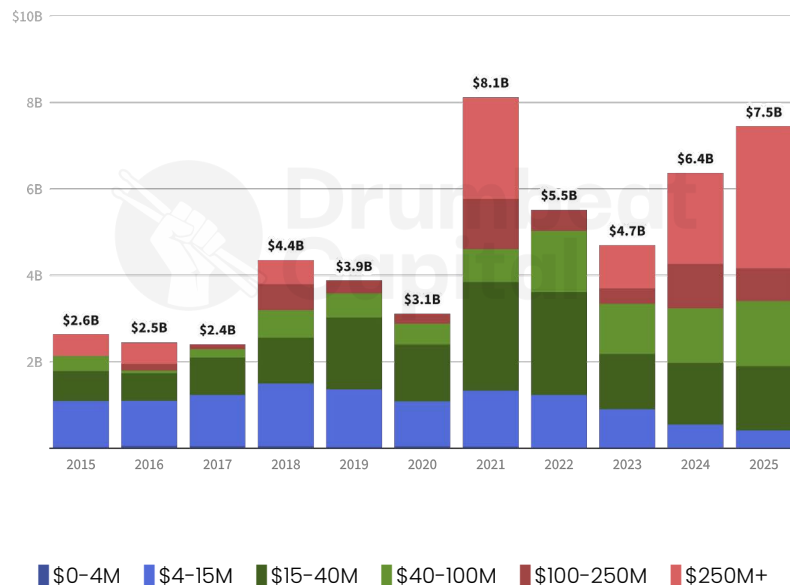


Europe: Seed Deep Tech funding

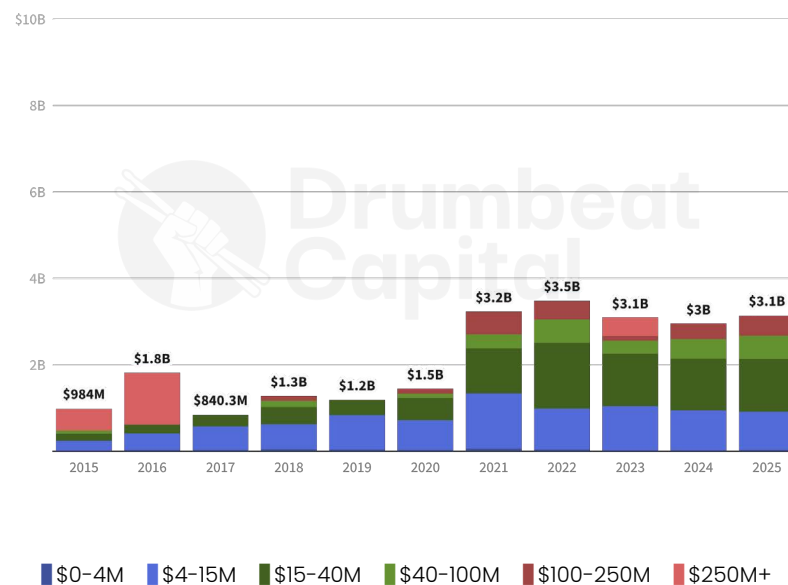


Series A funding is close to 2021 levels mainly driven by U.S. mega-rounds

U.S.: Series A Deep Tech funding

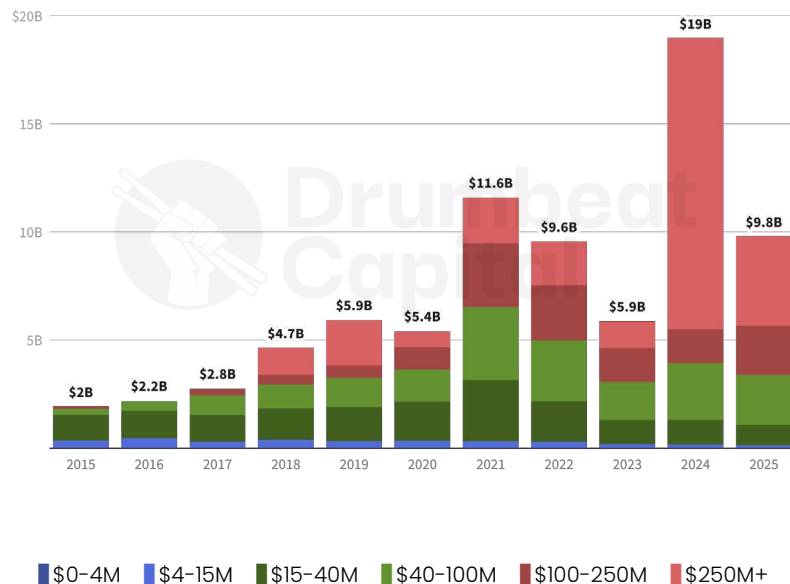


Europe: Series A Deep Tech funding

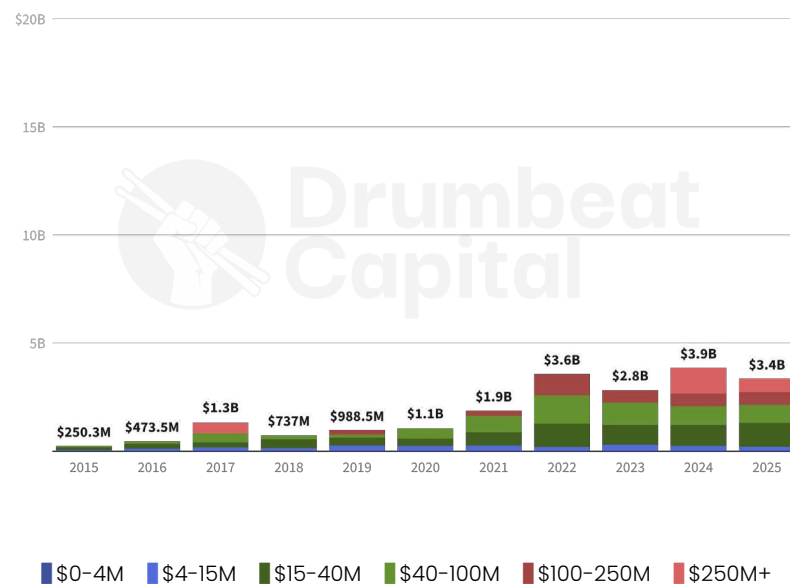


Series B funding dropped to similar levels as Series A in the U.S. and Europe

U.S.: Series B Deep Tech funding

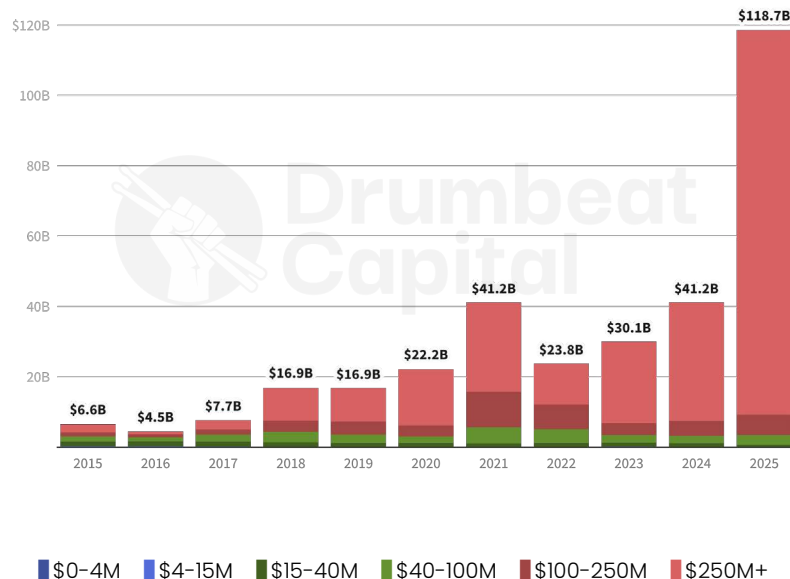


Europe: Series B Deep Tech funding

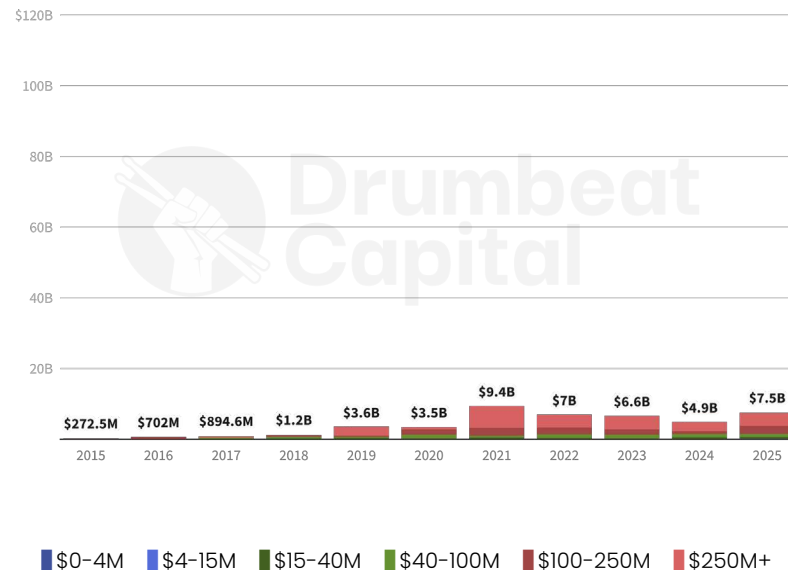


Series C+ at record highs in the U.S. driven by mega-rounds, Europe is flat

U.S.: Series C+ Deep Tech funding



Europe: Series C+ Deep Tech funding



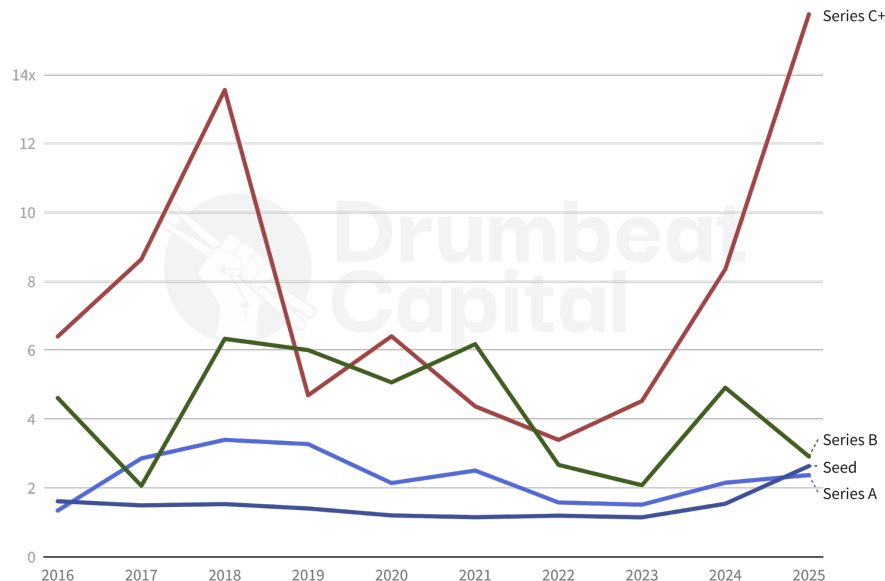
The U.S.-Europe funding gap is 2x at early stages and grows to 16x at later stages

At early-stages, Seed and Series A, U.S. Deep Tech startups raise 1.5x–4x more capital than European counterparts.

At Series B, the gap is wider at 3–5x.

The gap at Series C+ is much larger with a minimum of 4x, and a 16x all-time high in 2025.

U.S. / Europe VC funding ratio by round stage



Jean-David Malo

Director of Research and
Innovation, European Commission



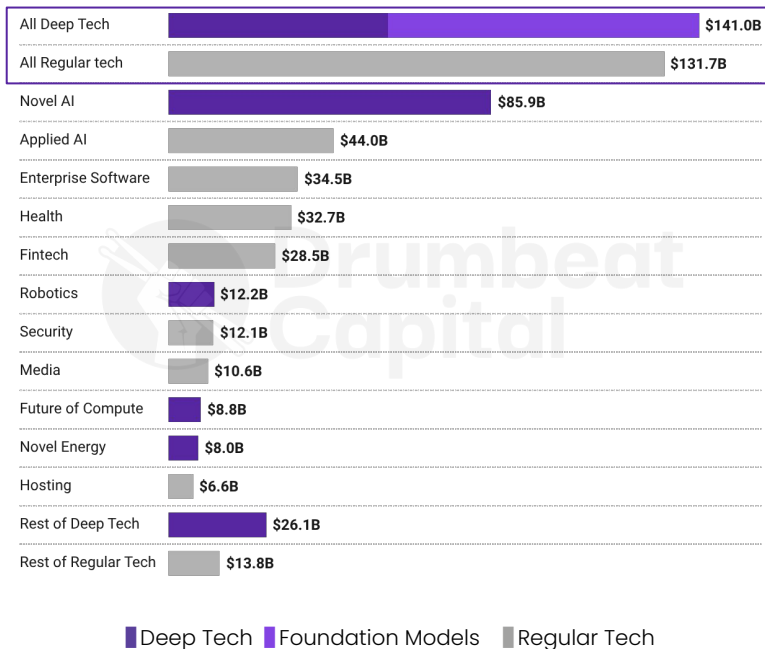
"Europe has no shortage of talent, nor of startup creation — only a shortage of scale. The ScaleUp Europe Fund (SEF) initiated by Commissioner Ekaterina Zaharieva has the purpose to change that.

It is designed to give Europe's most ambitious Deep Tech companies the capital they need to scale globally, by mobilizing a powerful coalition of private EU investors with the European Commission around a shared objective: turning European scientific excellence into global industrial leadership.

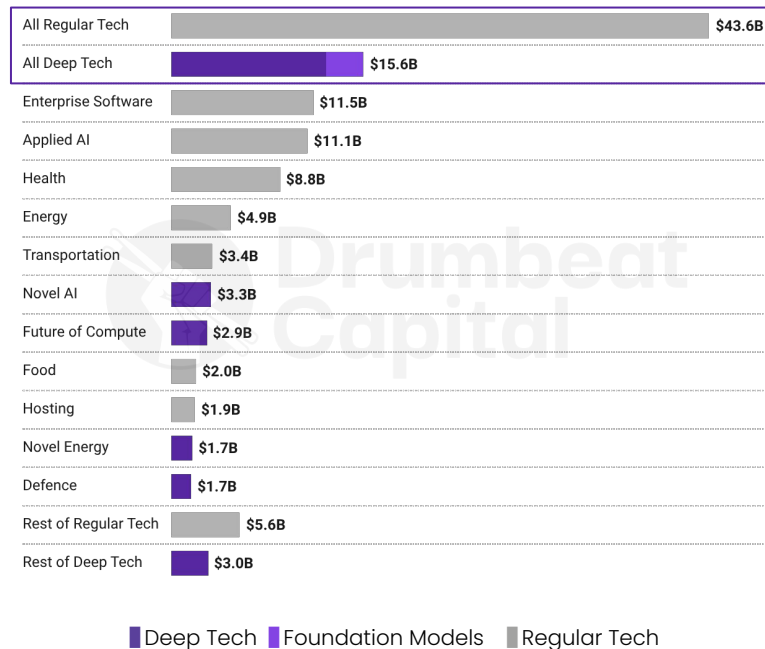
With a target size of €5 billion and the ambition to catalyze more than €20 billion in growth financing with other investors such as U.S. ones, the SEF aims to close Europe's scale-up gap and helps the next generation of European Deep Tech champions grow from breakthrough innovation to world-leading companies."

Deep Tech is the largest category in the U.S. and makes up 26% of European VC

U.S.: Capital raised by sector in 2025



Europe: Funding by sector in 2025

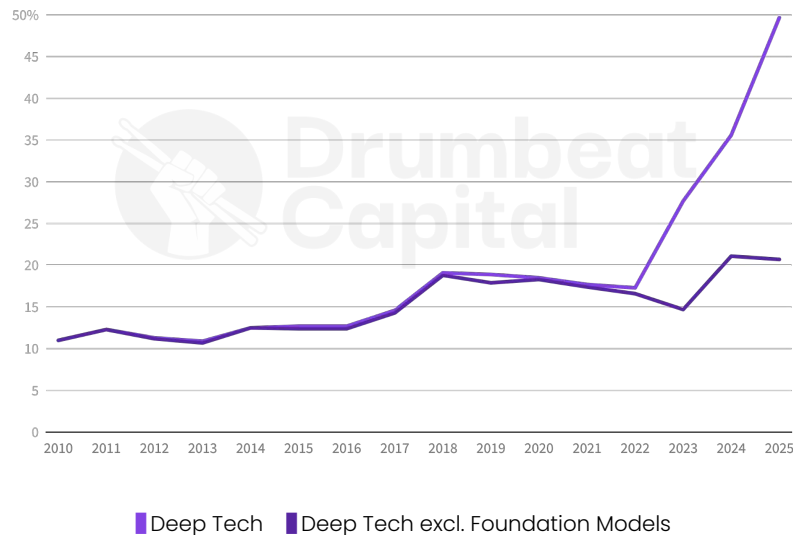


Note: Segments shown exclude overlaps with Deep Tech, so Climate Tech is to be understood as non Deep Tech Climate Tech (excluding nuclear, next gen batteries etc). Segments shown still overlap between each other beyond Deep Tech, for instance and AI x Health non Deep Tech startup is part of both AI and Health.

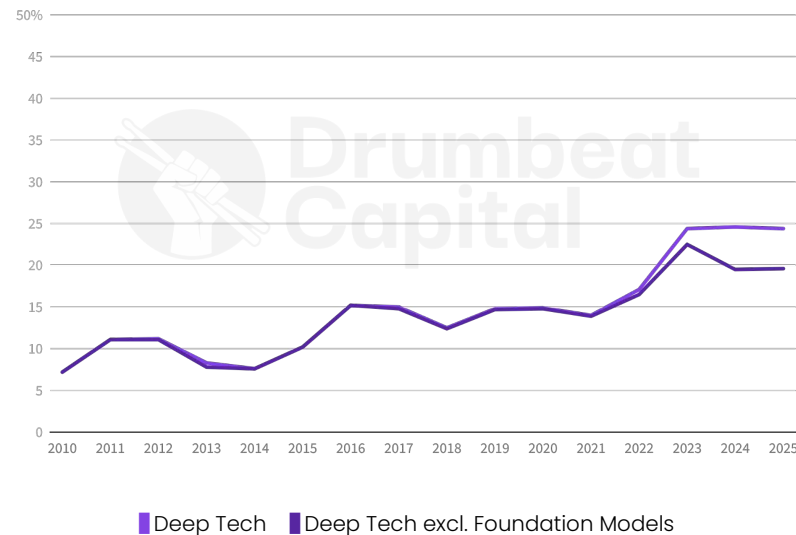
Source: Dealroom

Foundation Models have led to a peak in Deep Tech funding

U.S.: Share of Deep Tech as % of total VC funding

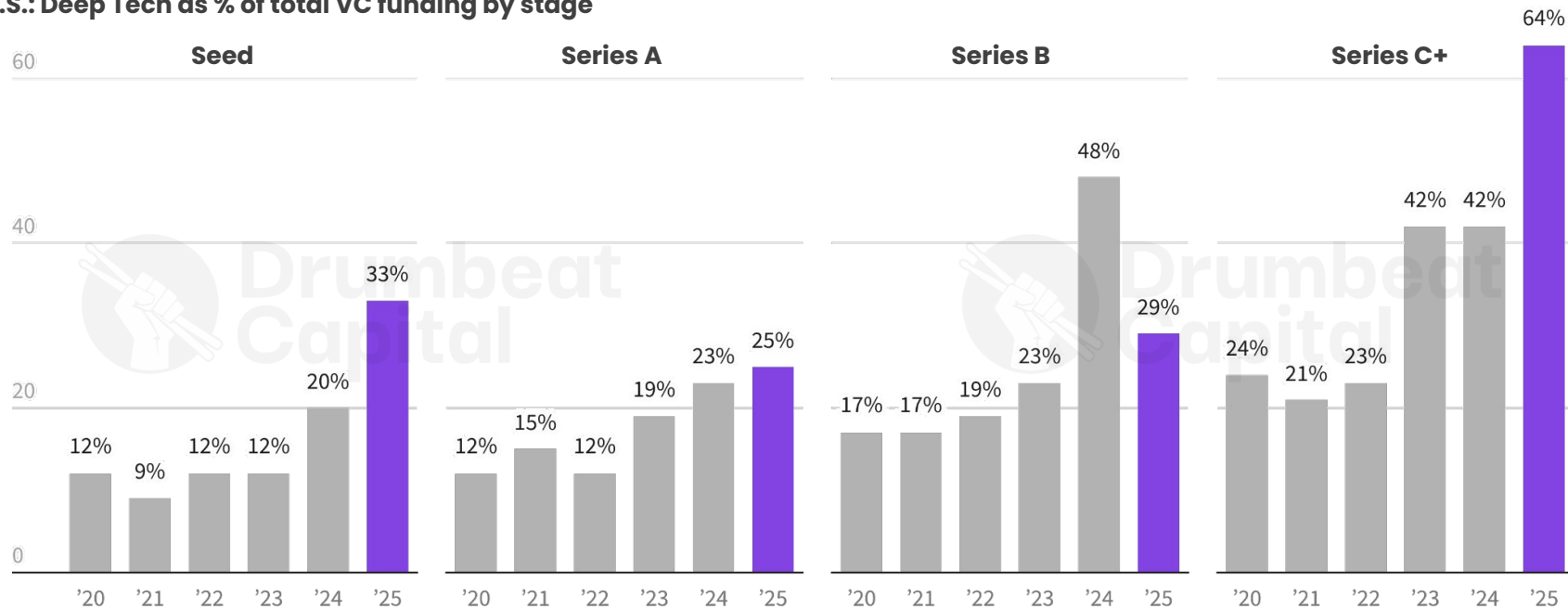


Europe: Share of Deep Tech as % of total VC funding



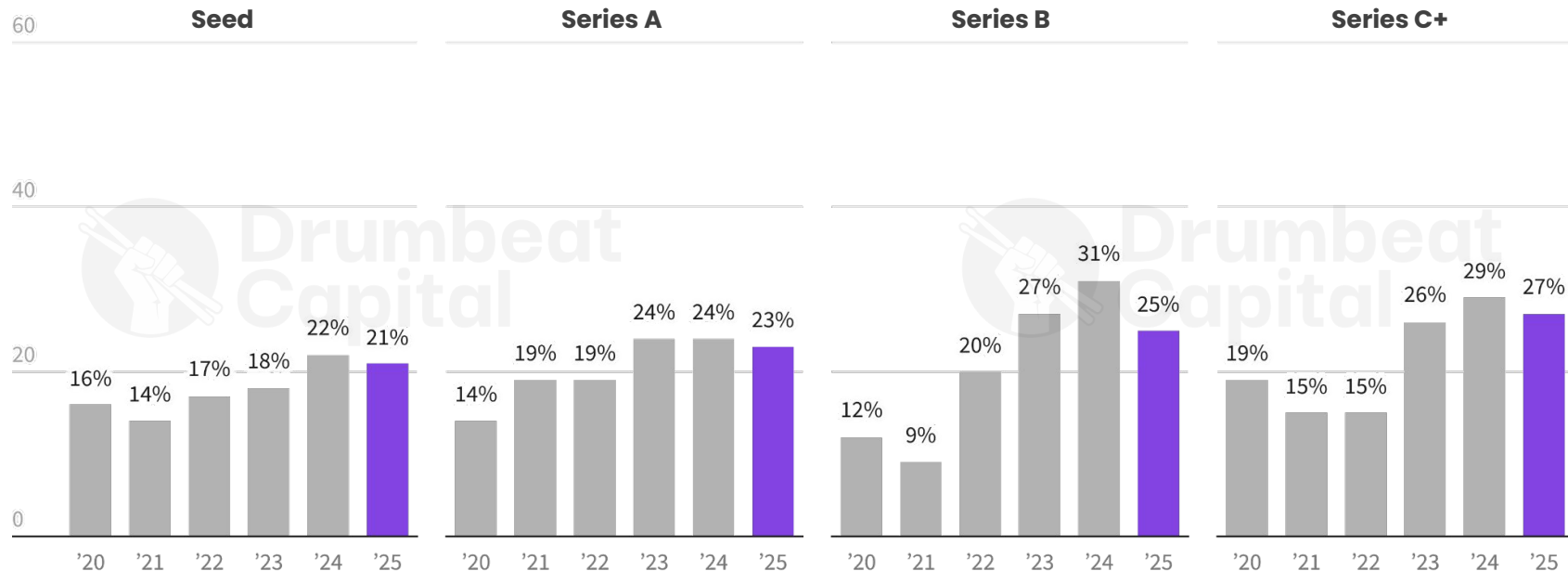
U.S.: Deep Tech as % of total VC funding is increasing across all stages

U.S.: Deep Tech as % of total VC funding by stage



Europe: Deep Tech as % of total VC funding is flat early, and increasing at growth

Europe: Deep Tech as % of total VC funding by stage

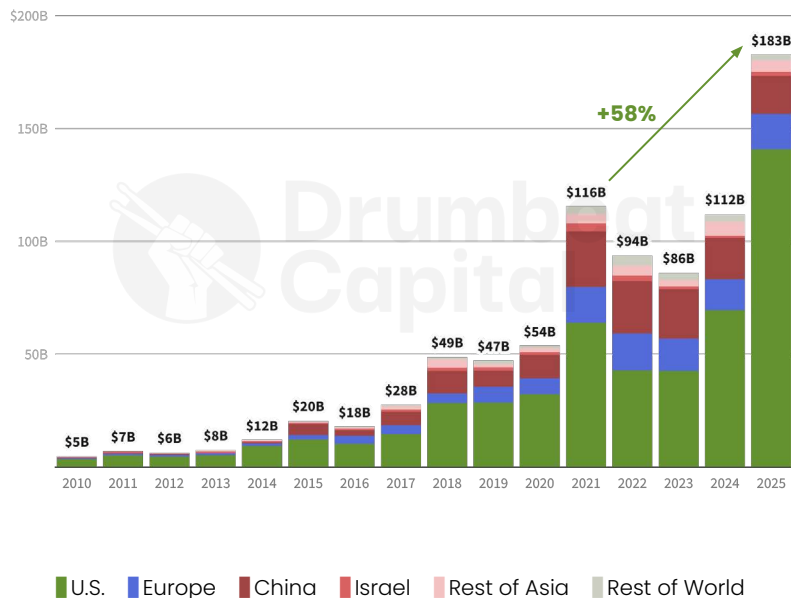


2.4

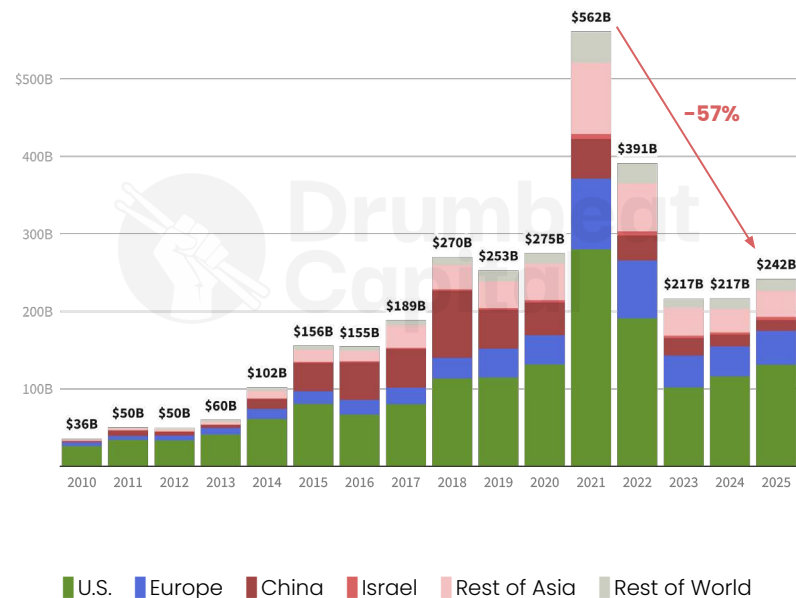
Geography

While regular tech is still below 2021 levels, Deep Tech is at record highs

Deep Tech funding by geography

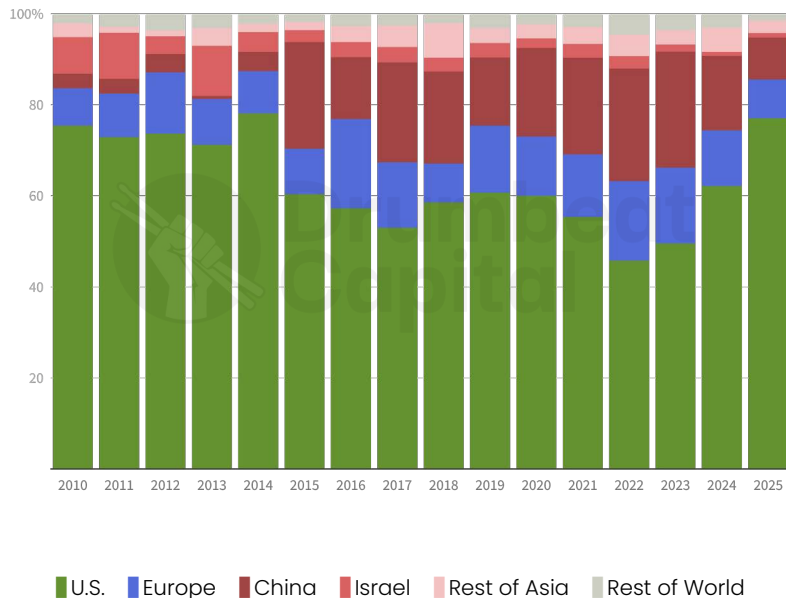


Regular Tech funding by geography

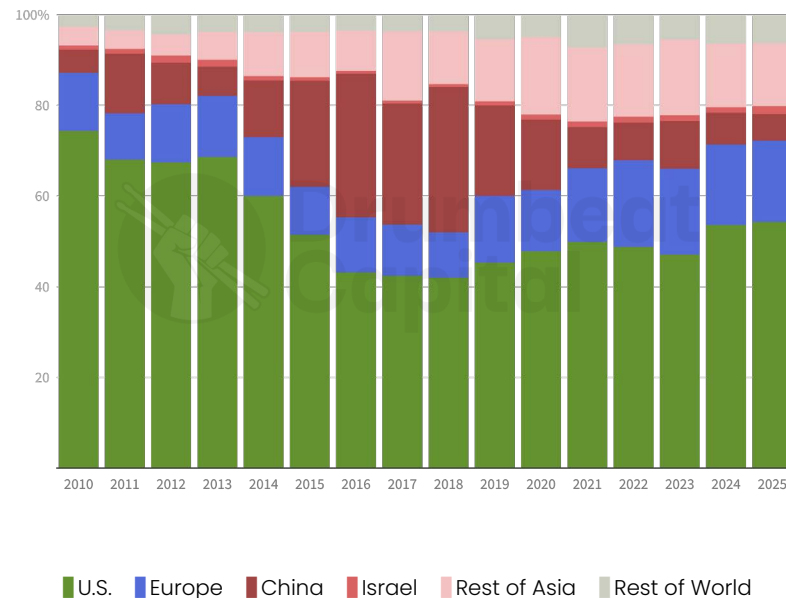


The U.S. makes up 80% of total Deep Tech funding and only 50% of Regular Tech

Deep Tech funding by Geography, % of total

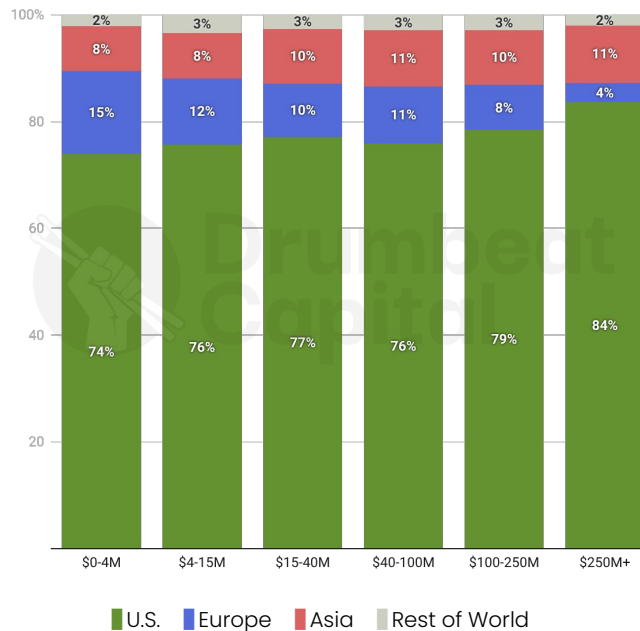


Regular Tech funding by Geography, % of total

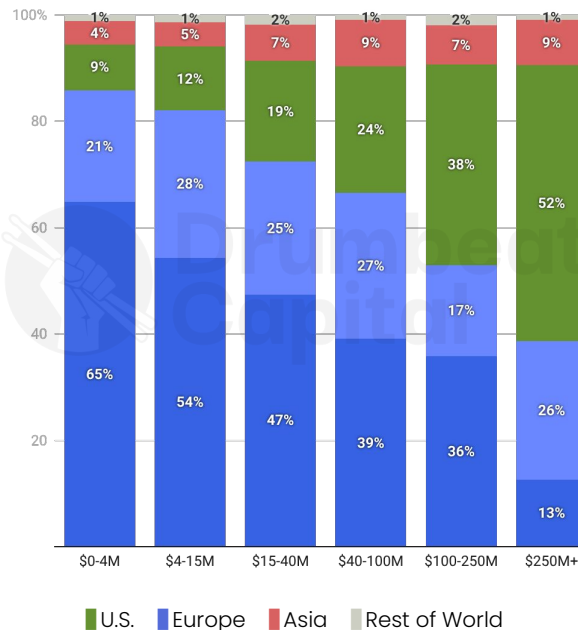


U.S. Deep Tech ecosystem is self-sufficient; Europe depends on U.S. funding at late stage

VC Investment in U.S. Deep Tech by source (24-25)

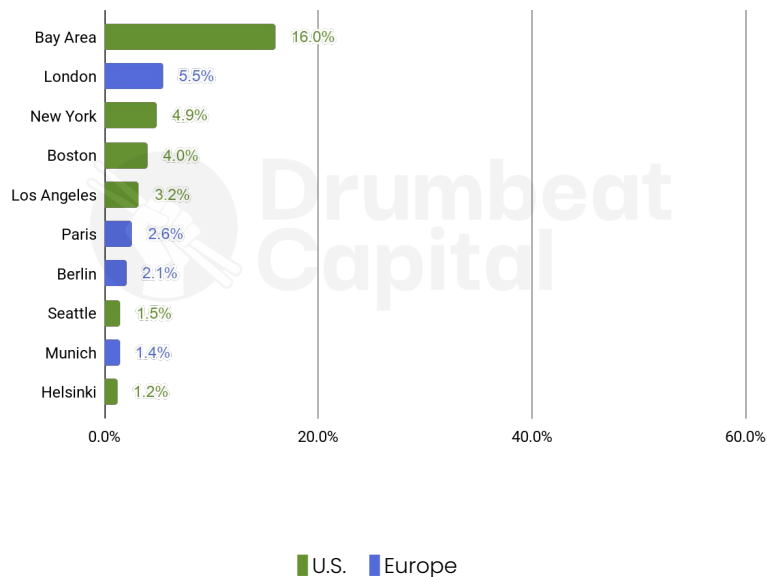


VC Investment in European Deep Tech by source (24-25)

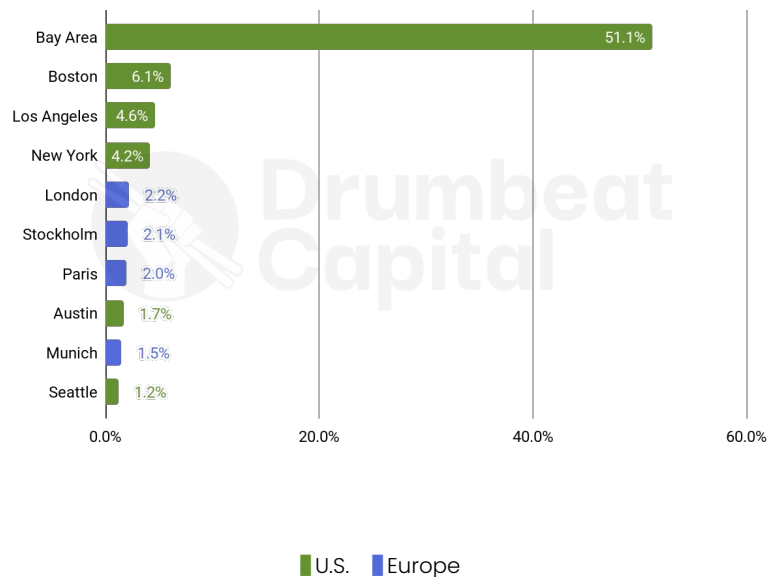


The Bay Area hosts just 16% of Deep Tech startups, but captures >50% of all capital raised

% of total # of Deep Tech startups, 2010–2025

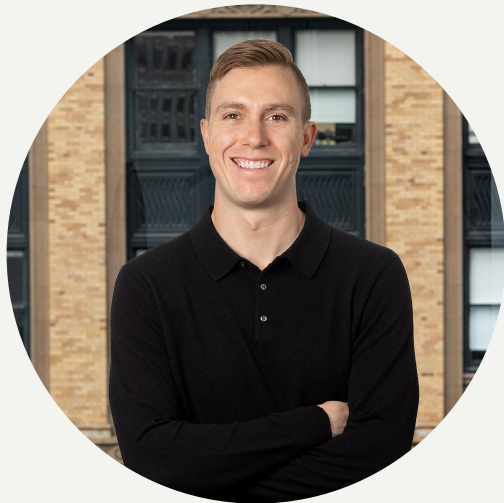


% of total capital raised, 2010–2025



Chris Partin

Partner, Gunderson Dettmer



"A useful way to read both markets right now: the U.S. is running fast, Europe is running steadier. Last year, U.S. deal value nearly reached 2021's record high, and 2026 is off to an astounding start. Europe's deal value grew year-over-year for the second consecutive year, driven by fewer, larger rounds and a maturing environment. Both markets have momentum, they are just expressing it much differently."

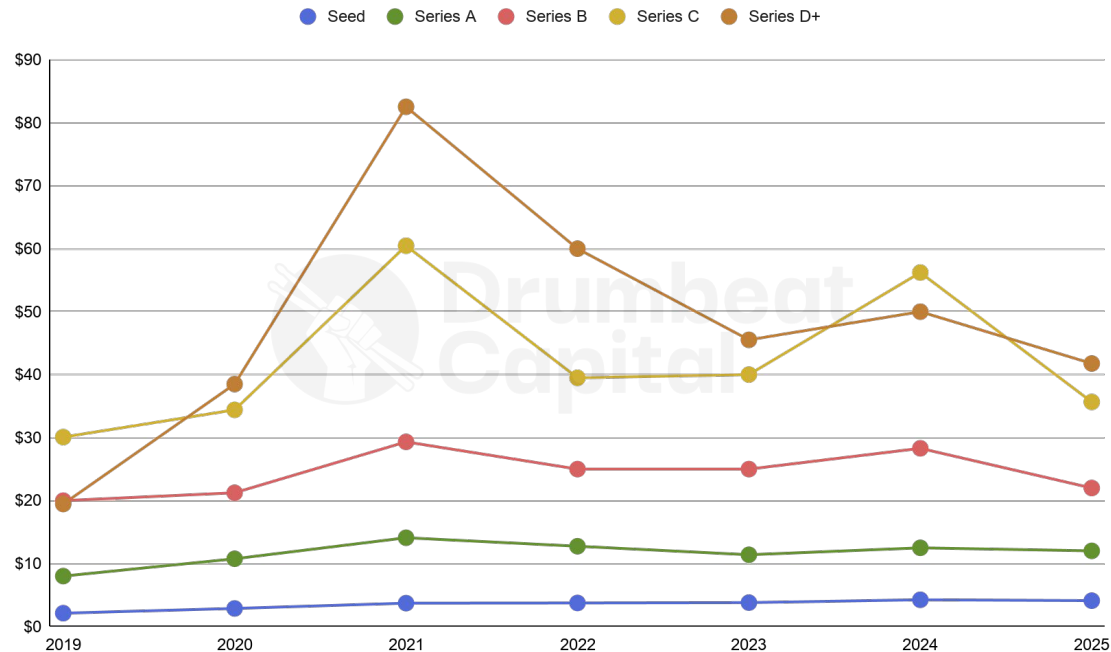
2.5

Round Sizes

Note: Data in this chapter utilizes direct U.S. cap table data provided by Carta. Similarly accurate European data is not yet available, but we look forward to including it in future reports when it is.

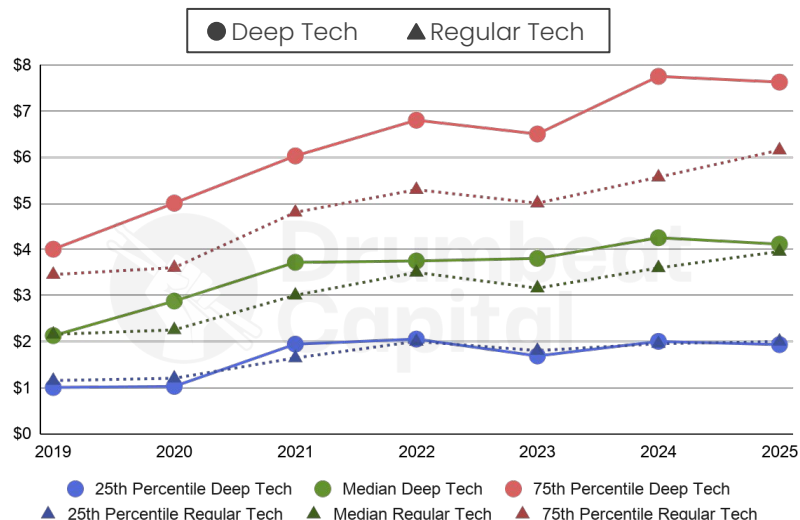
U.S. Deep Tech median round sizes are moderating after COVID spike

Median round size (\$M)



U.S. Median Deep Tech Seed round size is \$4.1M

Seed round size (\$M)



Seed round size has **doubled** in the last six years

Median and lower Seed round size is similar between Deep Tech and Regular Tech

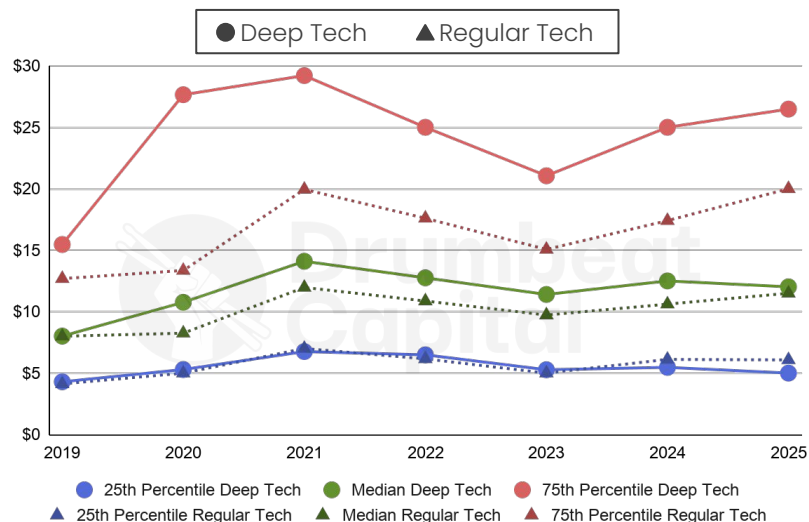
75th percentile Seed round size for Deep Tech tend to be bigger than Regular Tech

The Deep Tech round size premium increases with larger rounds

2025	25%ile	Median	75%ile	90%ile
Deep Tech	\$1.9	\$4.1	\$7.6	\$15.0
Regular Tech	\$2.0	\$3.0	\$6.2	\$10.5
DT Premium	-5%	+37%	+23%	+43%

U.S. Median Deep Tech Series A round size is \$12M

Series A round size (\$M)



75%ile

Median

25%ile

Series A round size has moderated over the last five years

Median and lower Series A round size is similar between Deep Tech and Regular Tech

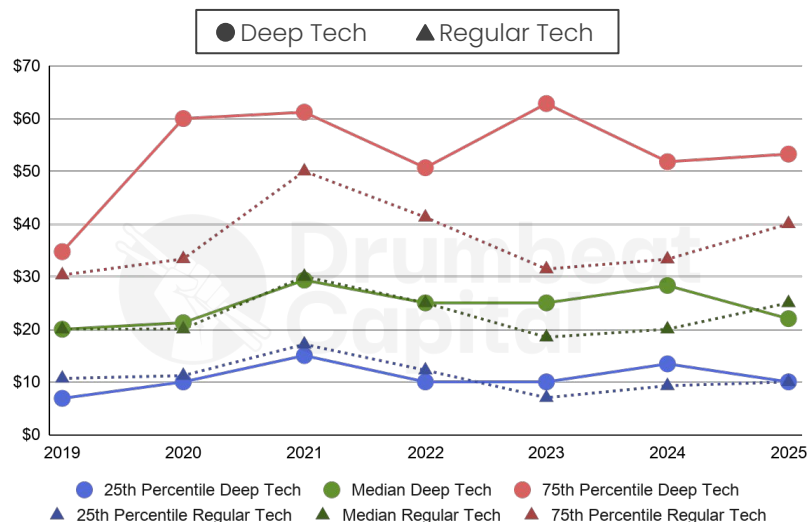
75th percentile Series A round size for Deep Tech tend to be bigger than Regular Tech

The Deep Tech round size premium increases with larger rounds

2025	25%ile	Median	75%ile	90%ile
Deep Tech	\$5	\$12	\$26	\$58
Regular Tech	\$6	\$12	\$20	\$30
DT Premium	-17%	=	+30%	+93%

U.S. Median Deep Tech Series B round size is \$22M

Series B round size (\$M)



75%ile

Median

25%ile

Series B round size has remained stable over the last 5 years

Median and lower Series B round size is similar between Deep Tech and Regular Tech

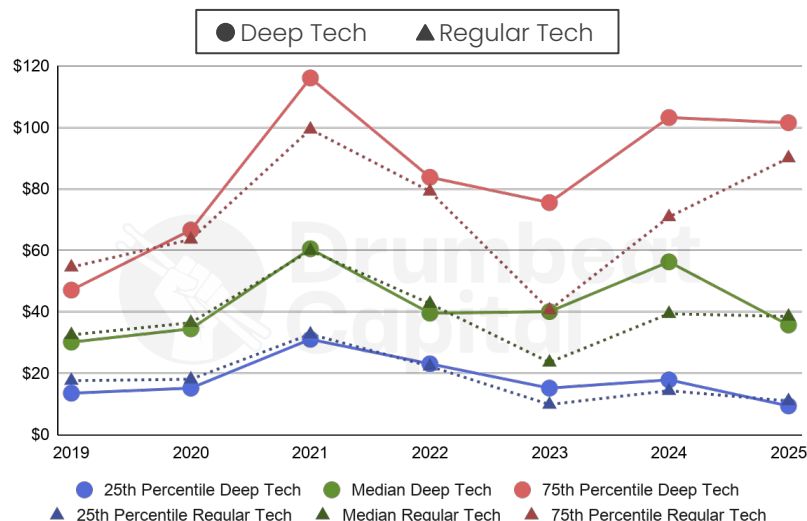
75th percentile Series B round size for Deep Tech tend to be bigger than Regular Tech

The Deep Tech round size premium increases with larger rounds

2025	25%ile	Median	75%ile	90%ile
Deep Tech	\$10	\$22	\$53	\$114
Regular Tech	\$10	\$25	\$40	\$67
DT Premium	=	-12%	+33%	+70%

U.S. Median Deep Tech Series C round size is \$36M

Series C round size (\$M)



Series C top quartile round size has **doubled** in the last six years

Median and lower Series C round size is similar between Deep Tech and Regular Tech

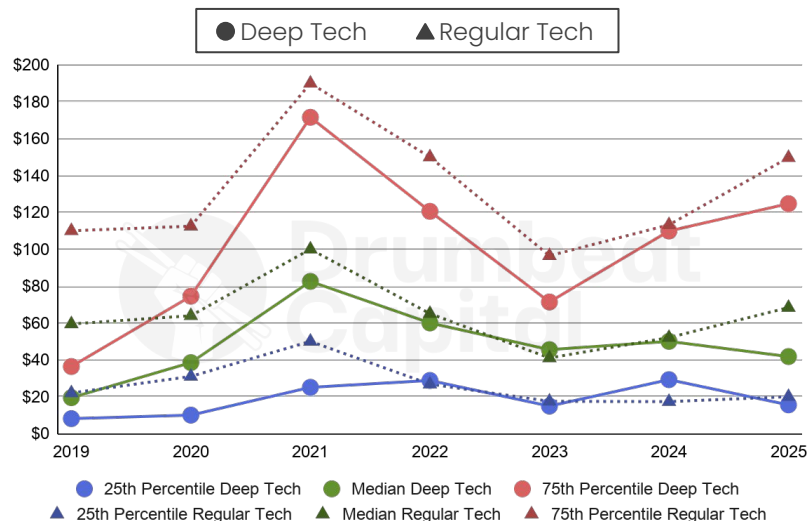
75th percentile Series C round size for Deep Tech tend to be bigger than Regular Tech

The Deep Tech round size premium is less prevalent in later rounds

2025	25thile	Median	75thile	90thile
Deep Tech	\$9	\$36	\$101	\$213
Regular Tech	\$11	\$38	\$90	\$200
DT Premium	-18%	-5%	+12%	+7%

U.S. Median Deep Tech Series D+ round size is \$42M

Series D+ round size (\$M)



Series D+ top quartile round size has **tripled** in the last six years

Median and lower Series D+ round size is similar between Deep Tech and Regular Tech; although 2025 saw a spike in Regular Tech median round sizes

75th percentile Series C round size for Deep Tech tend to be smaller than Regular Tech

2025	25thile	Median	75thile	90thile
Deep Tech	\$16	\$42	\$125	\$276
Regular Tech	\$20	\$68	\$150	\$315
DT Premium	-20%	-38%	-17%	-12%

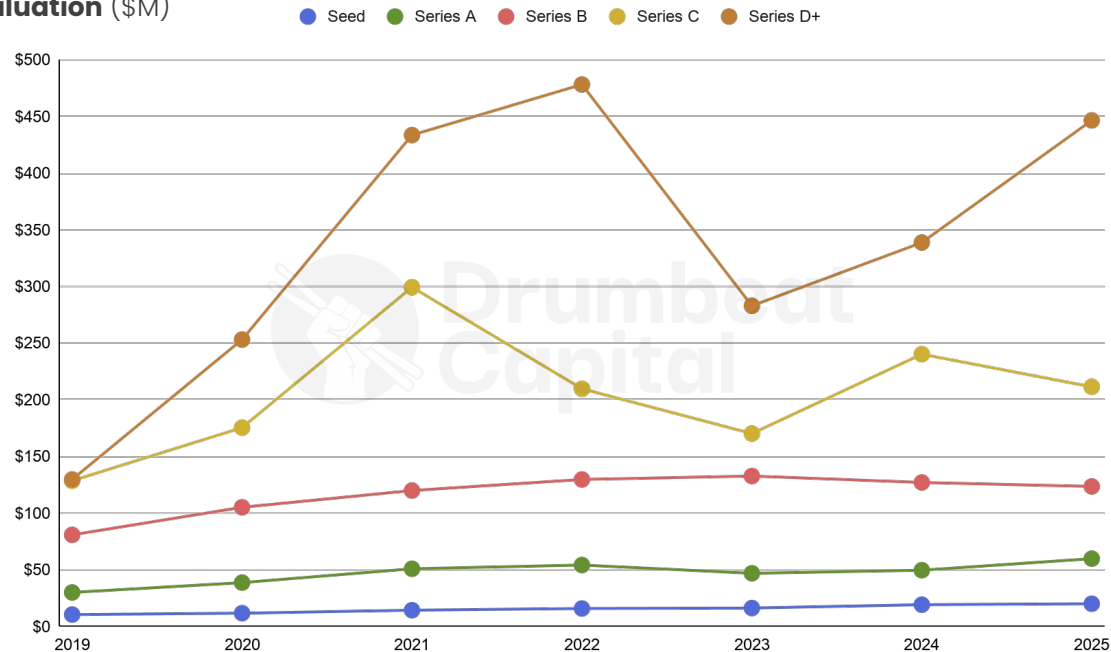
2.6

Valuations

Note: Data in this chapter utilizes direct U.S. cap table data provided by Carta. Similarly accurate European data is not yet available, but we look forward to including it in future reports when it is.

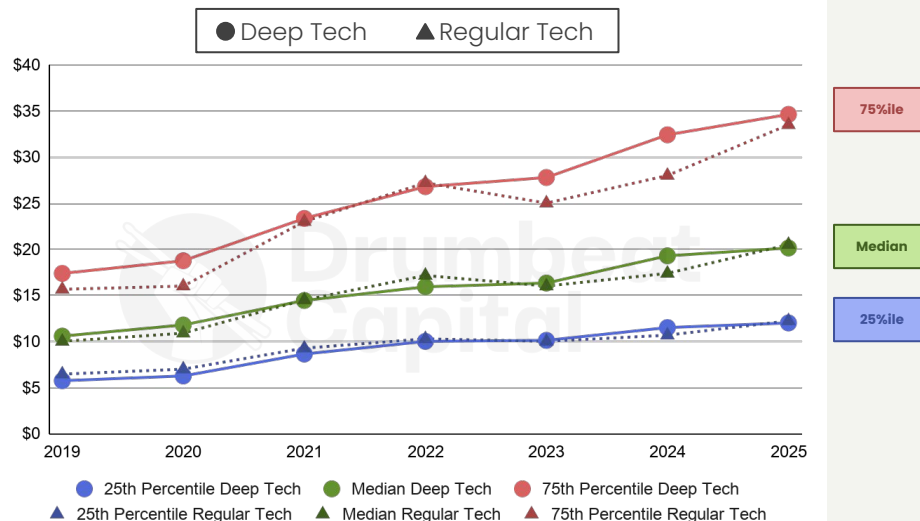
U.S. Deep Tech median post-money valuations are increasing again at Series D+

Median post-money valuation (\$M)



U.S. Median Deep Tech Seed post-money valuation is \$20M

Seed post-money valuations (\$M)



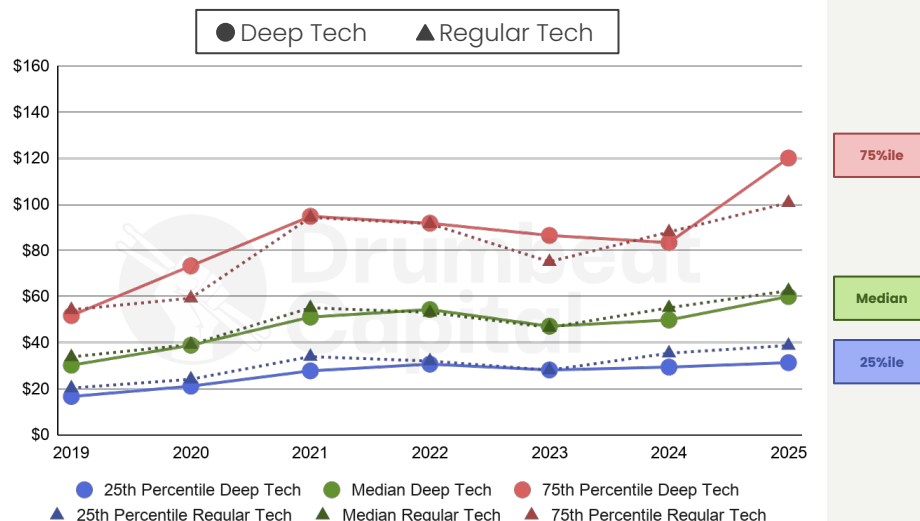
Seed post-money valuations have **doubled** in the last 6 years

Seed post money valuations are similar between Deep Tech and Regular Tech

2025	25%ile	Median	75%ile	90%ile
Deep Tech	\$12	\$20	\$35	\$60
Regular Tech	\$12	\$21	\$34	\$60
DT Premium	=	-5%	+3%	=

U.S. Median Deep Tech Series A post-money valuation is \$60M

Series A post-money valuations (\$M)



Series A post-money valuations have **doubled**, with a significant uptick in the last year

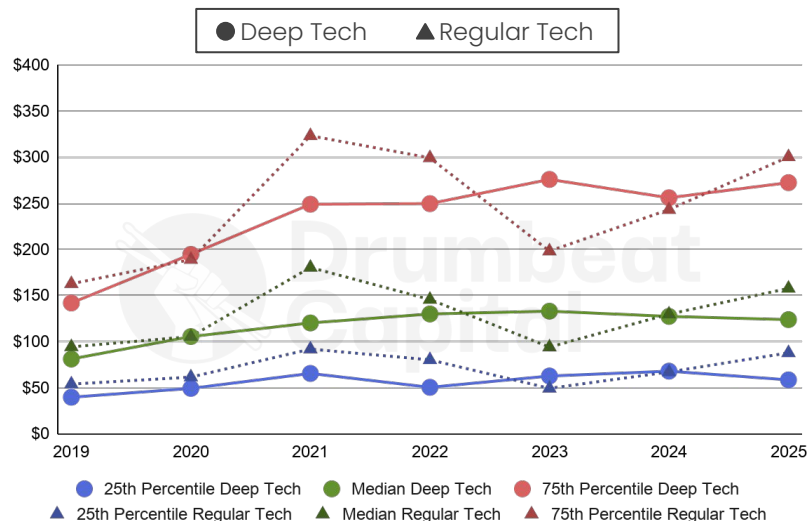
Series A post money valuations are similar between Deep Tech and Regular Tech

75th Percentile Deep Tech post-money valuations ticked up above Regular Tech in 2025

2025	25thile	Median	75thile	90thile
Deep Tech	\$31	\$60	\$120	\$249
Regular Tech	\$39	\$62	\$101	\$176
DT Premium	-20%	-3%	+19%	+41%

U.S. Median Deep Tech Series B post-money valuation is \$124M

Series B post-money valuations (\$M)



Series B post-money valuations have moderated over the last few years

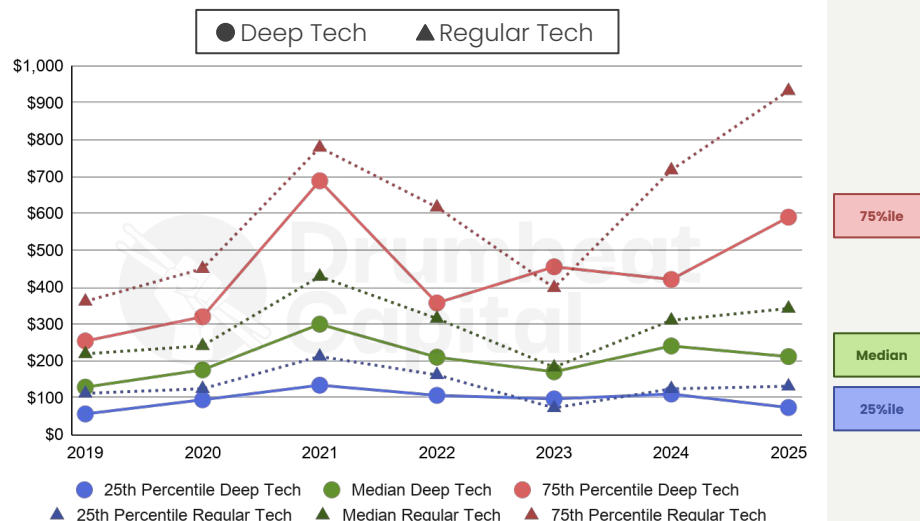
Series B post money valuations are **lower** for Deep Tech vs. Regular Tech

2025

	25%ile	Median	75%ile	90%ile
Deep Tech	\$58	\$124	\$272	\$537
Regular Tech	\$88	\$158	\$300	\$555
DT Premium	-34%	-22%	-9%	-3%

U.S. Median Deep Tech Series C post-money valuation is \$212M

Series C post-money valuations (\$M)



Series C post-money valuations have moderated for smaller rounds and spiked for larger rounds

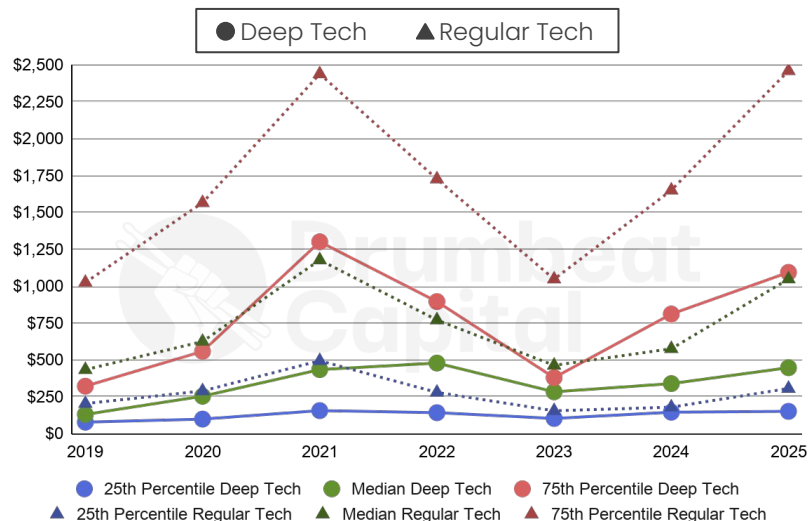
Series C post money valuations are **lower** for Deep Tech vs. Regular Tech

2025

	25%ile	Median	75%ile	90%ile
Deep Tech	\$73	\$212	\$590	\$1,278
Regular Tech	\$131	\$342	\$933	\$2,130
DT Premium	-44%	-38%	-37%	-40%

U.S. Median Deep Tech Series D+ post-money valuation is \$447M

Series D+ post-money valuations (\$M)



Series D+ post-money valuations have **increased** in the last two years, especially at the high end

Series D+ post money valuations are **lower** for Deep Tech vs. Regular Tech

2025

	25%ile	Median	75%ile	90%ile
Deep Tech	\$151	\$447	\$1,093	\$2,533
Regular Tech	\$306	\$1,048	\$2,460	\$7,270
DT Premium	-51%	-57%	-56%	-65%

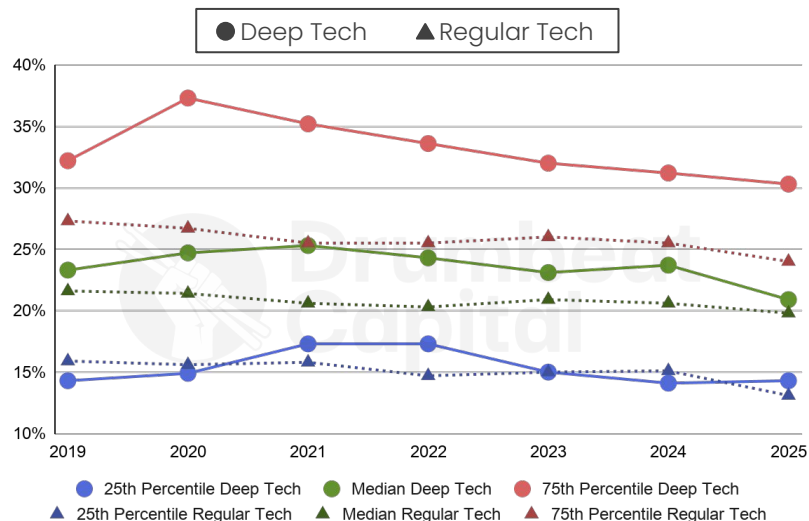
2.7

Dilution

Note: Data in this chapter utilizes direct U.S. cap table data provided by Carta. Similarly accurate European data is not yet available, but we look forward to including it in future reports when it is.

U.S. Median Deep Tech Seed dilution is 21%

Seed dilution (%)



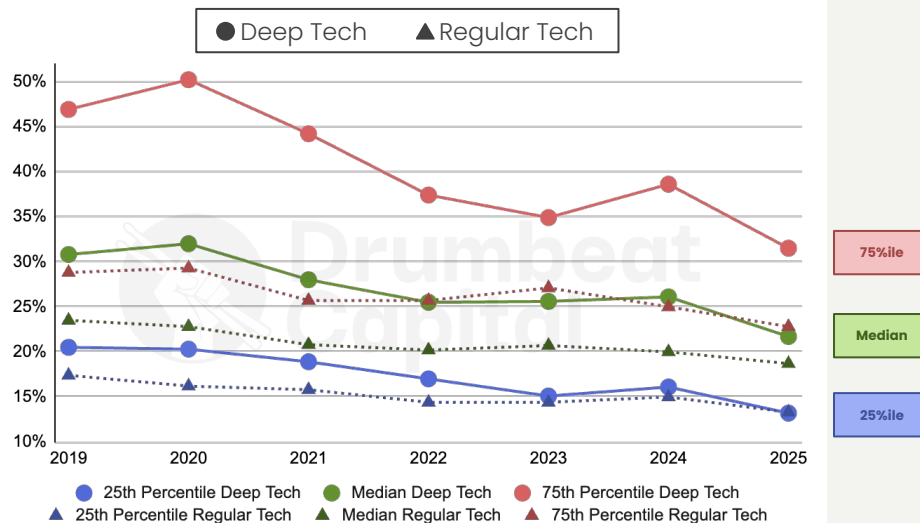
Seed dilution has **decreased** in the last six years

Deep Tech dilution tends to be **higher** than Regular Tech

2025	25%ile	Median	75%ile	90%ile
Deep Tech	14%	21%	30%	41%
Regular Tech	13%	20%	24%	30%
DT Premium	+8%	+5%	+25%	+37%

U.S. Median Deep Tech Series A dilution is 22%

Series A dilution (%)



Series A dilution has **decreased** in the last six years

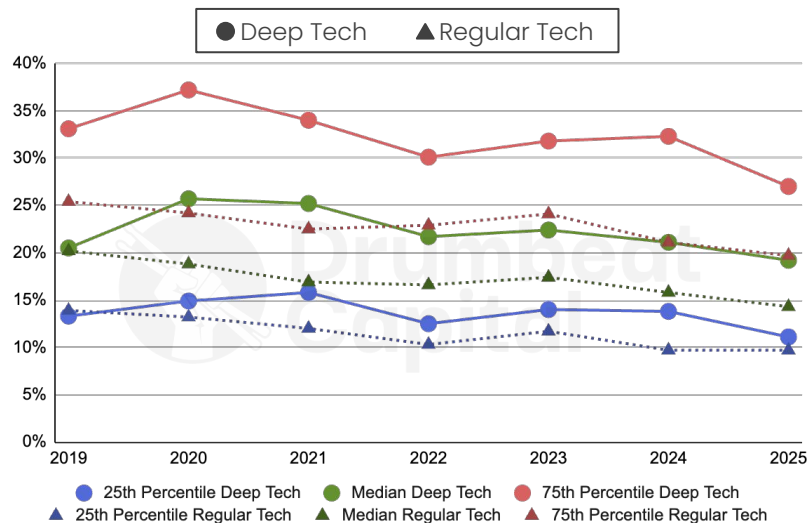
Deep Tech dilution tends to be **higher** than Regular Tech

2025

	25%ile	Median	75%ile	90%ile
Deep Tech	13%	22%	32%	51%
Regular Tech	13%	19%	23%	28%
DT Premium	=	+16%	+39%	+82%

U.S. Median Deep Tech Series B dilution is 19%

Series B dilution (%)



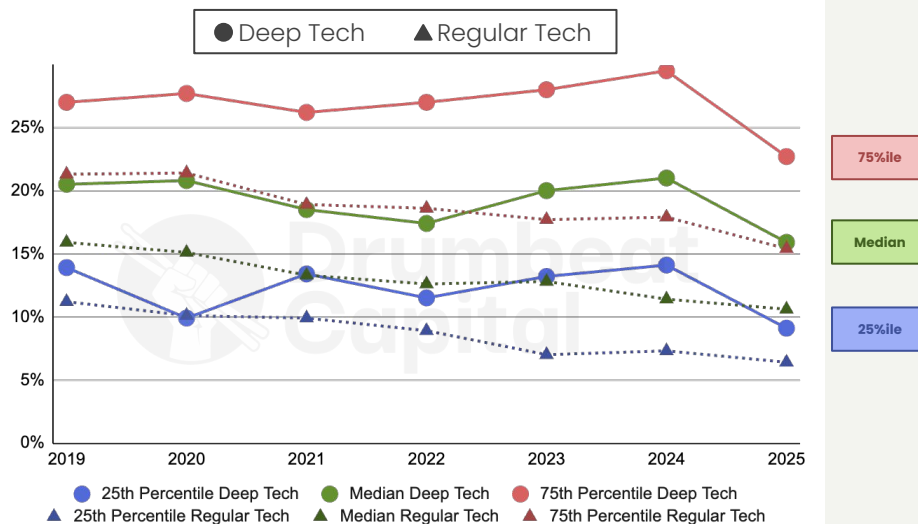
Series B dilution has **decreased** in the last six years

Deep Tech dilution tends to be **higher** than Regular Tech

2025	25%ile	Median	75%ile	90%ile
Deep Tech	11%	19%	27%	37%
Regular Tech	10%	14%	20%	26%
DT Premium	+10%	+36%	+35%	+42%

U.S. Median Deep Tech Series C dilution is 16%

Series C dilution (%)



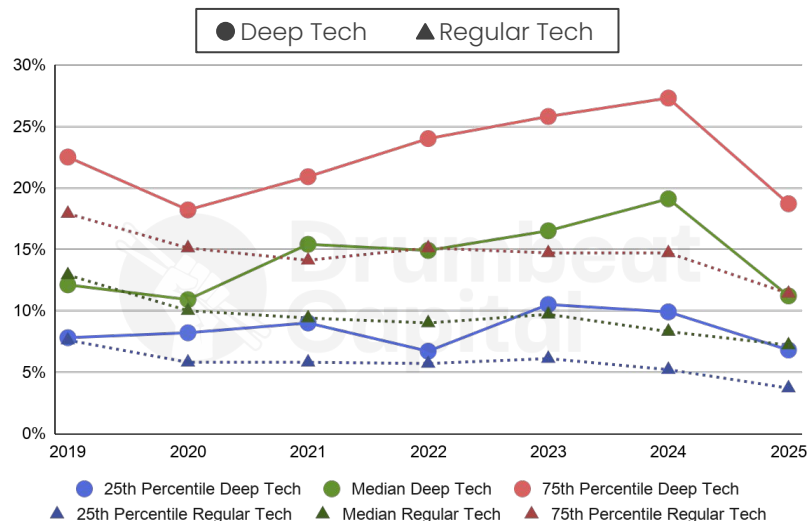
Series C dilution has been stable in the last 6 years but **decreased** significantly in 2025

Deep Tech dilution tends to be **significantly higher** than Regular Tech

2025	25%ile	Median	75%ile	90%ile
Deep Tech	9%	16%	23%	35%
Regular Tech	6%	11%	15%	23%
DT Premium	+50%	+45%	+53%	+52%

U.S. Median Deep Tech Seed dilution is 11%

Series D+ dilution (%)



Series D+ dilution has increased in the last 6 years but decreased significantly in 2025, ending **roughly flat** with where it started

Series D+ Deep Tech dilution tends to be **significantly higher** than Regular Tech

2025

	25%ile	Median	75%ile	90%ile
Deep Tech	7%	11%	19%	27%
Regular Tech	4%	7%	11%	18%
DT Premium	+75%	+57%	+73%	+50%

Hamza Shad

Insights Manager, Carta



carta

“Given the AI-driven growth in demand for compute and energy, Deep Tech startups are in the spotlight. We’re seeing better deal terms for early-stage Deep Tech founders, with lower dilution and larger round sizes compared to a few years ago. Gross margins are rising for companies building cutting-edge hardware infrastructure. That’s why the top 50% of Deep Tech startups are closing the gap in dilution with their software counterparts, though the bottom half continue to give up larger chunks of equity in the fundraising process.”

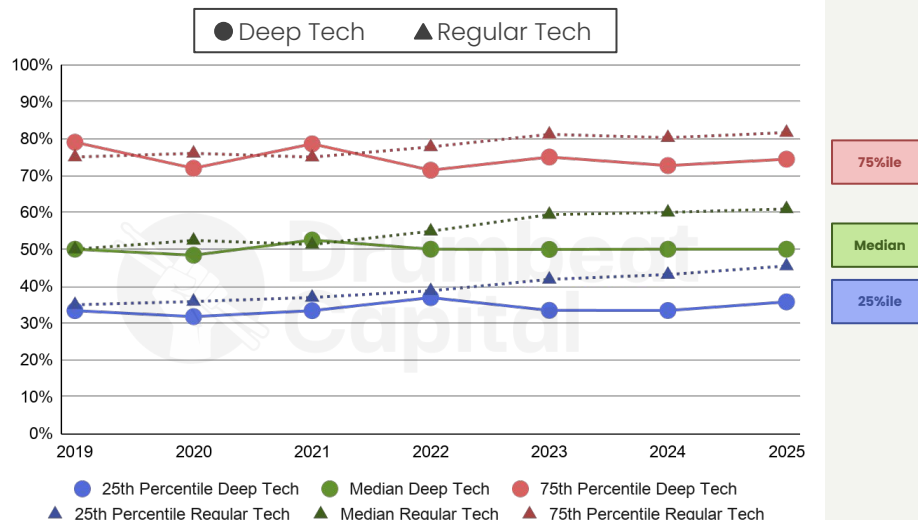
2.8

Lead Investor Ownership

Note: Data in this chapter utilizes direct U.S. cap table data provided by Carta. Similarly accurate European data is not yet available, but we look forward to including it in future reports when it is.

U.S. Median Deep Tech lead percent of Seed round is 50%

Percent of Seed rounds taken by lead investors

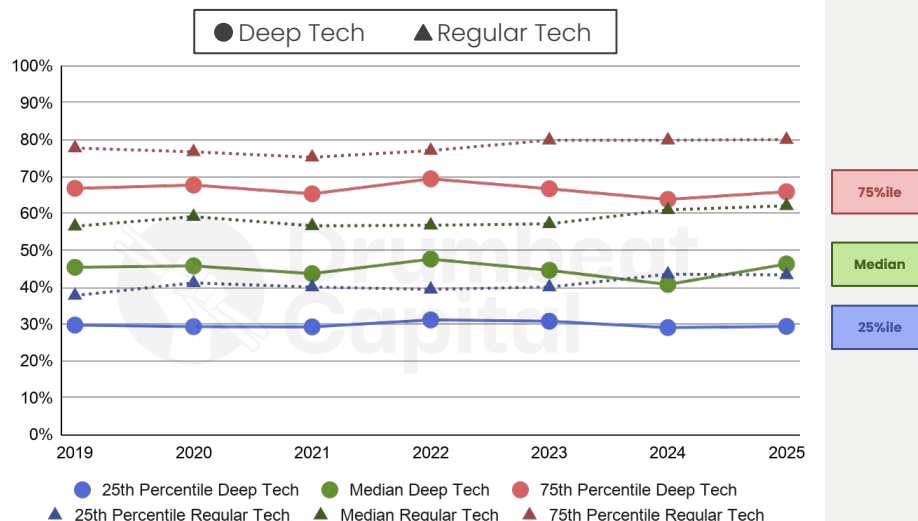


Lead investor round ownership in Deep Tech remains stable

Regular Tech lead investor ownership is increasing at early stages in recent years

U.S. Median Deep Tech lead percent of Series A round is 46%

Percent of Series A rounds taken by lead investors

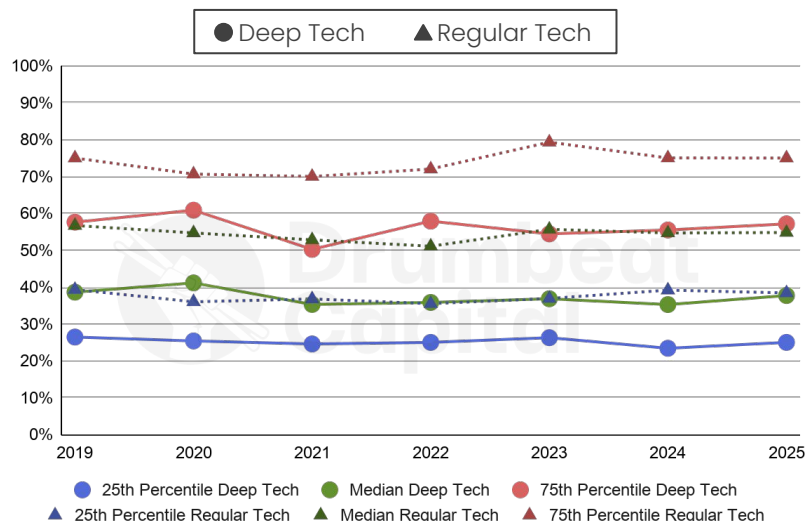


Lead investor round ownership in Deep Tech remains stable

Regular Tech lead investor ownership is increasing at early stages in recent years

U.S. Median Deep Tech lead percent of Series B round is 38%

Percent of Series B rounds taken by lead investors



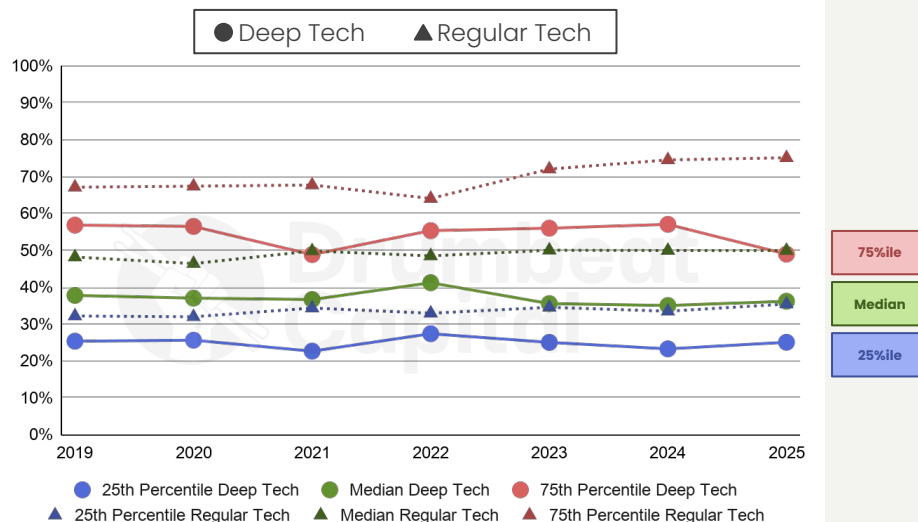
Lead investor round ownership is stable at venture stage

Regular Tech lead investor ownership is significantly higher



U.S. Median Deep Tech lead percent of Series C round is 36%

Percent of Series C rounds taken by lead investors

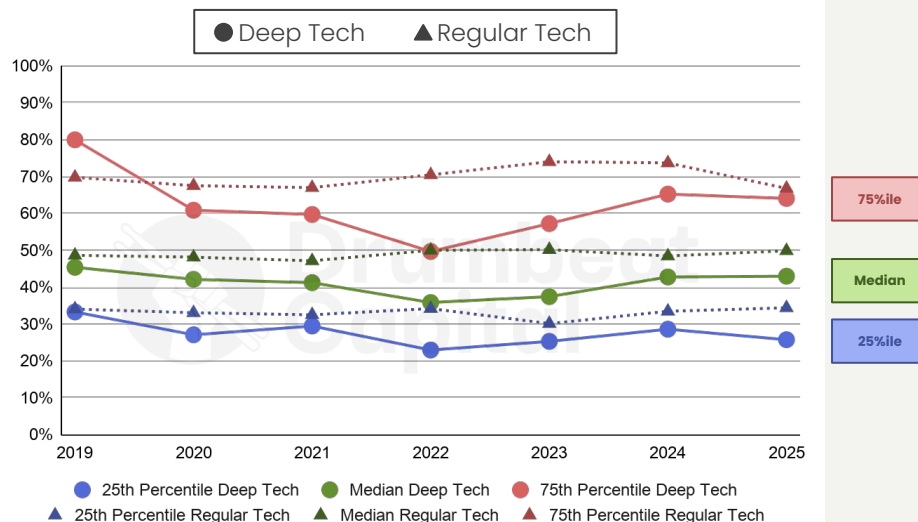


Lead investor round ownership is stable at venture stage

Regular Tech lead investor ownership is significantly higher

U.S. Median Deep Tech lead percent of Series D+ round is 43%

Percent of Series D+ rounds taken by lead investors



Lead investor round ownership is stable at venture stage

Regular Tech lead investor ownership is slightly higher

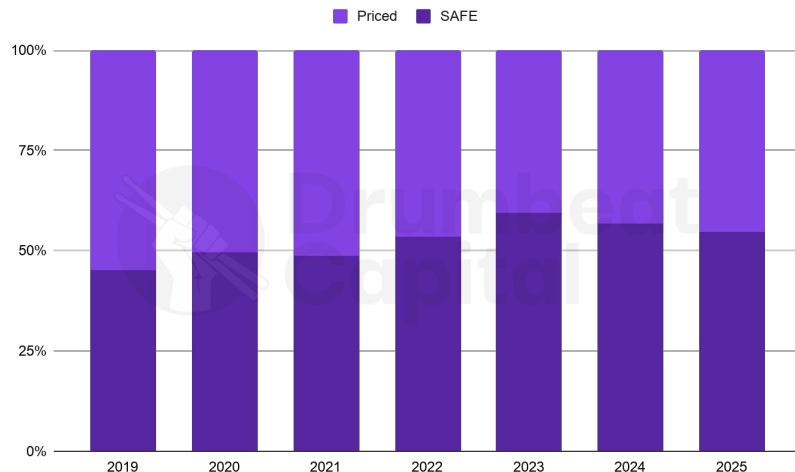
2.9

SAFEs

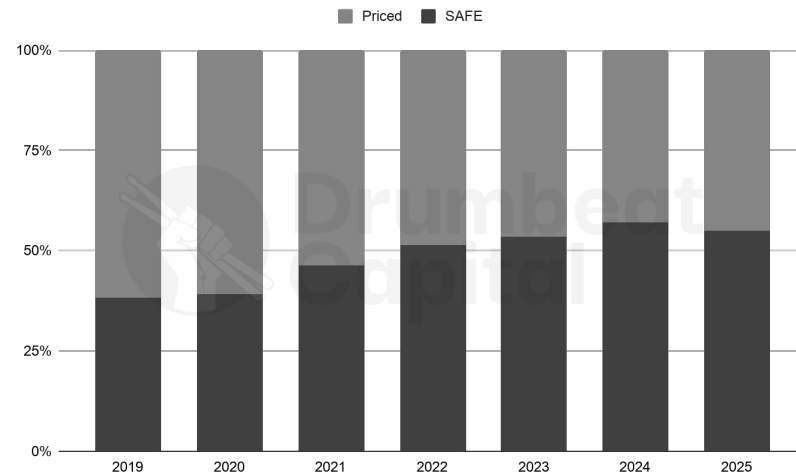
Note: Data in this chapter utilizes direct U.S. cap table data provided by Carta. Similarly accurate European data is not yet available, but we look forward to including it in future reports when it is.

SAFEs make up ~50% of Seed rounds

~50% of **Deep Tech Seed** rounds use SAFEs (by count)

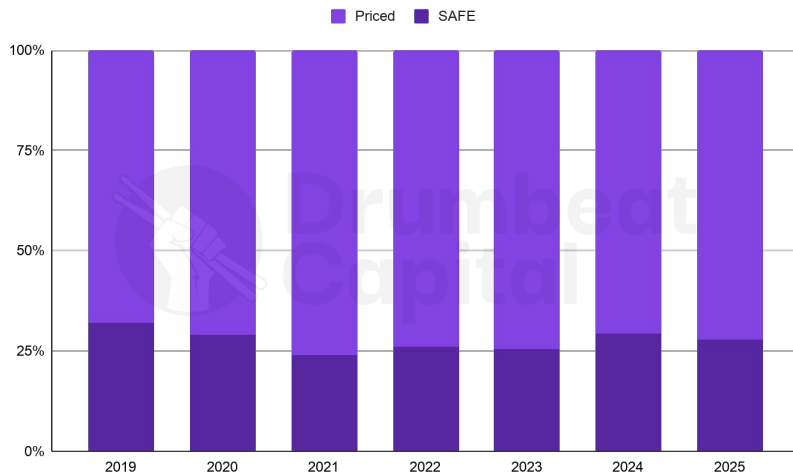


~50% of **Regular Tech Seed** Rounds use SAFEs (by count)

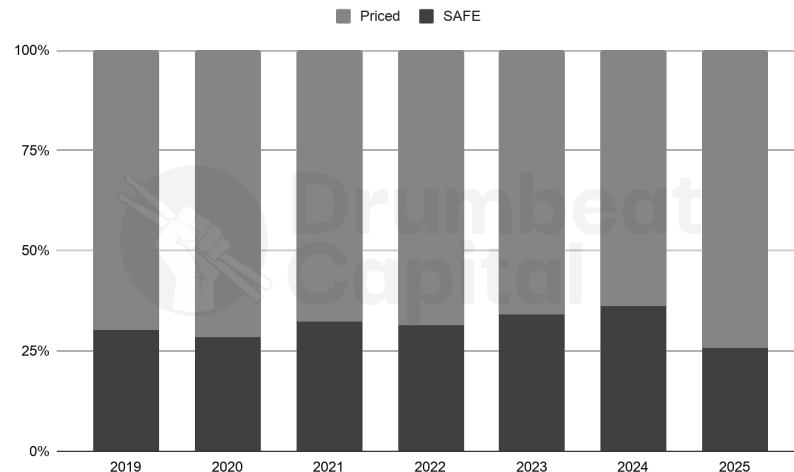


SAFEs are used for ~25% of Seed capital raised; larger rounds are typically priced

~25% of **Deep Tech Seed** capital raised is on SAFEs (by \$)

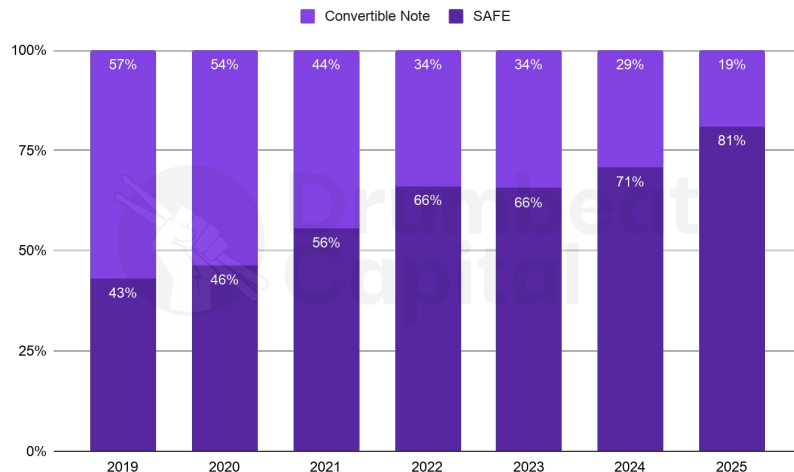


~25% of **Regular Tech Seed** capital raised is on SAFEs (by \$)

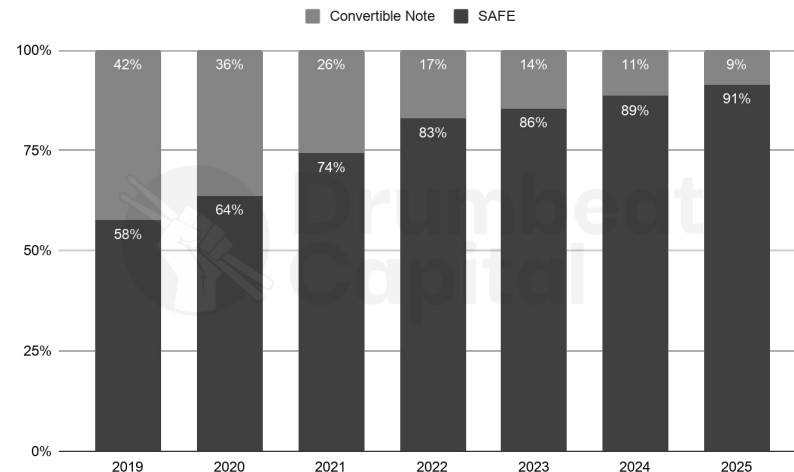


SAFEs have taken over as the primary instrument for pre-priced fundraising

Deep Tech SAFE usage in pre-priced rounds is over 80%

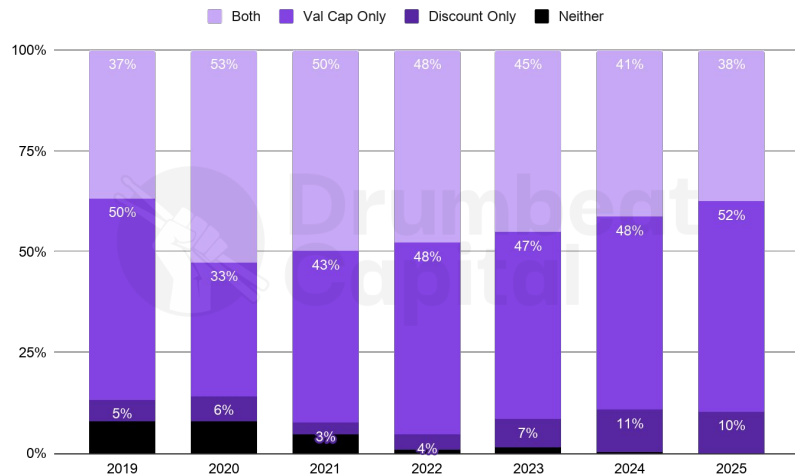


Regular Tech SAFE usage in pre-priced rounds is over 90%

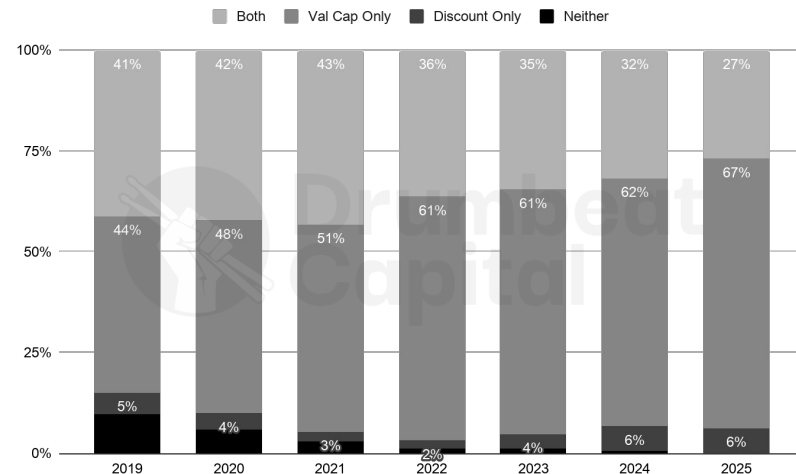


SAFEs almost always use valuation caps; discounts are declining

Deep Tech SAFEs usage of valuation caps is over 90%

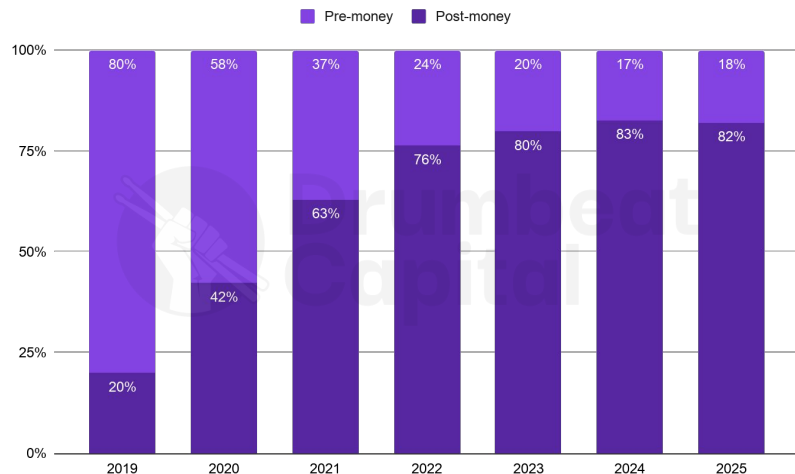


Regular Tech SAFEs usage of valuation caps is over 90%

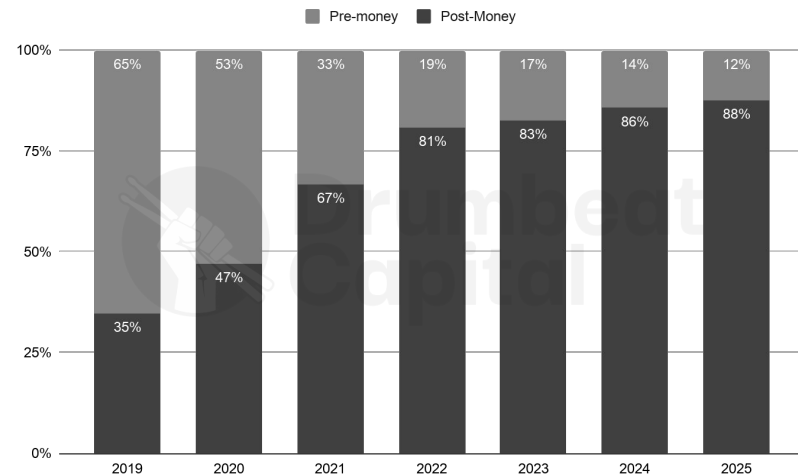


SAFEs almost always use Post-money valuation caps

Deep Tech SAFE Post-money valuation cap usage is 80%+

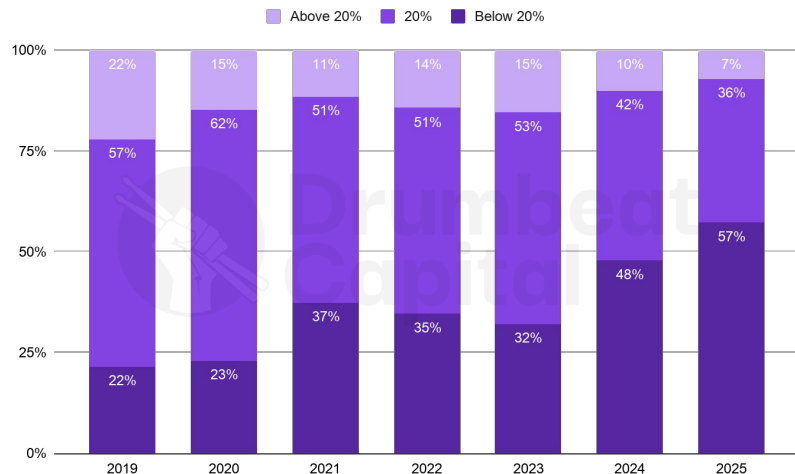


Regular Tech SAFE Post-money valuation cap usage is 80%+

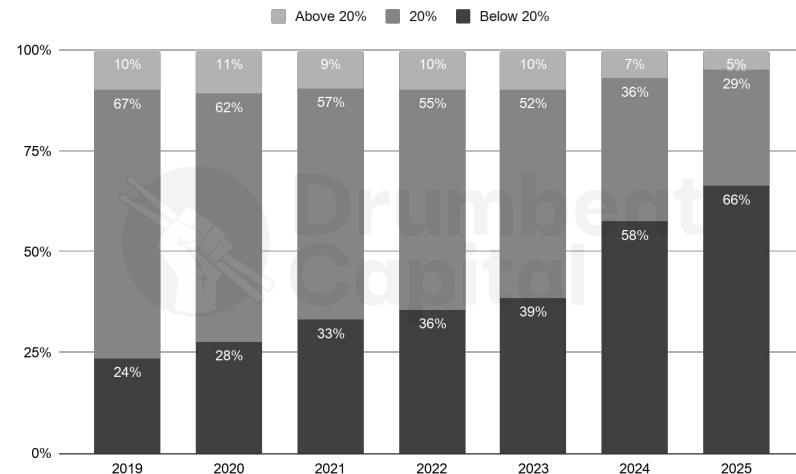


SAFEs discounts are almost always 20% or less; decreasing in last couple of years

Deep Tech SAFE discounts are decreasing



Regular Tech SAFE discounts are decreasing even faster

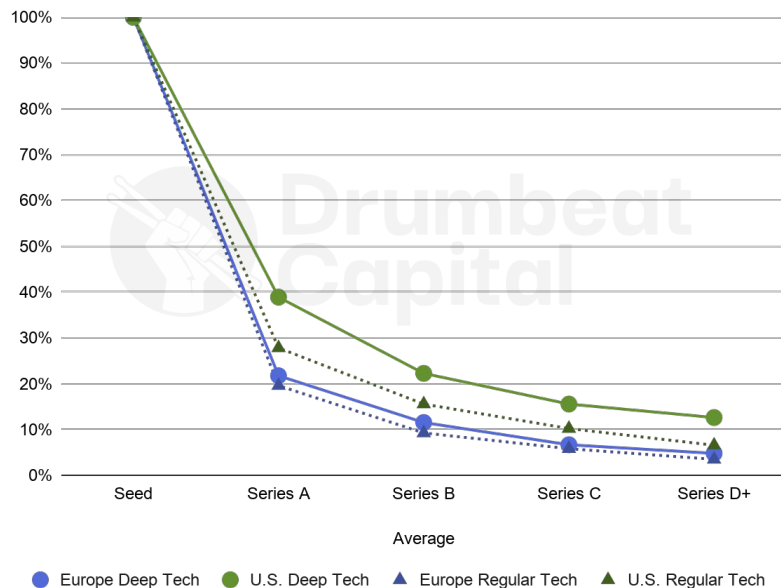


2.10

Graduation Rates

Europe matches the U.S. in producing early-stage Deep Tech startups, but fails at scaling

Average Graduation rate comparison (2010+)
(% of Seed Companies to raise subsequent round)



Deep Tech companies raise subsequent rounds at higher rates than Regular Tech companies

U.S. companies raise subsequent rounds at higher rates than European companies

Graduation Rates	Seed	Series A	Series B	Series C	Series D+
U.S. Deep Tech	100%	39%	22%	16%	13%
U.S. Regular Tech	100%	28%	16%	10%	7%
Europe Deep Tech	100%	22%	12%	7%	5%
Europe Regular Tech	100%	20%	9%	6%	4%

U.S. vs. Europe Deep Tech graduation rates

U.S. Deep Tech round graduation rates

Seed year	Series A	Series B	Series C	Series D
2015	35%	23%	16%	7%
2016	35%	16%	11%	5%
2017	37%	22%	8%	2%
2018	39%	24%	11%	2%
2019	46%	25%	12%	3%
2020	51%	23%	11%	3%
2021	38%	18%	4%	1%
2022	32%	10%	3%	0%
2023	30%	9%	3%	1%

Europe Deep Tech round graduation rates

Seed year	Series A	Series B	Series C	Series D
2015	25%	12%	9%	3%
2016	26%	15%	5%	3%
2017	22%	10%	5%	2%
2018	22%	11%	6%	1%
2019	28%	11%	3%	0%
2020	26%	13%	3%	0%
2021	29%	8%	3%	1%
2022	24%	5%	1%	0%
2023	22%	3%	1%	0%

Source: Dealroom

Note: Round types such as Seed are based on standardized round types from Dealroom methodology and can at time differ from the nominal label given by the company and news. Standardization happens based on round amount, nominal round label, previous rounds, and company age. Conversion rates are counting rounds raised 3 to 36 months after the previous round.

U.S. vs. Europe Deep Tech Seed graduation rates

U.S. Deep Tech Seed round graduation rates

Seed Year	Year 1	Year 2	Year 3	Year 4	Year 5	Cohort Size
2015	10%	27%	35%	40%	43%	188
2016	6%	25%	35%	37%	37%	260
2017	12%	29%	37%	43%	49%	245
2018	11%	25%	39%	44%	47%	312
2019	11%	28%	46%	53%	55%	178
2020	17%	44%	51%	56%	58%	133
2021	15%	31%	38%	44%		203
2022	9%	24%	32%			214
2023	14%	26%				164
2024	19%					165

Europe Deep Tech Seed round graduation rates

Seed Year	Year 1	Year 2	Year 3	Year 4	Year 5	Cohort Size
2015	7%	17%	25%	31%	33%	150
2016	5%	14%	26%	31%	34%	175
2017	5%	16%	22%	28%	32%	205
2018	2%	13%	22%	30%	35%	257
2019	2%	15%	28%	33%	38%	237
2020	4%	16%	26%	36%	39%	221
2021	7%	19%	29%	37%		284
2022	4%	12%	24%			317
2023	4%	13%				302
2024	5%					278

Source: Dealroom

Note: Round types such as Seed are based on standardized round types from Dealroom methodology and can at time differ from the nominal label given by the company and news. Standardization happens based on round amount, nominal round label, previous rounds, and company age. Conversion rates are counting rounds raised 3 to 36 months after the previous round.

U.S. vs. Europe Regular Tech graduation rates

U.S. Regular Tech round graduation rates

Seed year	Series A	Series B	Series C	Series D
2015	27%	16%	11%	6%
2016	28%	16%	11%	5%
2017	29%	19%	10%	3%
2018	27%	17%	8%	3%
2019	41%	21%	8%	3%
2020	44%	18%	6%	2%
2021	30%	9%	2%	0%
2022	19%	4%	1%	0%
2023	19%	4%	0%	0%

Europe Regular Tech round graduation rates

Seed year	Series A	Series B	Series C	Series D
2015	24%	12%	7%	4%
2016	25%	12%	7%	3%
2017	22%	10%	5%	2%
2018	21%	12%	5%	1%
2019	26%	10%	4%	1%
2020	25%	8%	2%	0%
2021	20%	5%	1%	0%
2022	14%	3%	0%	0%
2023	13%	1%	0%	0%

U.S. vs. Europe Regular Tech Seed graduation rates

U.S. Regular Tech Seed round graduation rates

Seed Year	Year 1	Year 2	Year 3	Year 4	Year 5	Cohort Size
2015	10%	21%	27%	31%	33%	1,281
2016	6%	20%	28%	31%	34%	1,150
2017	9%	21%	29%	31%	34%	1,024
2018	7%	18%	27%	30%	32%	1,378
2019	8%	25%	41%	44%	46%	943
2020	17%	37%	44%	46%	47%	1,138
2021	13%	24%	30%	32%		1,846
2022	6%	12%	19%			2,081
2023	5%	14%				1,700
2024	8%					1,521

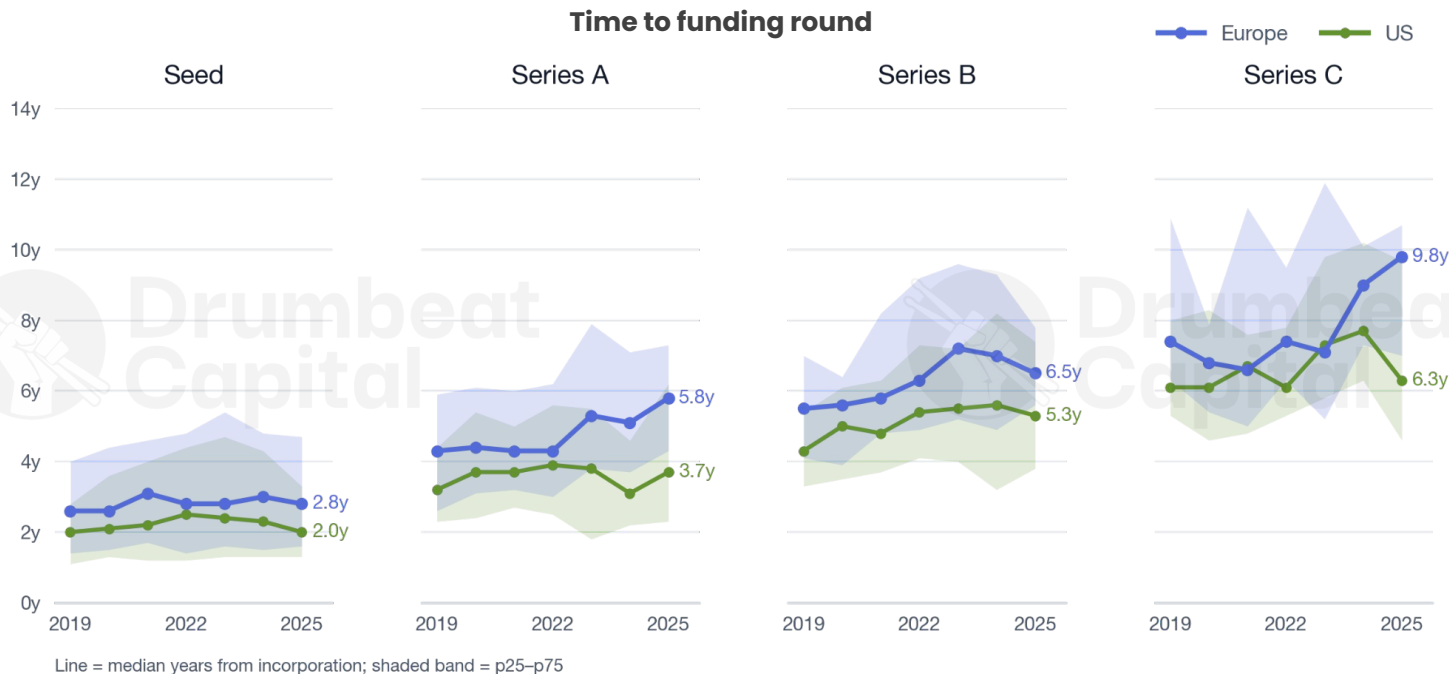
Europe Regular Tech Seed round graduation rates

Seed Year	Year 1	Year 2	Year 3	Year 4	Year 5	Cohort Size
2015	7%	17%	24%	29%	31%	666
2016	6%	17%	25%	28%	31%	840
2017	5%	15%	22%	25%	28%	896
2018	5%	14%	21%	26%	28%	1,014
2019	5%	15%	26%	29%	31%	895
2020	6%	18%	25%	29%	31%	1,010
2021	7%	14%	20%	21%		1,628
2022	2%	8%	14%			1,713
2023	2%	7%				1,401
2024	2%					1,186

Source: Dealroom

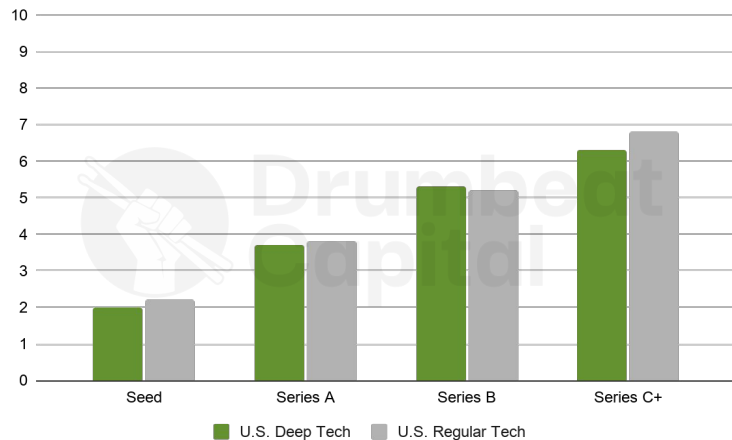
Note: Round types such as Seed are based on standardized round types from Dealroom methodology and can at time differ from the nominal label given by the company and news. Standardization happens based on round amount, nominal round label, previous rounds, and company age. Conversion rates are counting rounds raised 3 to 36 months after the previous round.

Time to Funding Round: U.S. is 1-2 years faster than Europe, late stage is diverging

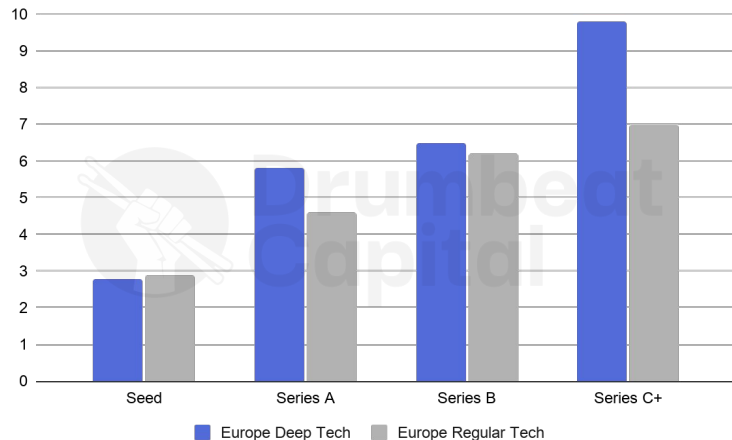


Median time to funding round for Deep Tech in Europe is lagging Regular Tech

U.S.: Median years to funding round



Europe: Median years to funding round



Steve Franklin

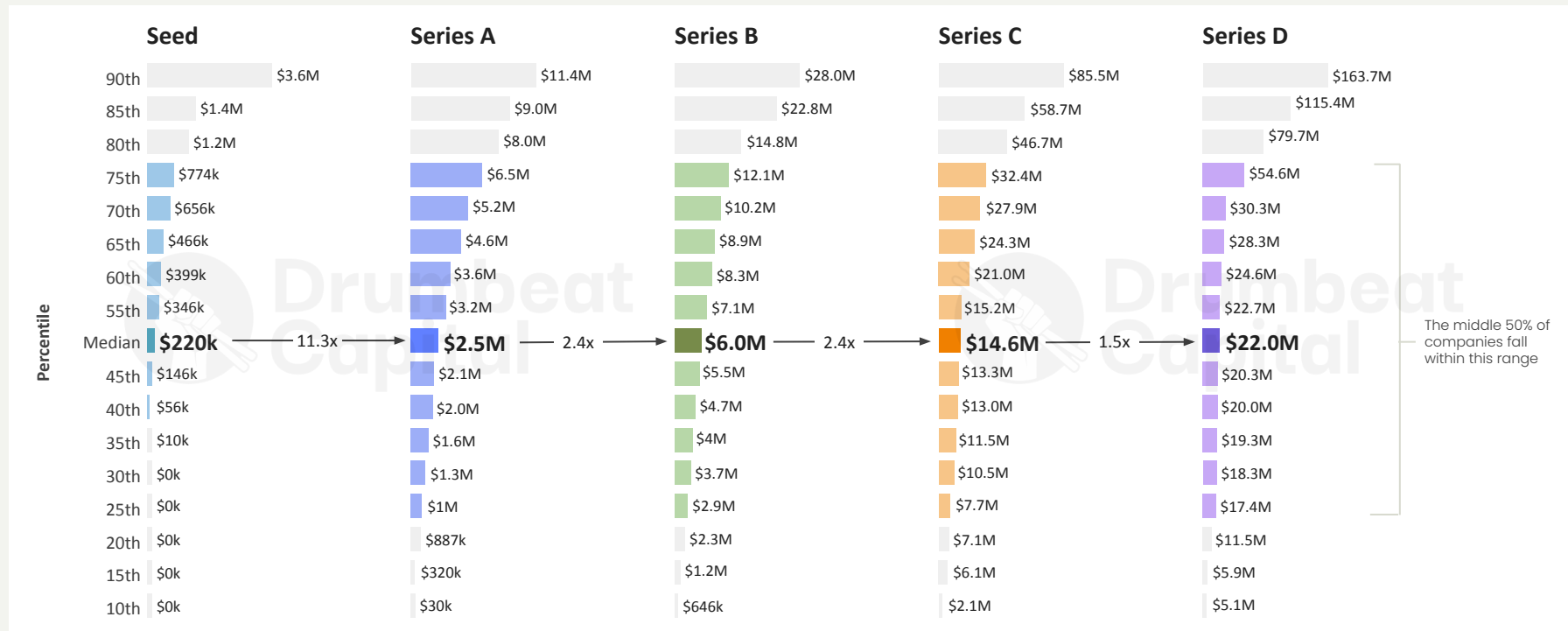
Partner, Gunderson Dettmer



"Deep Tech is not a sector, it's a time horizon that has long been challenging for VC investment across many sectors including autonomous systems, climate, fusion power and other energy solutions, defense, biotech and space. These are all sectors that were once considered too slow, too capital-intensive, too hard for VC dollars.

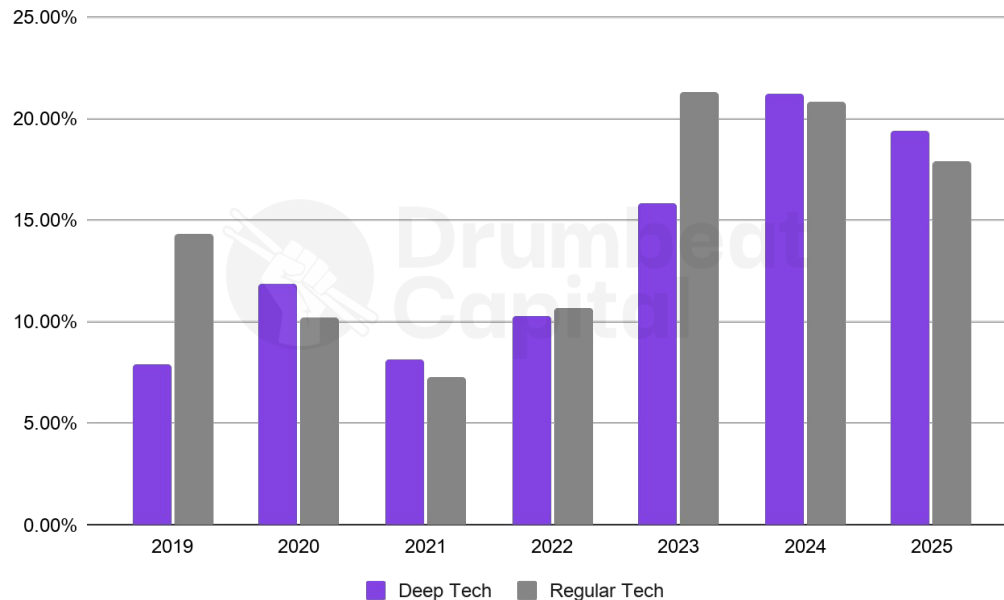
However, today's broad application of AI is reducing that horizon, and venture dollars are shifting meaningfully toward Deep Tech startups. Deep Tech investment is no longer a sidebar in the venture capital story, but a strategic shift of the market. **The deals being structured today will define entire industries a decade from now."**

Revenue growth is often more heavily considered than absolute revenue at fundraise



Down rounds in Deep Tech increased in line with Regular Tech

Down rounds as a percent of all rounds

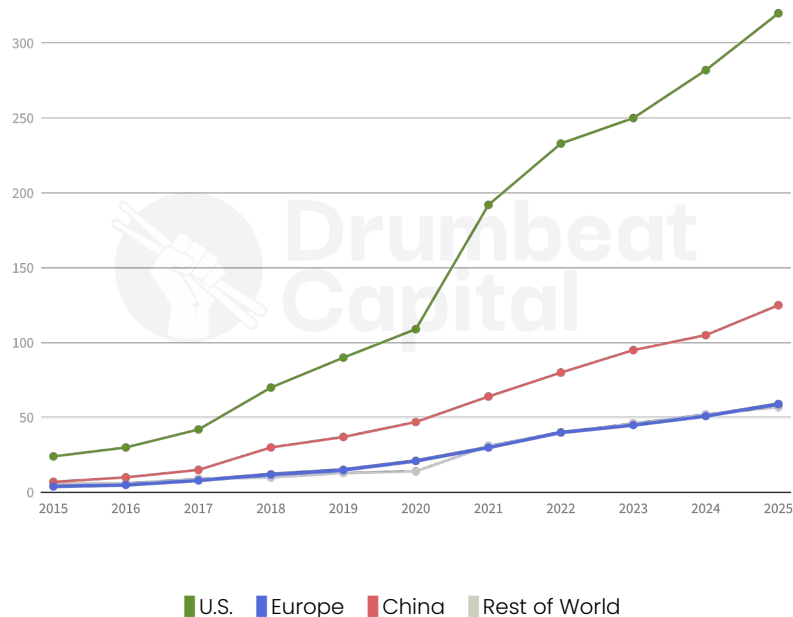


2.11

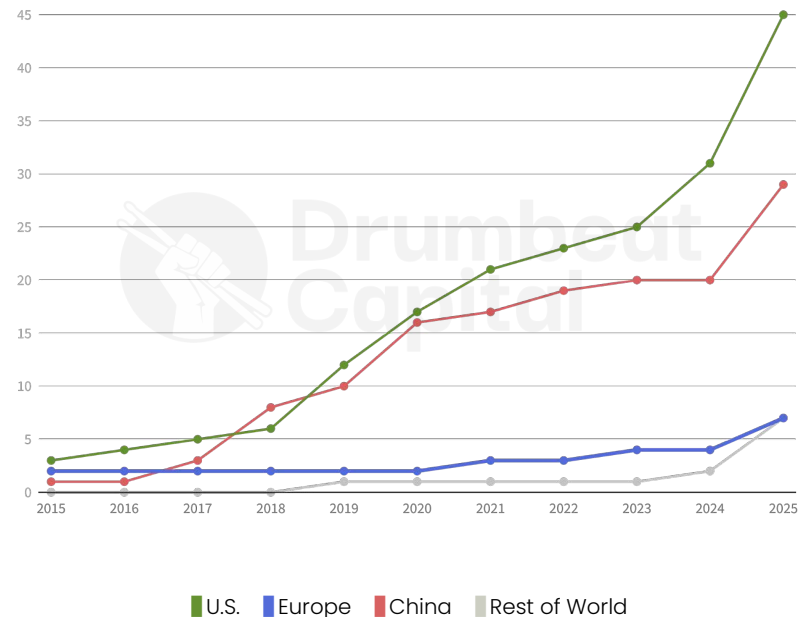
Scaling to Unicorns & Beyond

Given higher graduation rates, the U.S. Deep Tech Unicorn rate is pulling away

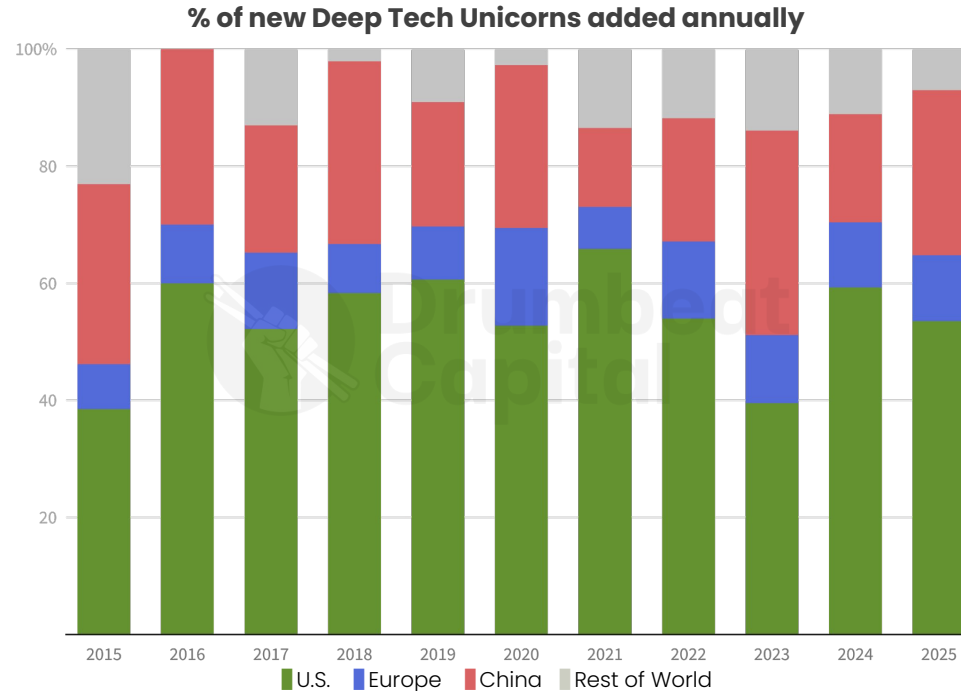
of Deep Tech Unicorns



of Deep Tech Decacorns

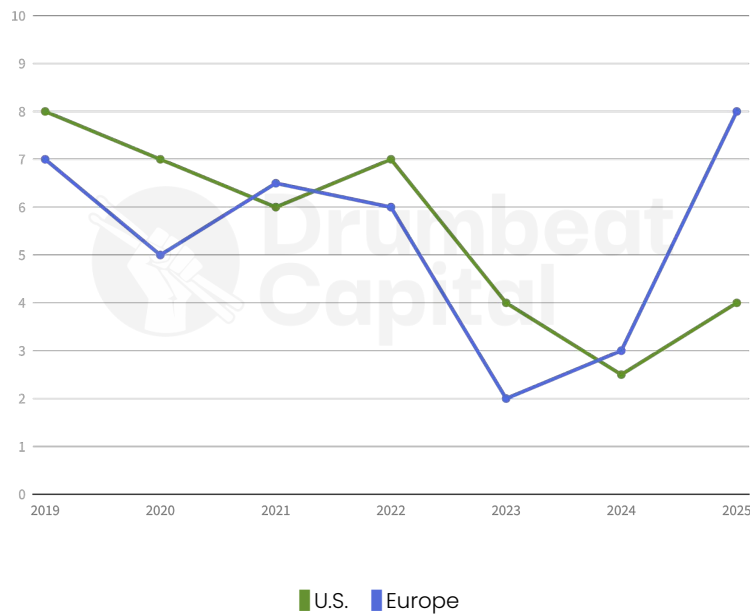


Over 50% of newly added Deep Tech unicorns are from the U.S.

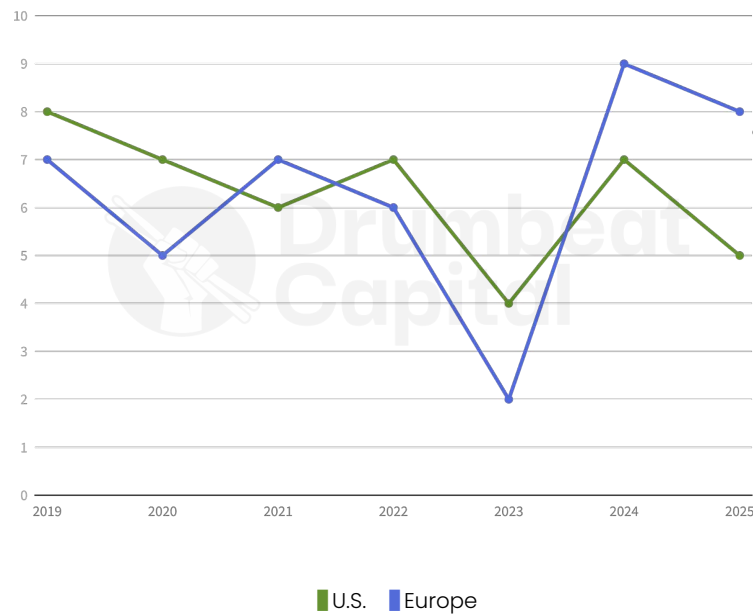


The median time to unicorn is almost half in the U.S. vs. Europe

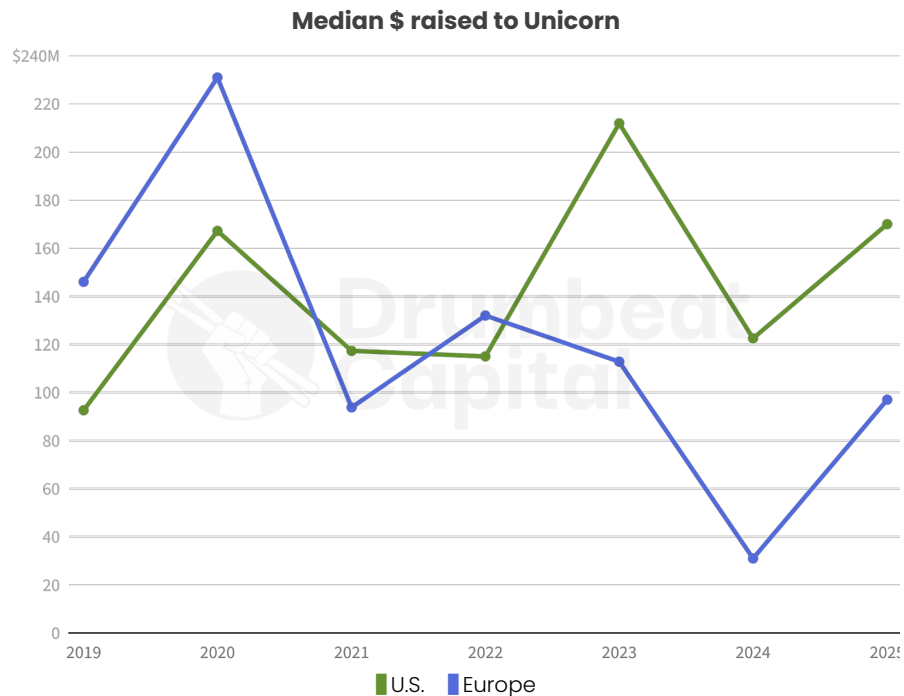
Median time to unicorn from first funding round



... time to unicorn **excl. Foundational Models**

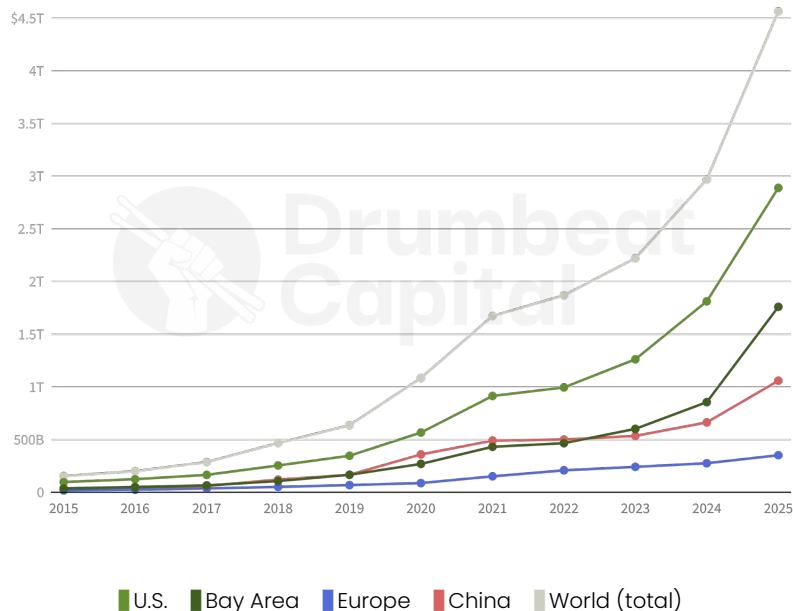


European Deep Tech unicorns require less capital than U.S. counterparts

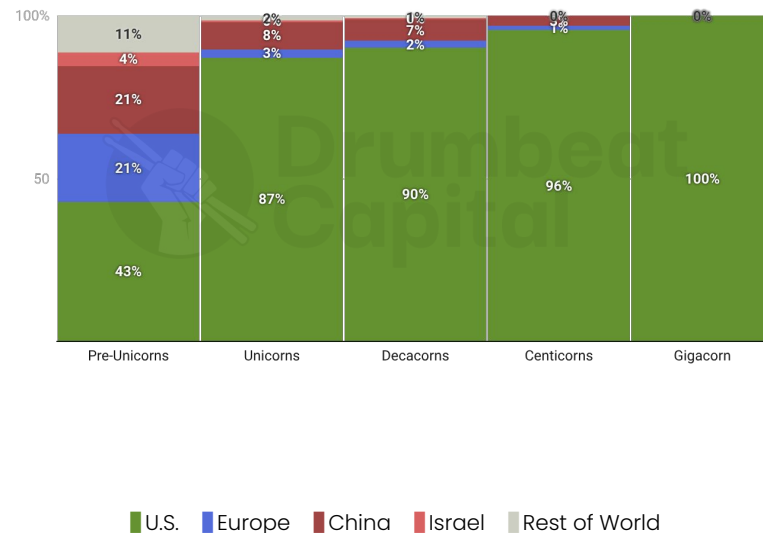


The U.S. dominates value creation; Europe with untapped scaling potential

Cumulative Deep Tech enterprise value

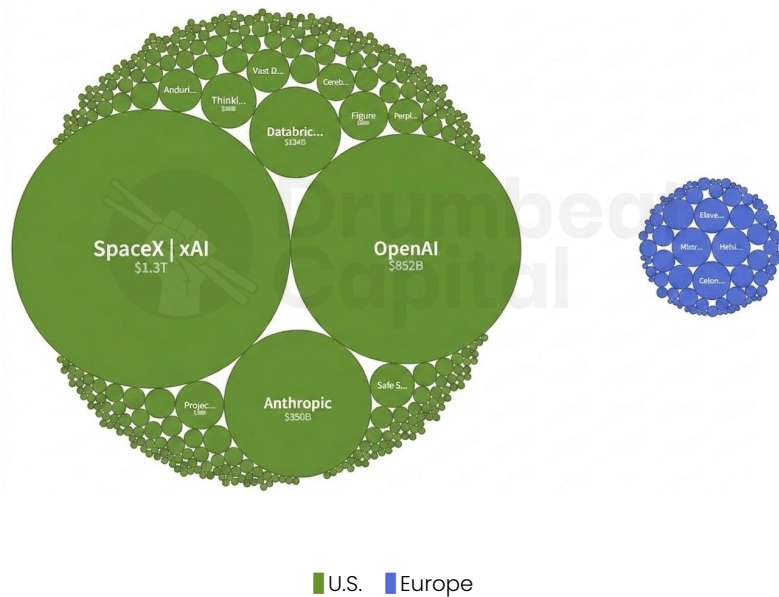


Combined Deep Tech enterprise value

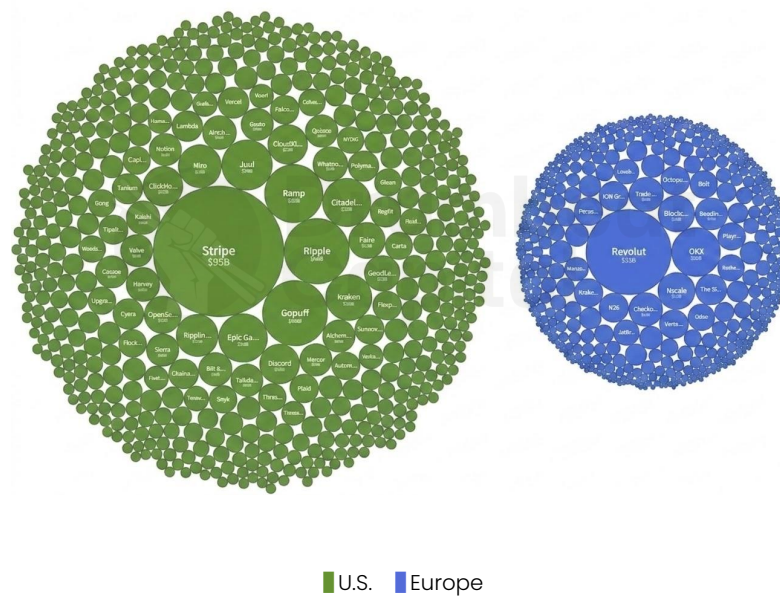


Private Deep Tech EV is \$3.9T vs. \$4.6T for Regular Tech

Deep Tech: Total enterprise value of private startups



Regular Tech: Total enterprise value of private startups



Note: Valuation data up to May 2026.

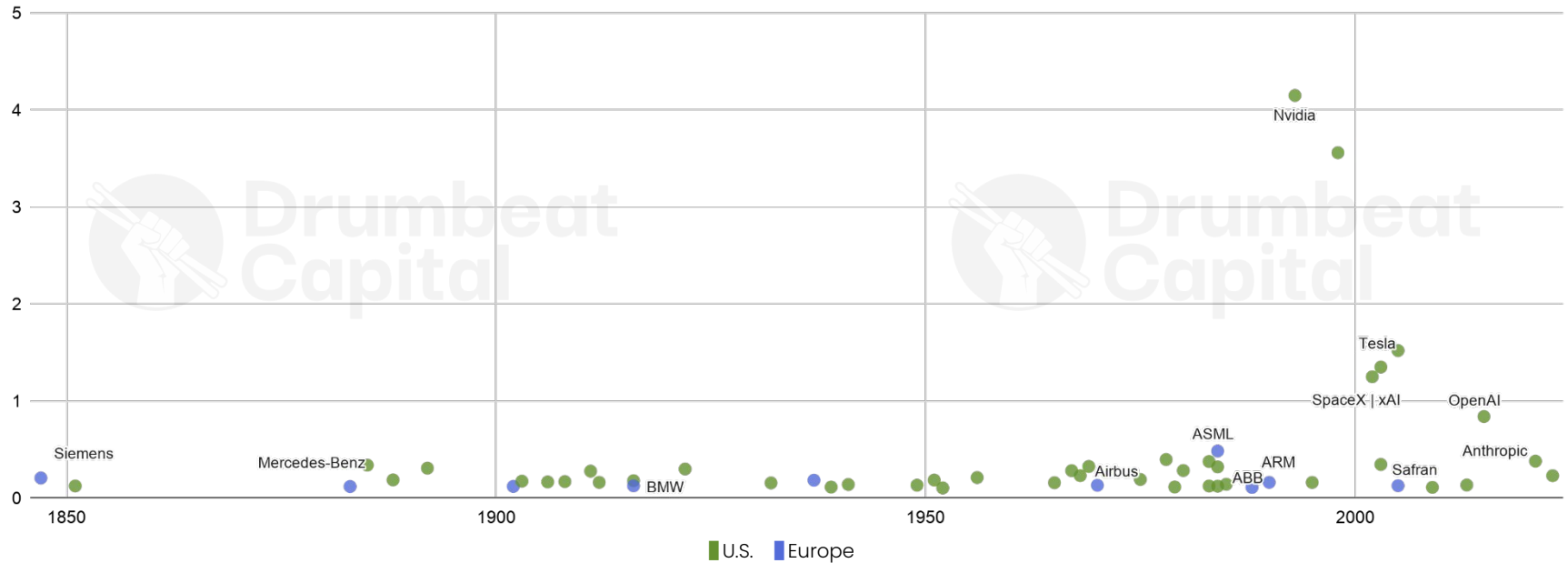
The infographic only includes private unicorns and \$100M+ revenue companies and meant to be indicative of value creation distribution. Deep Tech excludes Health in this report.

*SpaceX is targeting a \$2T valuation for its upcoming IPO. Anthropic has reportedly received VC offers at a \$800B+ valuation, and traded in secondary markets at \$1T valuation.

Source: Dealroom

Europe does not have any \$100B Deep Tech companies founded later than 2005

U.S. and European Deep Tech Companies above \$100B by founding date and valuation (in \$Trillion)

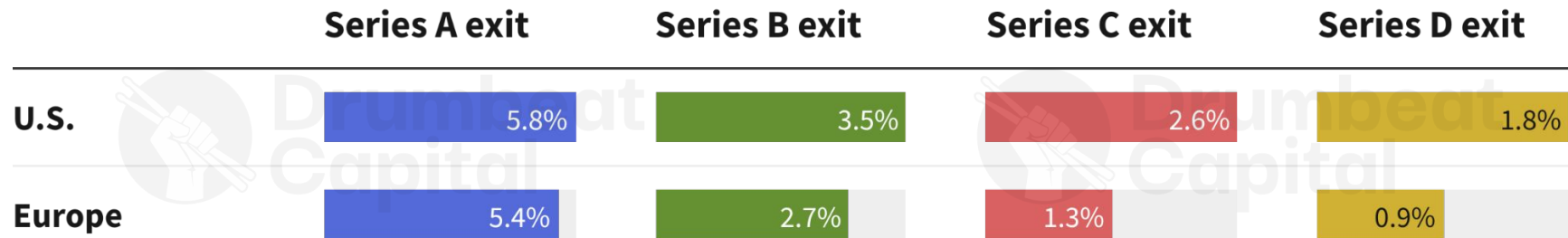


2.12

Exits

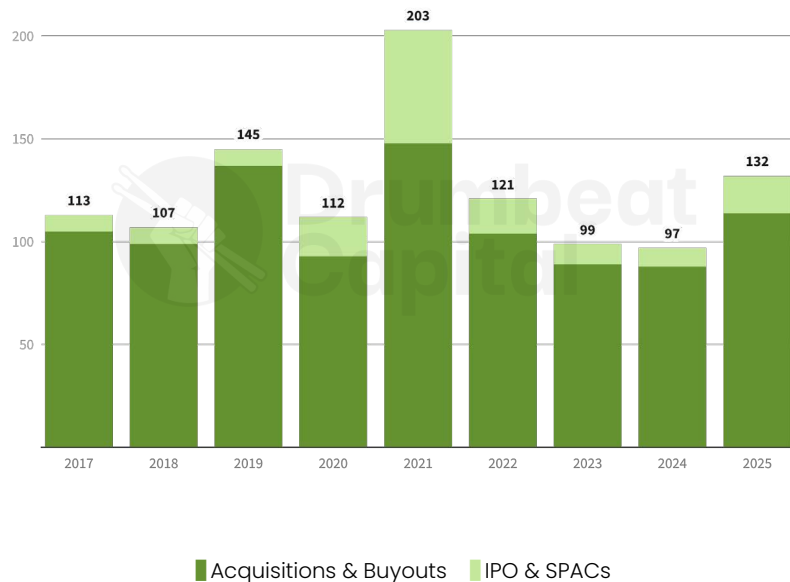
U.S. exit rates are twice as high as those in Europe at later stages

Deep Tech exit rates: % of companies raising a Seed round between 2010–2020 and exiting at...

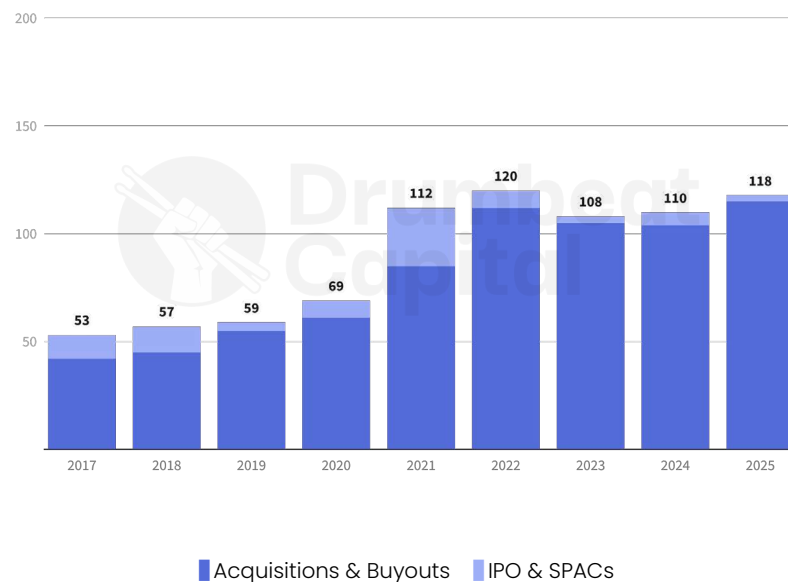


90% of exit count are M&A

Count of U.S. Deep Tech exits

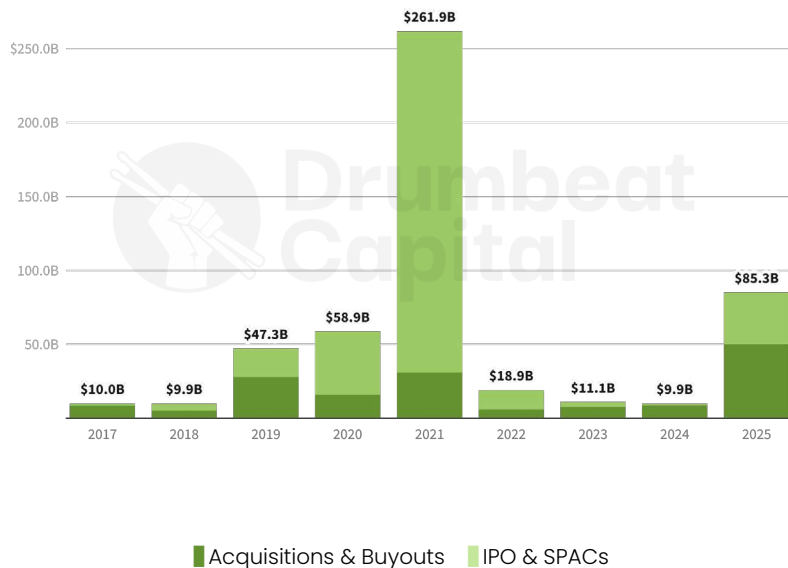


Count of European Deep Tech exits

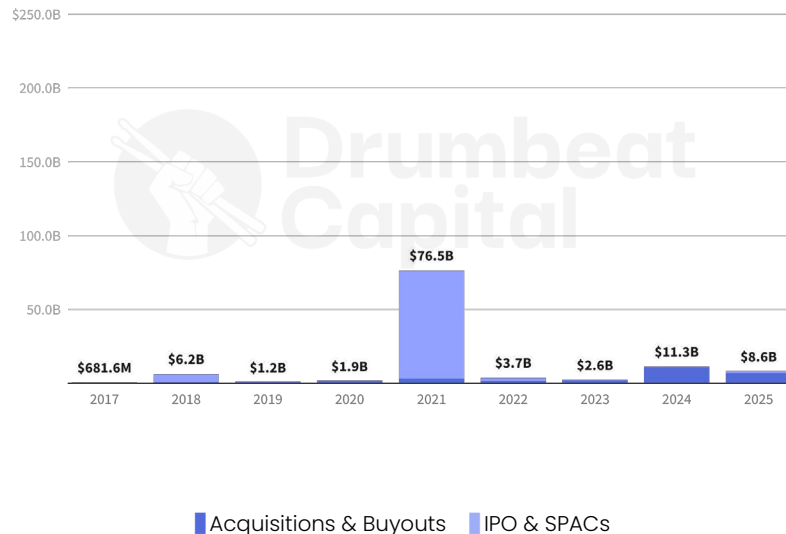


60% of exit value are IPOs & SPACs

U.S.: Total Value of Deep Tech Exits

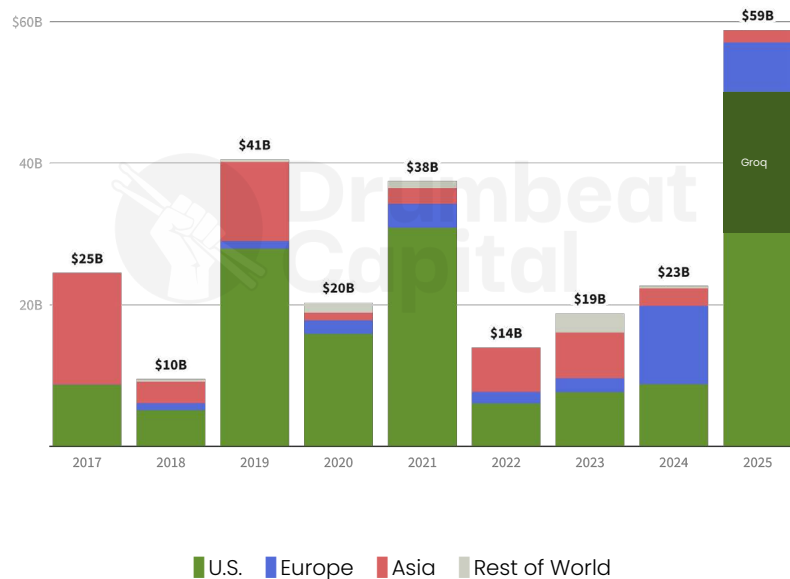


Europe: Total Value of Deep Tech Exits



2025 was a record year for M&A in Deep Tech - 85% in the U.S. and 33% driven by Groq

Deep Tech M&A value by Founding Location

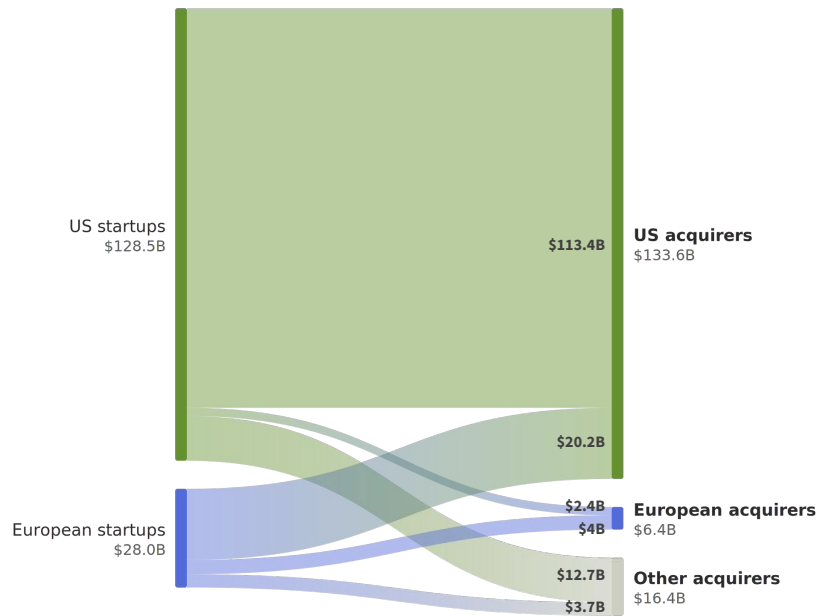


Selected M&A since 2020, U.S. & Europe

#	Name	Location	Year	Amount	Acquirer	Sector
1	Groq	U.S.	2025	\$20.0B	Nvidia	Future of Compute
2	Nuance Comm	U.S.	2021	\$19.7B	Microsoft	AI
3	INPHI	U.S.	2020	\$10.0B	Marvell Technology	Future of Compute
4	Ampere computing	U.S.	2025	\$6.5B	Softbank	Future of Compute
5	Celestial AI	U.S.	2025	\$3.3B	Marvell Technology	Future of Compute
6	Darktrace	Europe	2024	\$5.3B	Thoma Bravo	Cybersecurity
7	Oxford Ionics	Europe	2025	\$1.1B	IonQ	Future of Compute
8	Silo AI	Europe	2024	\$665M	AMD	AI
9	Graphcore	Europe	2024	\$600M	Softbank	Future of Compute
10	WaveOptics	Europe	2024	\$500M	Snap	Future of Compute

U.S. acquisitions are mostly domestic; European value flows strongly to the U.S.

Deep Tech M&A exit value flows, 2020–2026

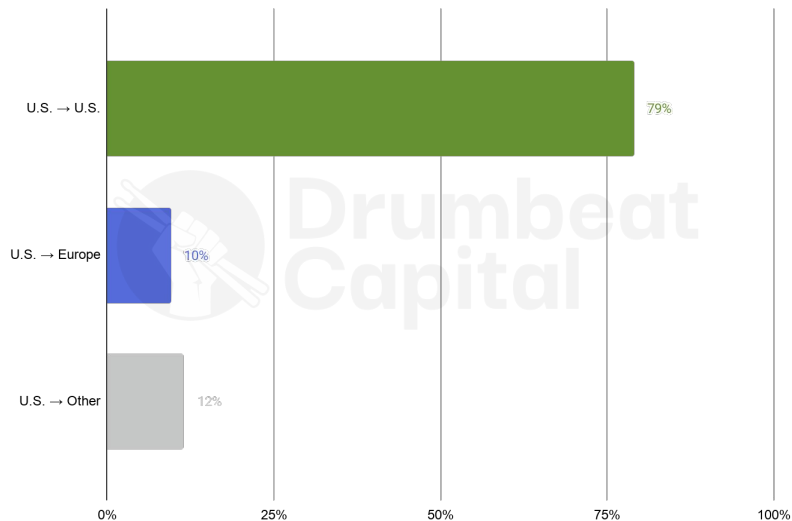


U.S. Deep Tech acquisitions are overwhelmingly domestic, with 88% of exit value staying in the U.S. since 2020. European acquirers account for just 2% of U.S. startup exit value. The remaining ~10% flows mostly to Japan and Canada.

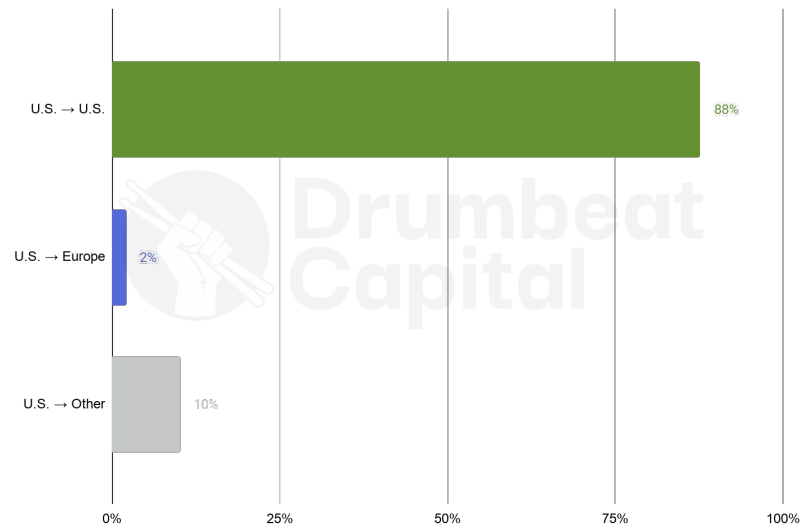
European Deep Tech startups tell the opposite story. U.S. buyers capture 74% of exit value, while European acquirers retain just 11% domestically, compared to 88% for the U.S. The rest of the world accounts for a further 14%, meaning 89% of European Deep Tech exit value leaves the continent.

U.S. transactions are predominantly domestic in both volume and value

U.S. M&A: % of **count** by region of acquirer, 2019–2025

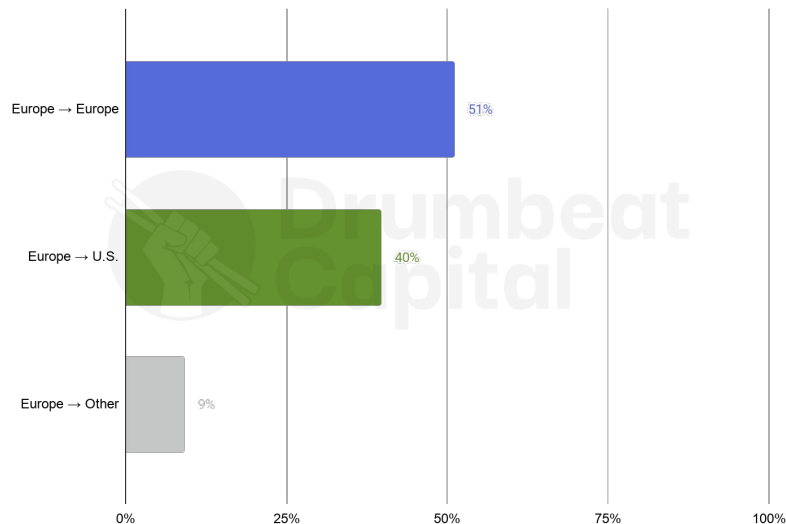


U.S. M&A: % of **value** by region of acquirer, 2019–2025

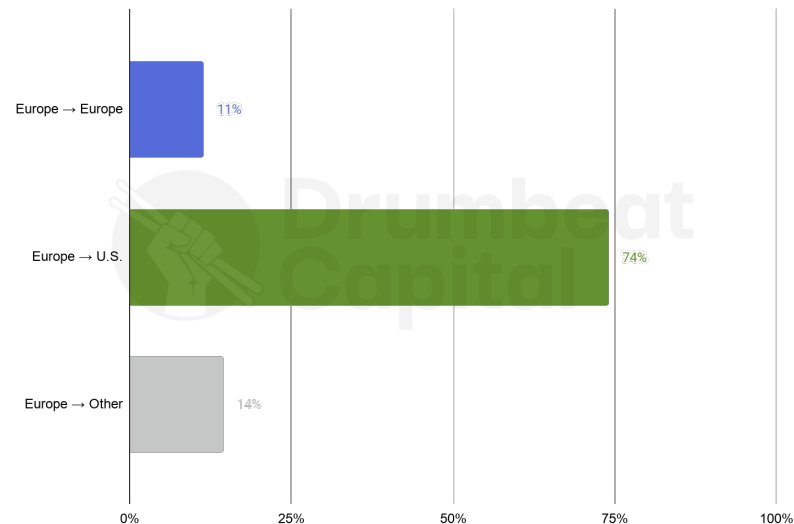


European transactions are mostly domestic by volume, but mostly U.S. by value

Europe M&A: % of **count** by region of acquirer, 2019–2025

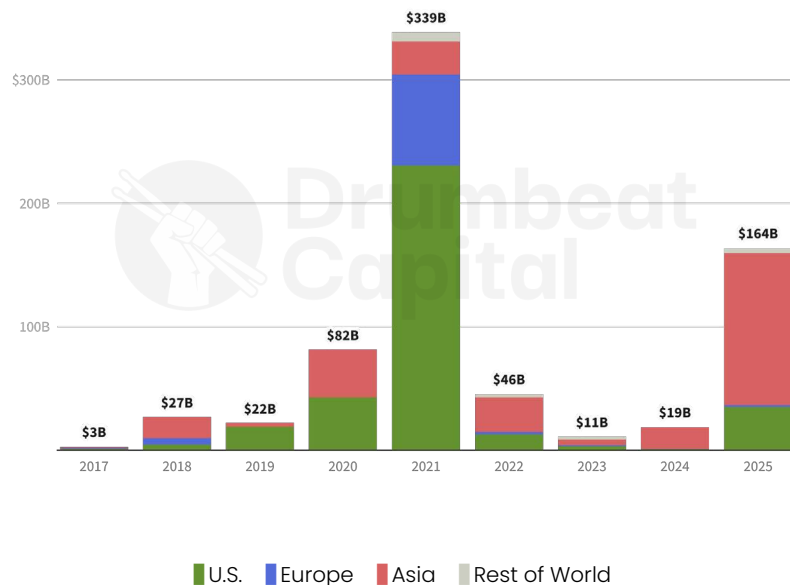


Europe M&A: % of **value** by region of acquirer, 2019–2025



Public markets in the U.S. are recovering to pre-2021 levels; Europe clearly behind

Deep Tech IPO & SPACs value by founding location

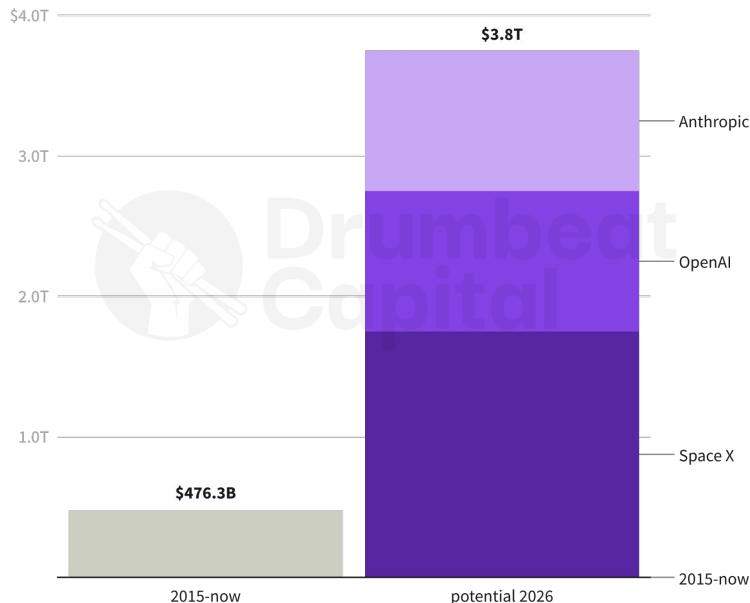


Selected IPOs & SPACs since 2020, U.S. & Europe

#	Name	Location	Year	Amount	Acquirer	Sector
1	Ginkgo Bioworks	U.S.	2021	\$17.5B	SPAC	Advanced materials
2	Aurora	U.S.	2021	\$11.0B	SPAC	AI
3	Firefly Aerospace	U.S.	2025	\$9.8B	IPO	Space
4	Beta Technologies	U.S.	2025	\$7.2B	IPO	Transportation
5	Quantum-Scape	U.S.	2020	\$3.3B	SPAC	Novel Energy
6	Arrival*	Europe	2021	\$13B	SPAC	Transportation
7	Lilium*	Europe	2021	\$3.3B	SPAC	Transportation
8	Darktrace	Europe	2021	\$2.4B	IPO	Cybersecurity
9	Einride	Europe	2026**	\$1.4B	SPAC	Transportation
10	Energy Vault	Europe	2022	\$1.1B	IPO	Novel Energy

The Deep Tech IPO pipeline for 2026 at 8x the cumulative IPO value since 2015

Potential Deep Tech IPO Pipeline vs. Historical Activity



U.S. Deep Tech companies created nearly \$500B in public market value over the last decade.

The next wave could be far larger: SpaceX, OpenAI, and Anthropic alone could target a combined \$3.8T valuation in future listings – nearly 8x the last decade’s exits. Other likely candidates include Cerebras and Anduril.

Europe’s pipeline is smaller, but Wayve and Mistral could also reach the public markets in the coming years.

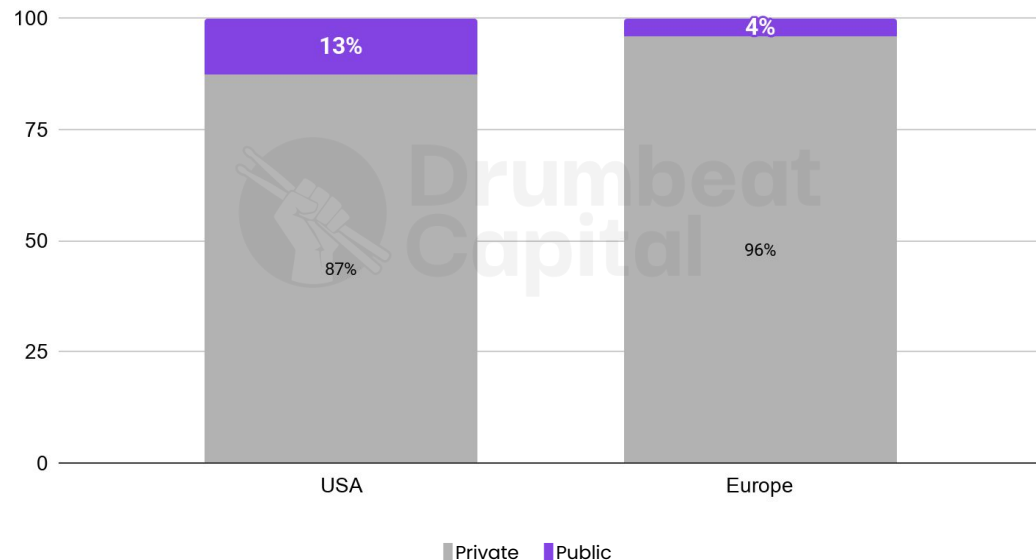
IPOs remain the critical exit path for Deep Tech companies and the primary driver of outsized returns.

The U.S. is widening its lead: IPO activity is rebounding, valuations are higher, analyst coverage is deeper, CEO incentives are more competitive, and public investors ultimately deliver stronger returns than in Europe.

Europe continues to struggle with fragmented capital markets, smaller pools of capital, and lower trading liquidity. While part of the gap reflects more companies staying private and a heavier industrial mix, high-growth and technology businesses increasingly look to the U.S.

Historically European companies favor remaining private; U.S. has 3x more public

Firms with revenue greater than \$100M, private vs. public

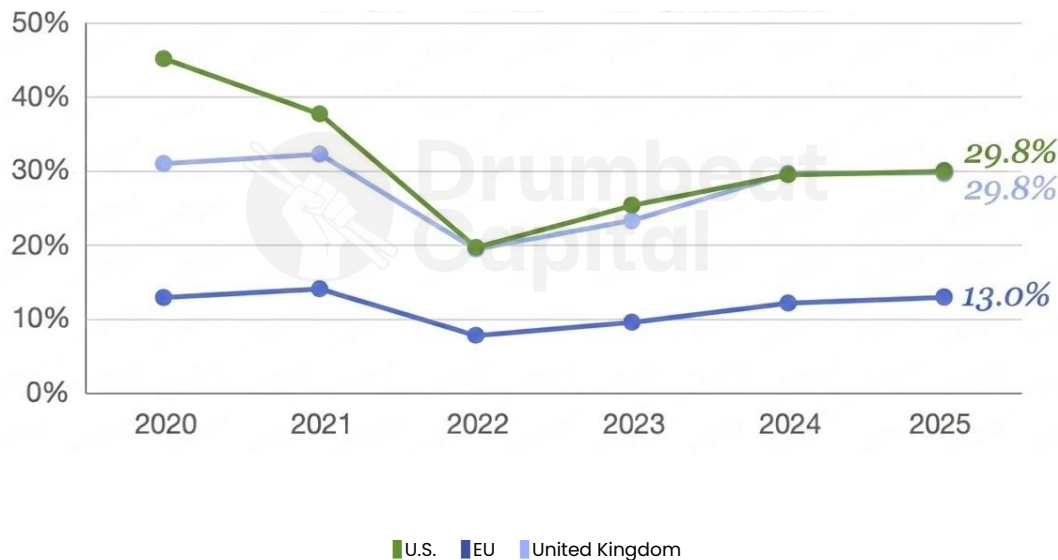


Europe's stronger tradition of family ownership and Hidden Champions may help explain why only 4% of large firms are public. Hidden Champions are companies that rank #1–#3 globally in a narrowly defined market, typically generate less than €5 billion in annual revenue, and remain largely unknown to the general public. Researchers estimate there are around 4,000 Hidden Champions worldwide.

However, European public markets are also less attractive – more fragmented and less liquid. See next slides for a detailed analysis.

U.S. companies rely significantly more on capital markets for financing

Equity and bond issuances as % of total financing for non-financial corporates

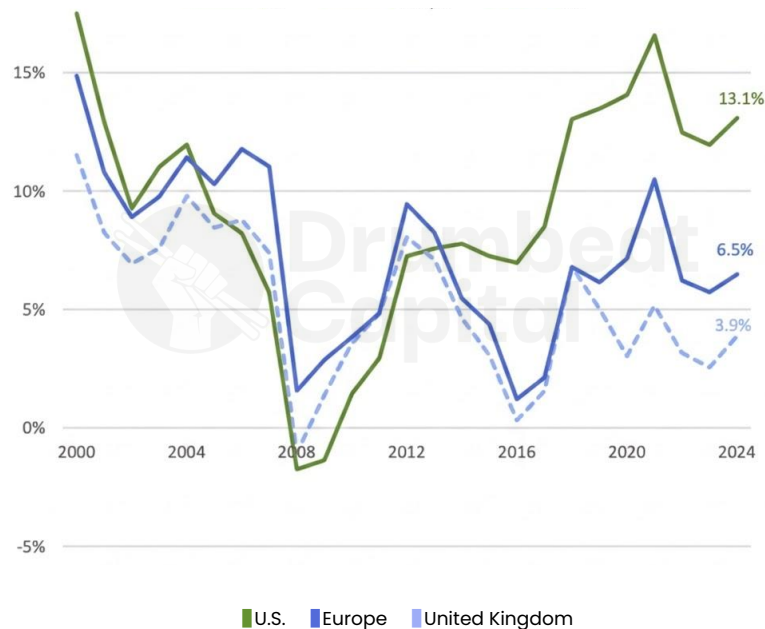


The indicator quantifies the proportion of total finance for Non-Financial Corporates (NFCs), which is provided by capital market instruments (equity and bonds).

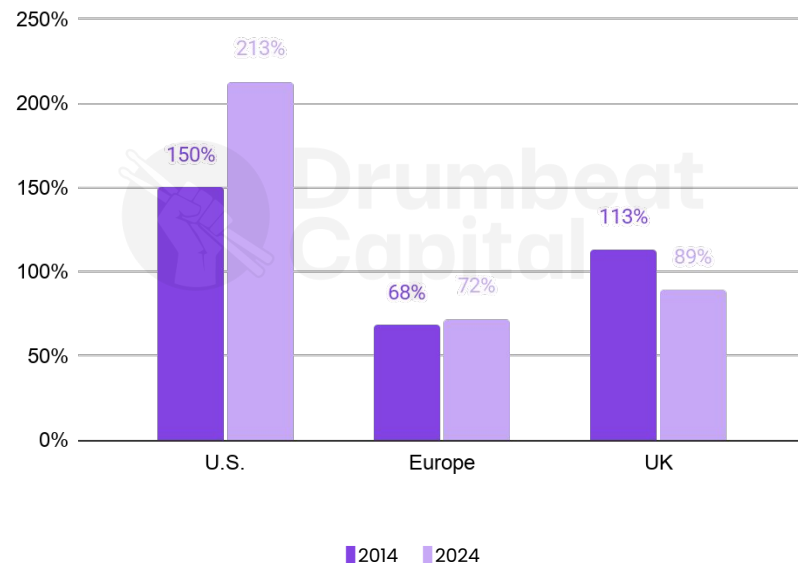
The U.S. capital market financing share is more than twice that of the EU, highlighting a structurally deeper and more developed market-based financing ecosystem. The EU is still struggling to unlock the full potential of market-based finance for its corporate sector.

The U.S. stock market has outperformed its peers in Europe

Rolling 10-year annualised total return, 2020 - 2024

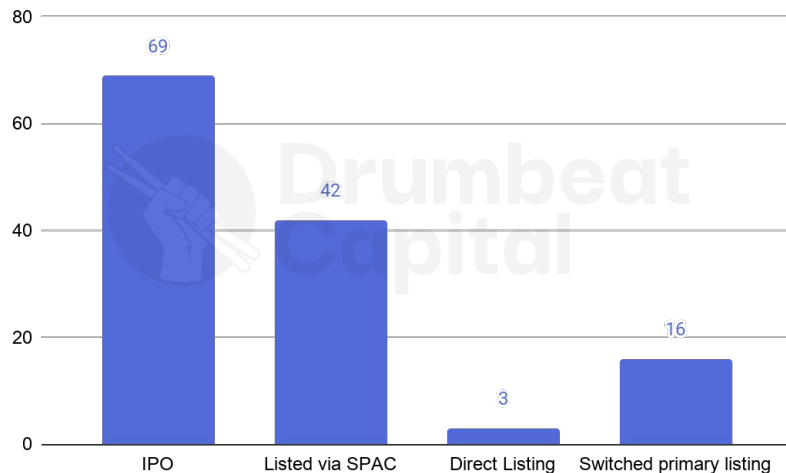


Change in market capitalisation as % of GDP

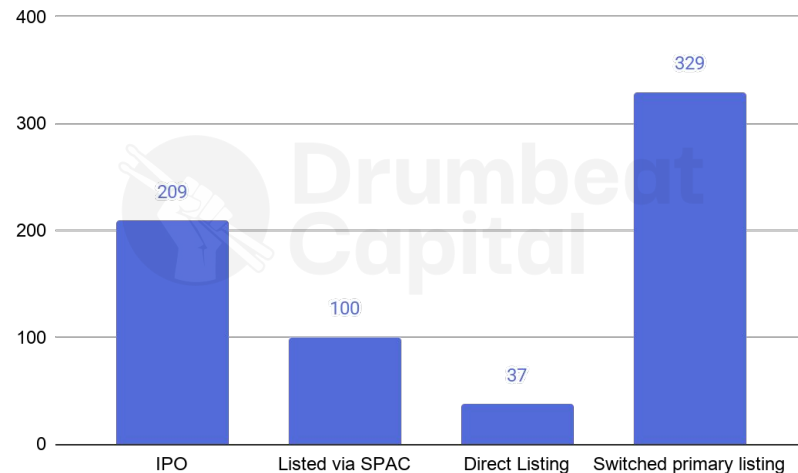


Since 2015, 130 European companies worth \$676bn have chosen U.S. public markets

of European companies moving to U.S., '15-'24 by listing

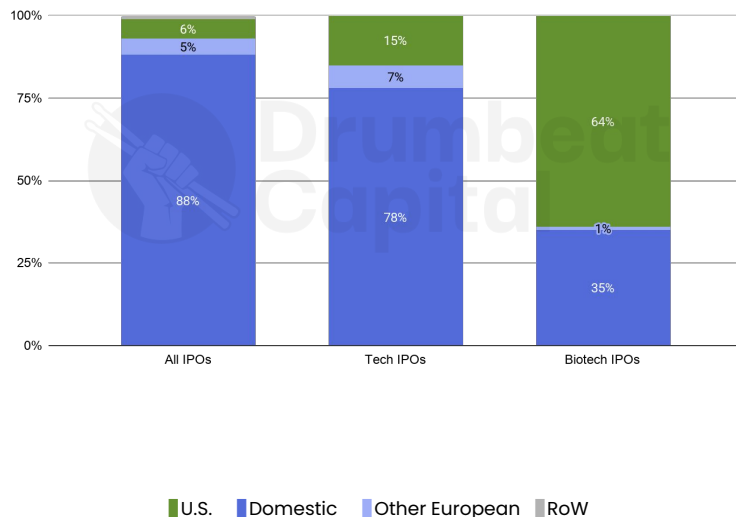


Value of European companies moving to U.S., '15-'24, \$bn

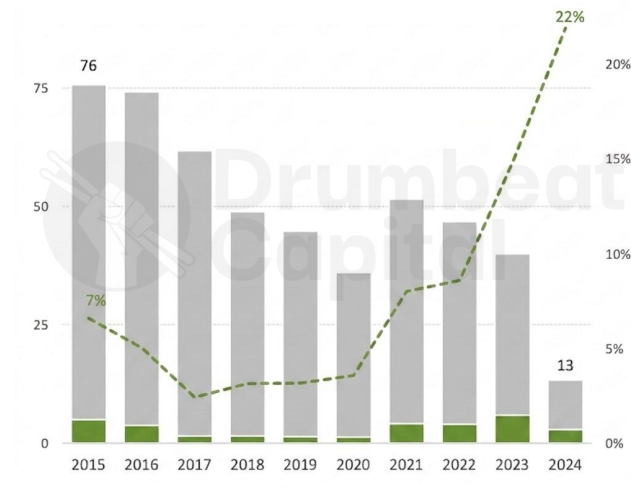


The U.S. is especially attractive for Tech and Biotech companies

Listing destination of IPOs by European companies, '15-'24, IPO value in \$bn*



Value of IPOs by European companies by region of listing



■ Value of European IPOs in Europe \$bn ■ Value of European IPOs in the U.S. \$bn
-- % listings in the U.S. by value

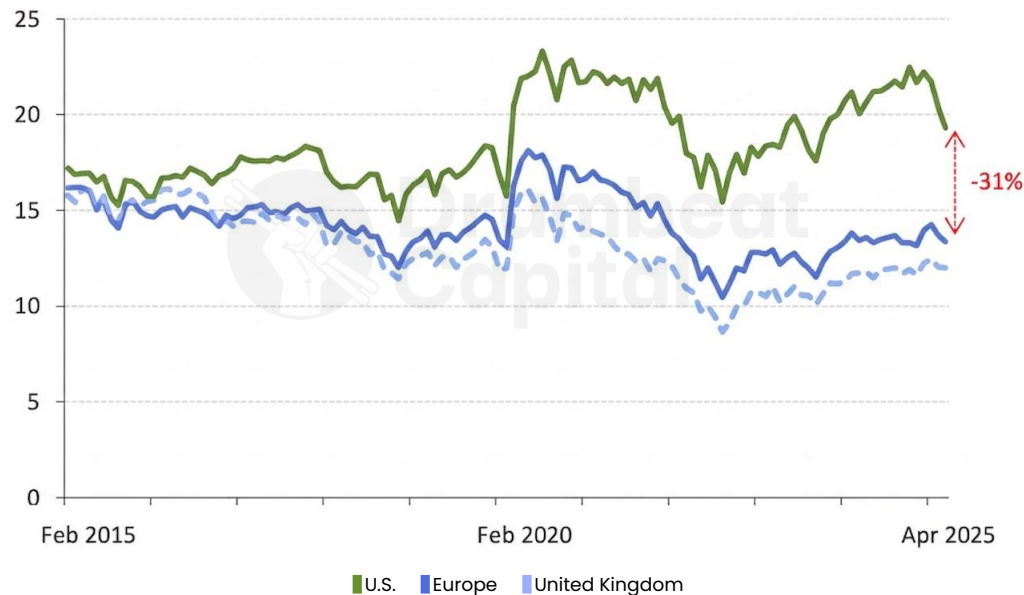
Comparing U.S. and European public markets

Several factors are often cited to explain why many founders view U.S. public markets as the gold standard:

1. **Valuations** are higher in the U.S.
2. Markets are more **liquid**
3. Companies get more **analyst coverage**
4. **Governance, CEO pay, and regulatory standards** are more founder-friendly

U.S. stocks trade at higher multiples than European companies

12m forward P / E ratio

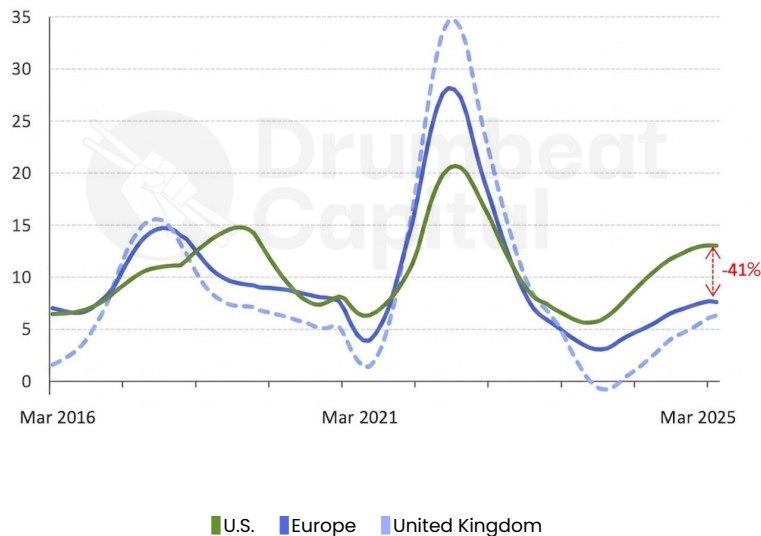


Over the past decade, the valuation gap between European and U.S. equities has widened significantly, accelerating sharply since the pandemic.

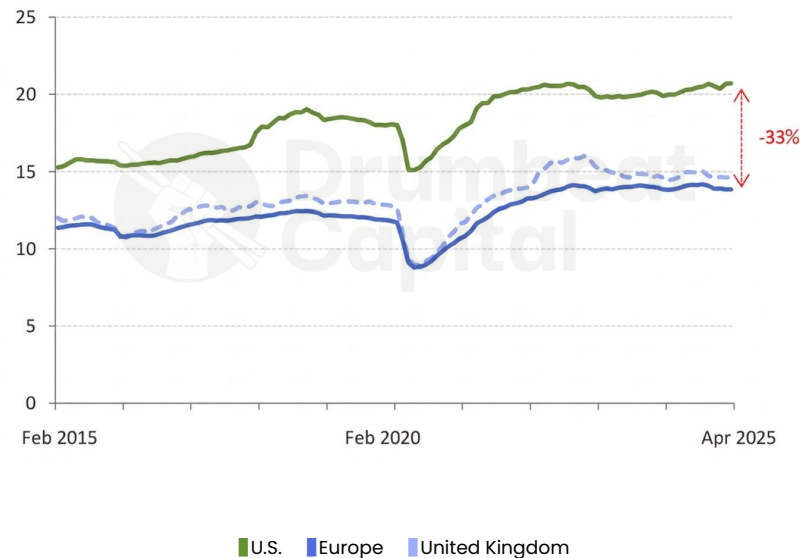
The key question is whether this reflects a structural valuation discount attached to Europe, and whether European companies could unlock higher valuations simply by moving their listing to the U.S.

Higher profitability and better returns of U.S. companies drives the valuation gap

12m forward earnings per share growth % (12m rolling ag)

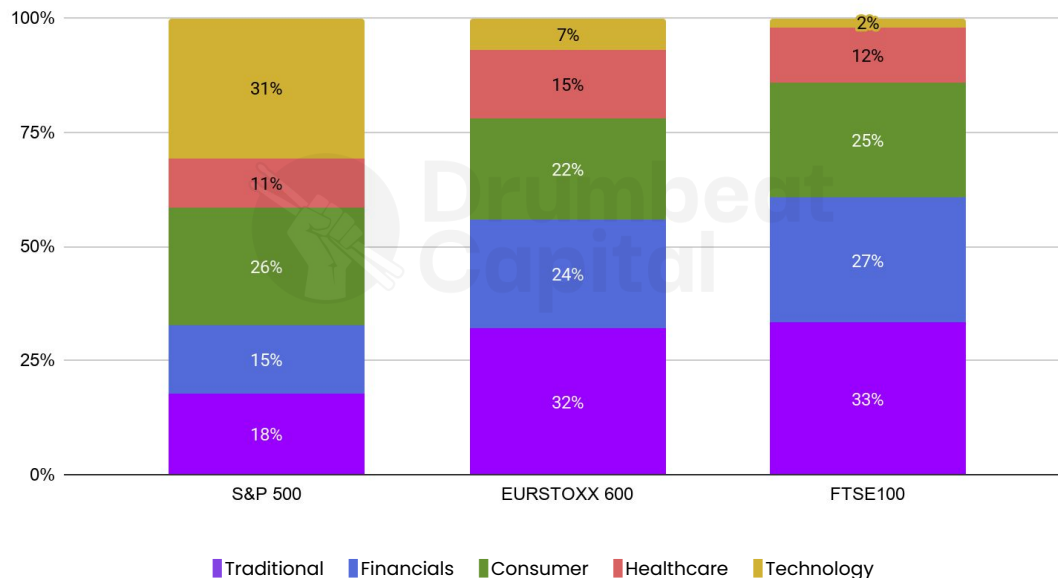


12m forward return on equity %



The sector mix also contributes to the the valuation gap

Sector composition of listed companies in the U.S. and Europe (by value %)

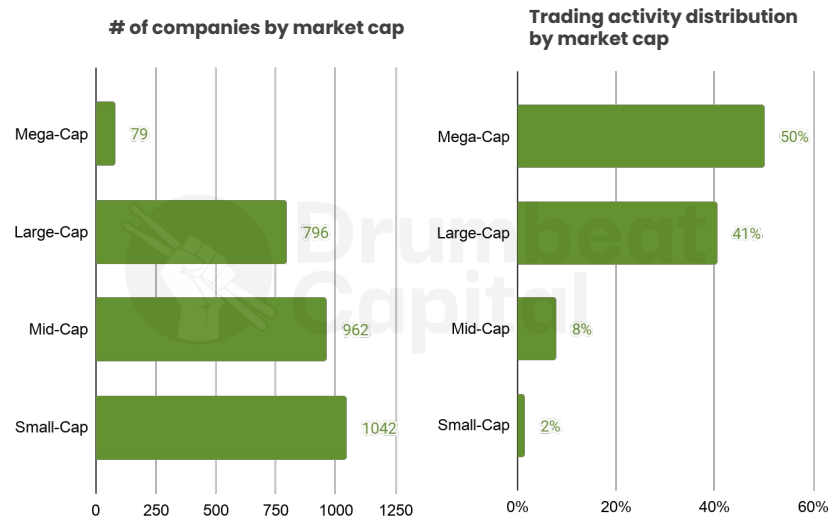


Technology accounts for 31% of the U.S. equity market, compared with just 7% in Europe and 2% in the UK. Given tech's superior growth prospects and profitability, it is unsurprising that U.S. markets command higher valuations.

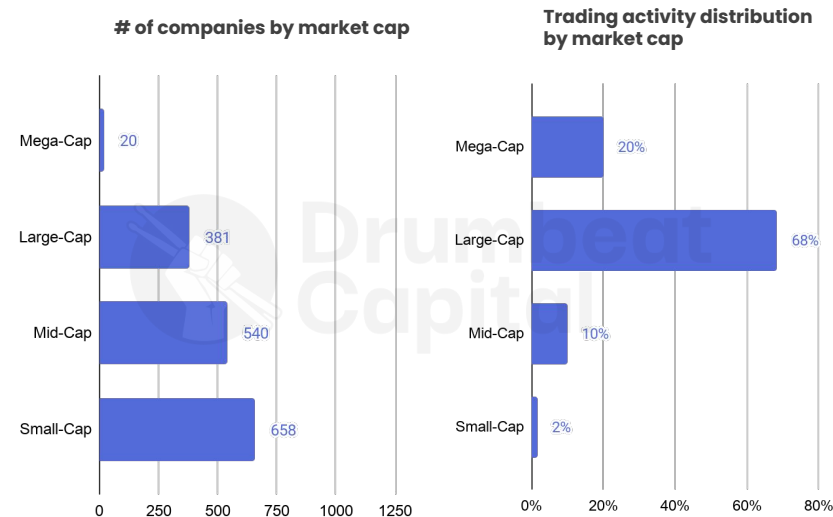
By contrast, European markets remain heavily skewed towards the industrial economy. Traditional sectors like energy, primary industry, and manufacturing represent around 60% of European markets, roughly double the proportion in the U.S.

Around 50% of trading activity in the U.S. is centered around Mega-Cap companies

U.S.: Market Cap and Turnover Distribution, 2023

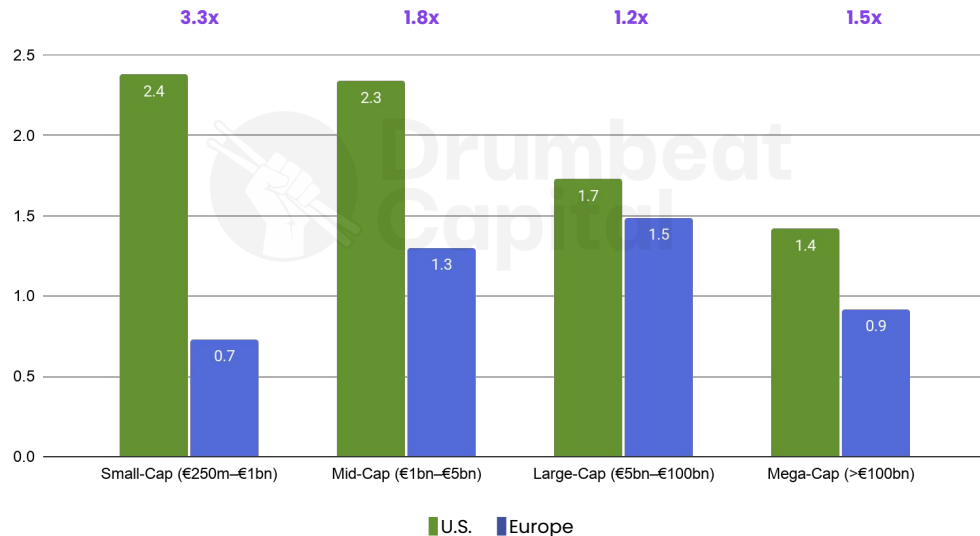


Europe: Market Cap and Turnover Distribution, 2023



Liquidity: The U.S. has a higher trading velocity across all market cap segments

Trading velocity in the U.S. and Europe, 2023



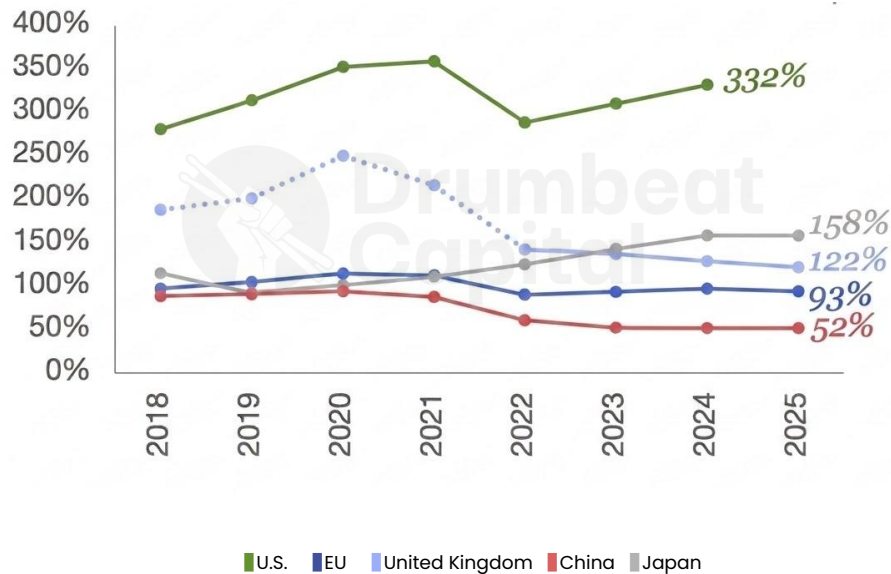
Trading velocity refers to the total value traded of securities in market cap segment divided by total market cap of securities in such segment.

The U.S. exhibits higher trading velocity across all market-cap segments, indicating that stocks trade more frequently relative to their market capitalization.

Large-Caps show the smallest difference between regions, with turnover velocity of 1.7x in the U.S. versus 1.5x in Europe (only a 1.2x gap). This indicates that European Large-Caps are nearly as liquid as their U.S. peers.

Higher U.S. liquidity is driven by greater household participation in capital markets

Household savings in market instruments as % of GDP

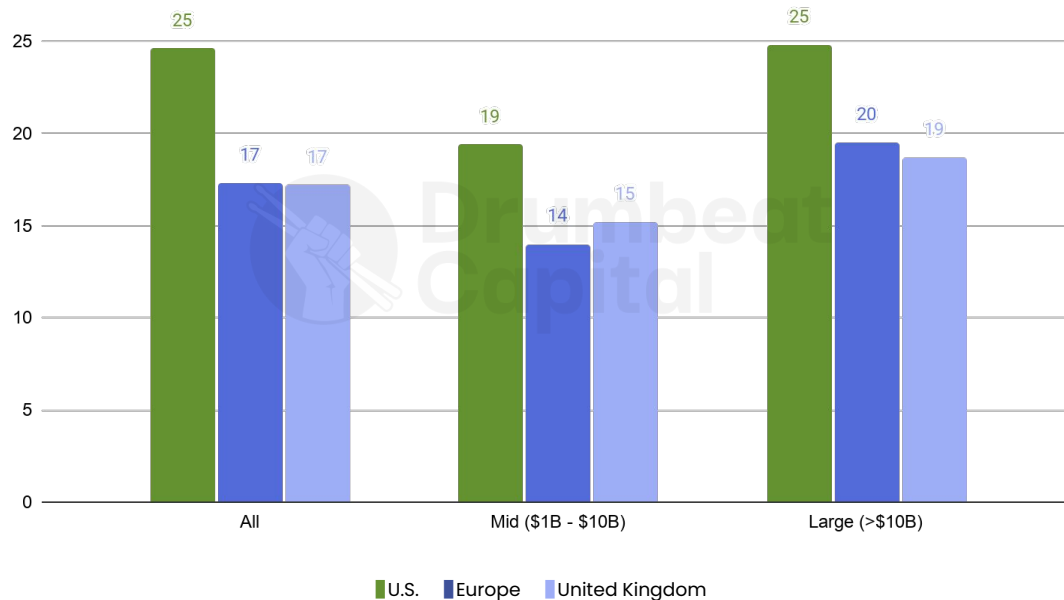


The Household Market Investment Indicator measures households' capacity to invest in capital markets. It is calculated as household financial assets—excluding cash, deposits, and unlisted equity—as a percentage of GDP.

The indicator includes listed equities, investment fund shares, bonds, life insurance reserves, and pension fund holdings. Higher levels of these investable assets indicate deeper pools of capital, which are a key driver of stronger equity market liquidity.

Companies get better analyst coverage in the U.S.

Average number of analysts per stock in the U.S. and Europe

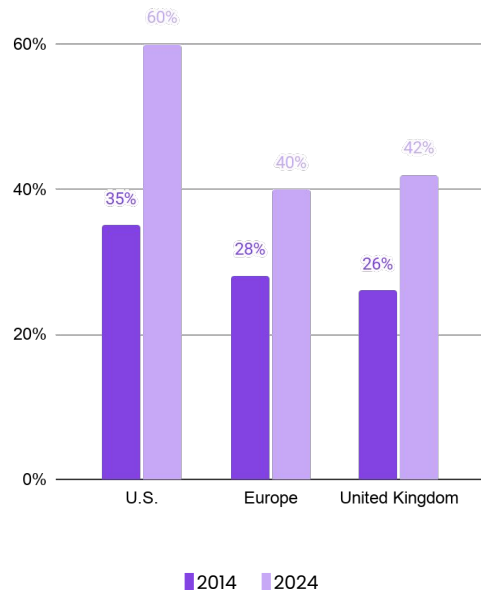


Analyst coverages helps drive investor awareness, liquidity, and market engagement. The gap is particularly pronounced for smaller companies: a European company worth more than \$10bn attracts roughly the same analyst coverage as a mid-cap stock in the U.S.

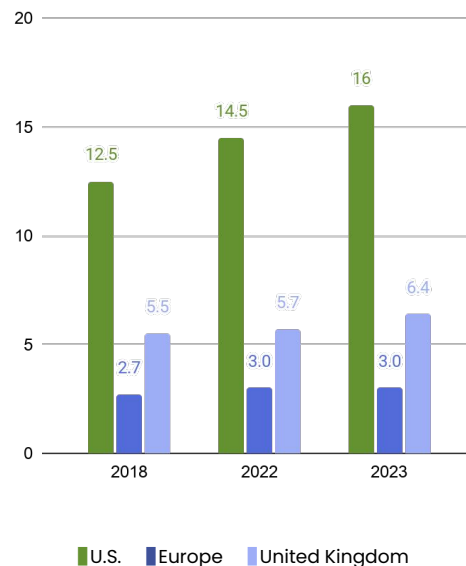
In addition, many technology companies argue that analyst research in Europe is less specialized, while the U.S. benefits from a stronger "star analyst" culture, often supported by large research teams that deepen sector expertise and market influence.

More index investing and higher CEO pay in the U.S. influences stock performance

Passive mgmt. as a % of all AUM, 2014 to 2024*



Median CEO pay in the U.S. and Europe m in \$m 2018 to 2023*



Regulatory scrutiny & Litigation Risk

Reporting: FTSE 100 annual reports now average 237 pages, up 25% in five years, reflecting a growing compliance burden. However, 10k filings have also doubled in length in the past 20 years.

Litigation Risk: In 2023, 215 new securities class actions were filed in the U.S., compared with just five in the UK—equivalent to roughly one lawsuit for every 20 listed companies in the U.S. versus one for every 360 in the UK.

2.13

Investors

Top 10 Investors in *Seed* Stage Deep Tech startups in 2025

In U.S. Deep Tech startups

#	Name	Location	# of Rounds
1	Andreessen Horowitz	United States	7
2	Alumni Ventures	United States	6
3	Eclipse Ventures	United States	6
4	Lux Capital	United States	6
5	Mayfield	United States	6
6	SOSV	United States	5
7	Mana Ventures	United States	5
8	MaC Venture Capital	United States	5
9	General Catalyst	United States	4
10	Quantonation	France	4

■ U.S. ■ Europe ■ Asia

In Europe Deep Tech Startups

#	Name	Location	# of Rounds
1	HTGF	Germany	8
2	Founderful	Switzerland	7
3	First Momentum Ventures	Germany	6
4	Lakestar	Switzerland	5
5	Earlybird Venture Capital	Germany	5
6	Tiny Supercomputer Investment Company	United Kingdom	5
7	Vento Ventures	Italy	5
8	Speedinvest	Austria	5
9	Zero Carbon Capital	United Kingdom	5
10	Atlantic	Germany	4

■ U.S. ■ Europe ■ Asia

Top 10 Investors in *Series A* Stage Deep Tech Startups in 2025

In U.S. Deep Tech Startups

#	Name	Location	# of Rounds
1	Andreessen Horowitz	United States	9
2	Founders Fund	United States	7
3	Lightspeed Venture Partners	United States	6
4	Eclipse Ventures	United States	5
5	Khosla Ventures	United States	5
6	Valor Equity Partners	United States	5
7	Menlo Ventures	United States	5
8	8VC	United States	4
9	Interlagos Capital	United States	4
10	NEA	United States	4

■ U.S. ■ Europe ■ Asia

In Europe Deep Tech Startups

#	Name	Location	# of Rounds
1	Amadeus Capital Partners	United Kingdom	5
2	Supernova Invest	France	5
3	FORWARD.one	Netherlands	5
4	HTGF	Germany	4
5	Verve Ventures	Switzerland	4
6	InnoEnergy	Netherlands	4
7	Matterwave Ventures	Germany	4
8	Expansion Ventures	France	4
9	Planet A	Sweden	4
10	Innovacom	France	4

■ U.S. ■ Europe ■ Asia

Top 10 Investors in *Series B* Stage Deep Tech Startups in 2025

In U.S. Deep Tech Startups

#	Name	Location	# of Rounds
1	Sequoia	United States	8
2	Lightspeed Venture Partners	United States	6
3	Nvidia	United States	6
4	Khosla Ventures	United States	5
5	General Catalyst	United States	5
6	Valor Equity Partners	United States	4
7	Index Ventures	United Kingdom	4
8	Benchmark	United States	4
9	CapitalG	United States	4
10	Fine Structure Ventures	United States	4

■ U.S. ■ Europe ■ Asia

In Europe Deep Tech Startups

#	Name	Location	# of Rounds
1	Omnes Capital	France	4
2	Supernova Invest	France	3
3	IQ Capital	United Kingdom	3
4	Starquest Capital	France	3
5	Lowercarbon Capital	United States	2
6	HV Capital	Germany	2
7	Elaia	France	2
8	LocalGlobe	United Kingdom	2
9	Eurazeo	France	2
10	General Catalyst	United States	2

■ U.S. ■ Europe ■ Asia

Top 10 Investors in *Series C+* Stage Deep Tech Startups in 2025

In U.S. Deep Tech Startups

#	Name	Location	# of Rounds
1	Nvidia	United States	12
2	Andreessen Horowitz	United States	9
3	Temasek	Singapore	9
4	Fidelity Investments	United States	9
5	Khosla Ventures	United States	8
6	Founders Fund	United States	8
7	DCVC	United States	8
8	NEA	United States	8
9	StepStone Group	United States	7
10	T. Rowe Price	United States	7

■ U.S. ■ Europe ■ Asia

In Europe Deep Tech Startups

#	Name	Location	# of Rounds
1	HV Capital	Germany	3
2	General Catalyst	United States	3
3	EQT Ventures	Sweden	3
4	Supernova Invest	France	2
5	IQ Capital	United Kingdom	2
6	Nvidia	United States	2
7	Andreessen Horowitz	United States	2
8	Sequoia	United States	2
9	GV	United States	2
10	Lightspeed Venture Partners	United States	2

■ U.S. ■ Europe ■ Asia

Top 10 *Seed* Investors in 2025 Deep Tech *Unicorns*

In U.S. Deep Tech Unicorns

#	Name	Location	# of Rounds
1	Lux Capital	United States	11
2	Andreessen Horowitz	United States	10
3	Sequoia	United States	7
4	SV Angel	United States	7
5	Khosla Ventures	United States	6
6	DCVC	United States	6
7	Lightspeed Venture Partners	United States	5
8	Founders Fund	United States	5
9	Felicis	United States	5
10	Soma Capital	United States	5

■ U.S. ■ Europe ■ Asia

In Europe Deep Tech Unicorns

#	Name	Location	# of Rounds
1	Sequoia	United States	3
2	Nvidia	United States	3
3	Greycroft Partners	United States	2
4	GV	United States	2
5	Tiny Supercomputer Investment Company	United Kingdom	2
6	LocalGlobe	United Kingdom	2
7	Maven 11 Capital	Netherlands	2
8	Vsquared Ventures	Germany	2
9	Atlantic	Germany	2
10	Elaia	France	1

■ U.S. ■ Europe ■ Asia

Top 10 *Series A* Investors in 2025 Deep Tech *Unicorns*

In U.S. Deep Tech Unicorns

#	Name	Location	# of Rounds
1	Andreessen Horowitz	United States	20
2	Sequoia	United States	14
3	Lux Capital	United States	12
4	DCVC	United States	12
5	Founders Fund	United States	12
6	NEA	United States	12
7	Lightspeed Venture Partners	United States	11
8	Accel	United States	10
9	Khosla Ventures	United States	9
10	General Catalyst	United States	8

■ U.S. ■ Europe ■ Asia

In Europe Deep Tech Unicorns

#	Name	Location	# of Rounds
1	EQT Ventures	Sweden	3
2	FirstMark	United States	2
3	LocalGlobe	United Kingdom	2
4	Seraphim Space	United Kingdom	2
5	Vsquared Ventures	Germany	2
6	InnoEnergy	Netherlands	2
7	Atomico	United Kingdom	1
8	Hummingbird Ventures	United Kingdom	1
9	Temasek	Singapore	1
10	SoftBank	Japan	1

■ U.S. ■ Europe ■ Asia

Top 10 *Series B* Investors in 2025 Deep Tech *Unicorns*

In U.S. Deep Tech Unicorns

#	Name	Location	# of Rounds
1	Andreessen Horowitz	United States	20
2	Lightspeed Venture Partners	United States	16
3	Sequoia	United States	15
4	Kleiner Perkins	United States	14
5	Khosla Ventures	United States	13
6	Lux Capital	United States	10
7	Breakthrough Energy Ventures	United States	10
8	Founders Fund	United States	9
9	NEA	United States	9
10	General Catalyst	United States	9

■ U.S. ■ Europe ■ Asia

In Europe Deep Tech Unicorns

#	Name	Location	# of Rounds
1	FirstMark	United States	3
2	Air Street Capital	United Kingdom	3
3	LocalGlobe	United Kingdom	2
4	Andreessen Horowitz	United States	2
5	Temasek	Singapore	2
6	SoftBank	Japan	2
7	Project A	Germany	2
8	Earlybird Venture Capital	Germany	2
9	General Catalyst	United States	2
10	HV Capital	Germany	2

■ U.S. ■ Europe ■ Asia

Top 10 *Series C+* Investors in 2025 Deep Tech *Unicorns*

In U.S. Deep Tech Unicorns

#	Name	Location	# of Rounds
1	Temasek	Singapore	22
2	Tiger Global	United States	20
3	Fidelity Investments	United States	19
4	Nvidia	United States	18
5	Andreessen Horowitz	United States	16
6	Sequoia	United States	16
7	BlackRock	United States	16
8	SoftBank	Japan	15
9	T. Rowe Price	United States	15
10	Khosla Ventures	United States	12

■ U.S. ■ Europe ■ Asia

In Europe Deep Tech Unicorns

#	Name	Location	# of Rounds
1	SoftBank	Japan	5
2	General Catalyst	United States	3
3	EQT Ventures	Sweden	3
4	Temasek	Singapore	2
5	Accel	United States	2
6	Balderton Capital	United Kingdom	2
7	Atomico	United Kingdom	2
8	Index Ventures	United Kingdom	2
9	NEA	United States	2
10	Bessemer Venture Partners	United States	2

■ U.S. ■ Europe ■ Asia

Top 10 *Seed* Investors in 2025 Deep Tech *Decacorns*

In U.S. Deep Tech Decacorns

#	Name	Location	# of Rounds
1	Andreessen Horowitz	United States	2
2	Nat Friedman	United States	2
3	Nvidia	United States	1
4	Sequoia	United States	1
5	Founders Fund	United States	1
6	General Catalyst	United States	1
7	Accel	United States	1
8	8VC	United States	1
9	Sutter Hill Ventures	United States	1
10	DST Global	United Kingdom	1

■ U.S. ■ Europe ■ Asia

In Europe Deep Tech Decacorns

#	Name	Location	# of Rounds
1	Index Ventures	United Kingdom	1
2	Lightspeed Venture Partners	United States	1
3	LocalGlobe	United Kingdom	1
4	Exor Ventures	United States	1
5	Firstminute Capital	United Kingdom	1
6	SV Angel	United States	1
7	Redpoint	United States	1
8	Credo Ventures	Czechia	1
9	La Famiglia	Germany	1
10	Concept Ventures	United Kingdom	1

■ U.S. ■ Europe ■ Asia

Top 10 *Series A* Investors in 2025 Deep Tech *Decacorns*

In U.S. Deep Tech Decacorns

#	Name	Location	# of Rounds
1	Andreessen Horowitz	United States	6
2	Founders Fund	United States	3
3	NEA	United States	3
4	Lightspeed Venture Partners	United States	3
5	General Catalyst	United States	2
6	SV Angel	United States	2
7	Elad Gil	United States	2
8	Khosla Ventures	United States	1
9	DCVC	United States	1
10	Eclipse Ventures	United States	1

■ U.S. ■ Europe ■ Asia

In Europe Deep Tech Decacorns

#	Name	Location	# of Rounds
1	Andreessen Horowitz	United States	2
2	Lightspeed Venture Partners	United States	1
3	SV Angel	United States	1
4	Credo Ventures	Czechia	1
5	Concept Ventures	United Kingdom	1
6	General Catalyst	United States	1
7	Accel	United States	1
8	Microsoft	United States	1
9	Salesforce Ventures	United States	1
10	Prima Materia	Sweden	1

■ U.S. ■ Europe ■ Asia

Top 10 *Series B* Investors in 2025 Deep Tech *Decacorns*

In U.S. Deep Tech Decacorns

#	Name	Location	# of Rounds
1	Andreessen Horowitz	United States	4
2	Founders Fund	United States	2
3	NEA	United States	2
4	Lightspeed Venture Partners	United States	2
5	General Catalyst	United States	2
6	Sequoia	United States	2
7	Khosla Ventures	United States	2
8	Lux Capital	United States	2
9	IVP	United States	2
10	Benchmark	United States	2

■ U.S. ■ Europe ■ Asia

In Europe Deep Tech Decacorns

#	Name	Location	# of Rounds
1	Andreessen Horowitz	United States	2
2	General Catalyst	United States	2
3	Lightspeed Venture Partners	United States	1
4	SV Angel	United States	1
5	Credo Ventures	Czechia	1
6	Accel	United States	1
7	Salesforce Ventures	United States	1
8	83North	United Kingdom	1
9	Sequoia	United States	1
10	DST Global	United Kingdom	1

■ U.S. ■ Europe ■ Asia

Top 10 *Series C+* Investors in 2025 Deep Tech *Decacorns*

In U.S. Deep Tech Decacorns

#	Name	Location	# of Rounds
1	Fidelity Investments	United States	7
2	BlackRock	United States	7
3	Andreessen Horowitz	United States	5
4	Nvidia	United States	5
5	Tiger Global	United States	5
6	General Catalyst	United States	4
7	Lux Capital	United States	4
8	Elad Gil	United States	4
9	Coatue Management	United States	4
10	Founders Fund	United States	3

■ U.S. ■ Europe ■ Asia

In Europe Deep Tech Decacorns

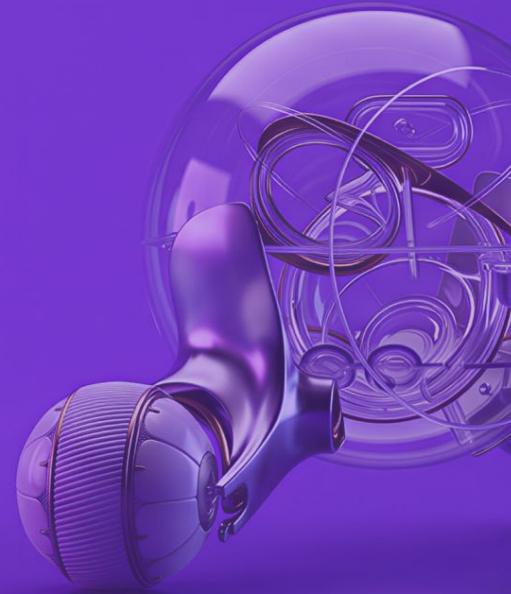
#	Name	Location	# of Rounds
1	Lightspeed Venture Partners	United States	3
2	Andreessen Horowitz	United States	2
3	General Catalyst	United States	2
4	Accel	United States	2
5	Sequoia	United States	1
6	DST Global	United Kingdom	1
7	Index Ventures	United Kingdom	1
8	NEA	United States	1
9	Greenoaks Capital Partners	United States	1
10	ASML	Netherlands	1

■ U.S. ■ Europe ■ Asia

PART 3

Deep Tech Sector

Deep Dives

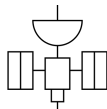


Sector Overview



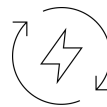
Future of Compute

Harnessing novel physics to advance humanity's greatest tool



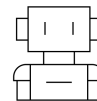
Aerospace

The infrastructure buildout in space is the next frontier of global power



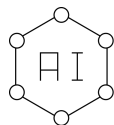
Novel Energy

Access to sustainable energy will define the quality of life for future generations



Robotics

Automating physical work at scale to address labor shortages



Novel AI

The models that come after LLMs will be unbelievably powerful strategic assets



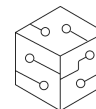
Defense

Protecting safety and sovereignty in an ever changing world



Advanced Materials

Material science innovation is the base from construction to semiconductors

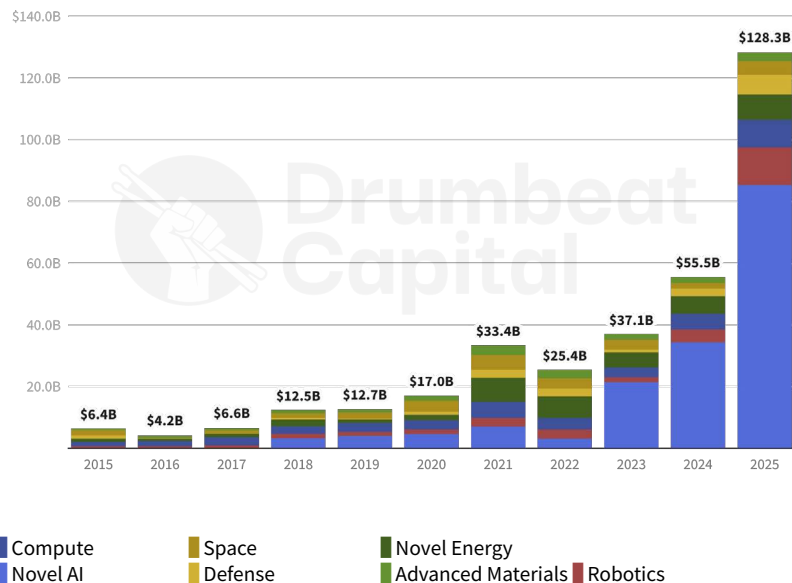


Beyond

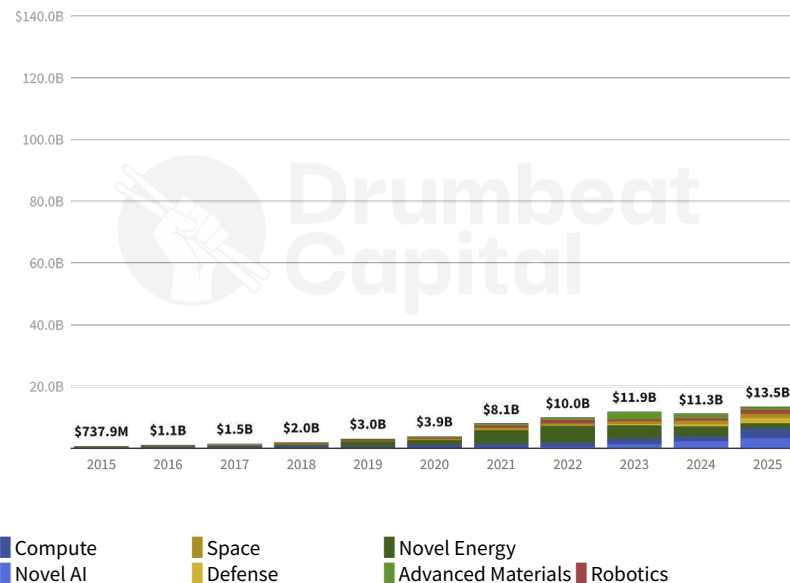
Exploring technologies that redefine what's possible

Deep Tech startups raise 10x the capital in the U.S. vs. Europe

U.S.: Venture capital raised by Deep Tech sectors

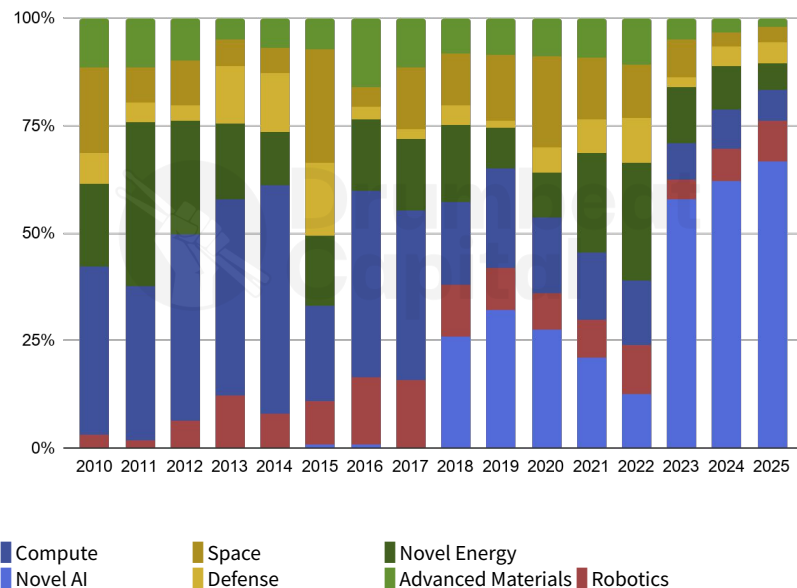


Europe: Venture capital raised by Deep Tech sectors

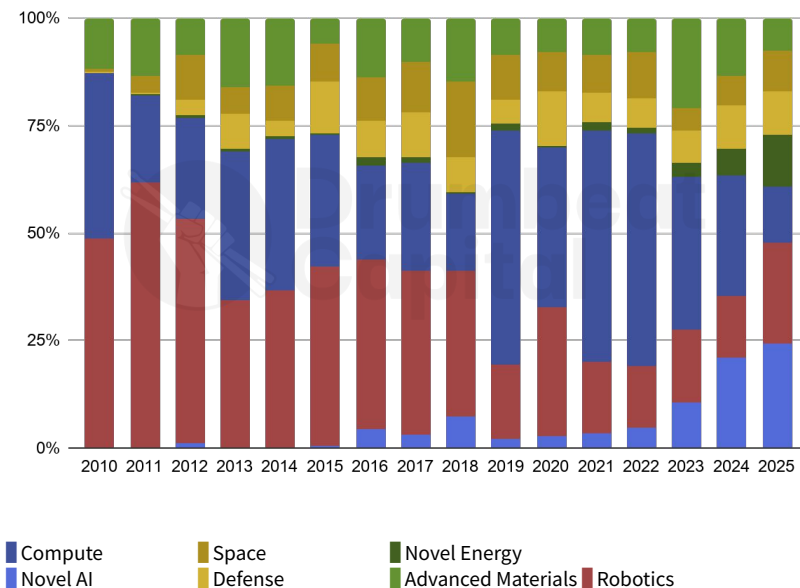


Novel AI, Robotics, and Compute are the dominant themes in Deep Tech

U.S.: % of venture capital raised by Deep Tech sectors

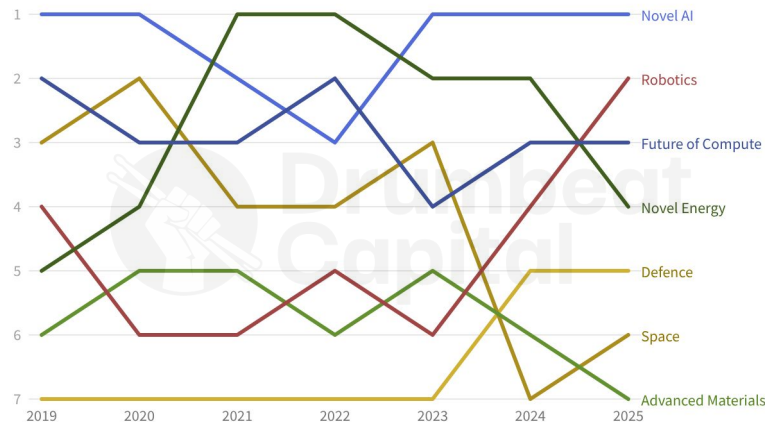


Europe: % of venture capital raised by Deep Tech sectors

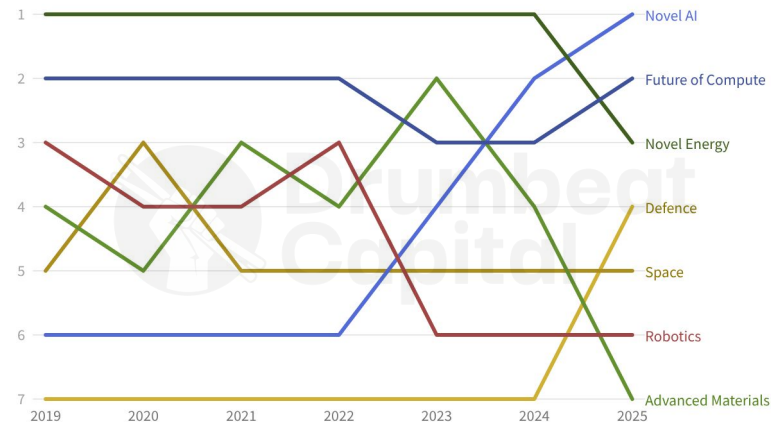


Capital allocation into Deep Tech sectors has aligned between the U.S. and Europe

U.S.: Deep Tech sectors ranked by capital raised



Europe: Deep Tech sectors ranked by capital raised



Deep Tech in the U.S. raises about 3-4x more capital than in Europe; AI at 26x

U.S. vs. Europe venture capital raised by sector

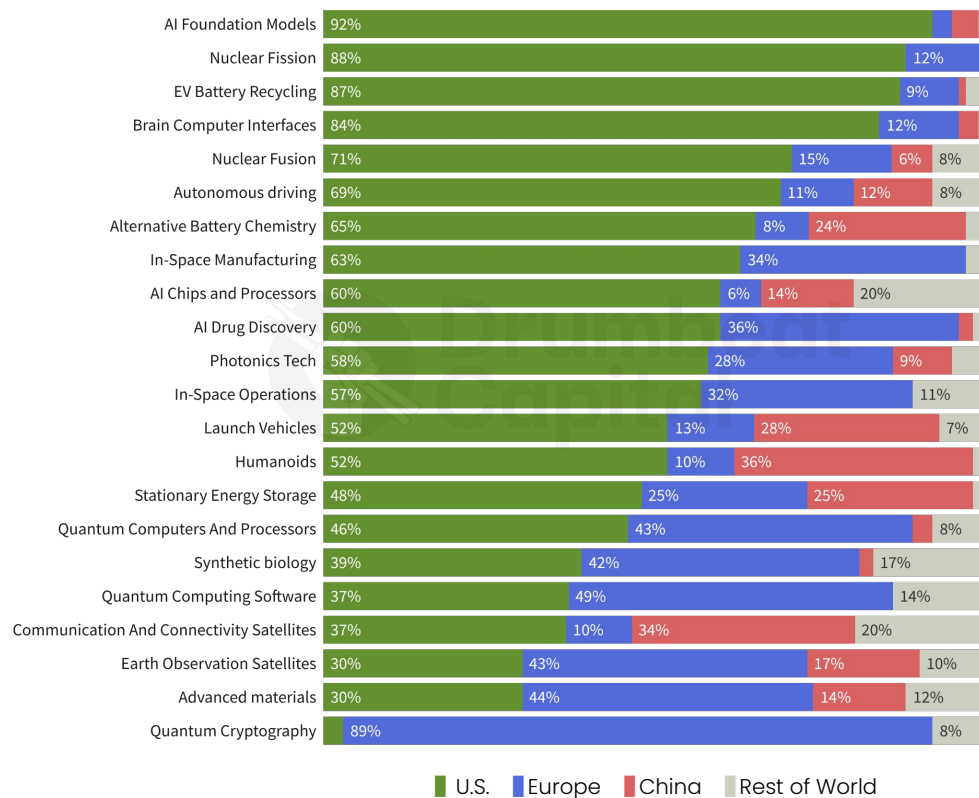


Gradient of allocation

The U.S. leads in AI foundation models, fission, fusion, and autonomous driving.

Europe shows strength in quantum technology, advanced materials, and some sectors of space.

Share of venture capital funding by Deep Technology (2023–2025)



Top companies are foundation models, semiconductors, and aerospace & defense

U.S.: Top Deep Tech unicorns

#	Name	Location	Launch Year	Sector	Valuation
1	SpaceX	Los Angeles	2002	Space	\$1.25T
2	OpenAI	Bay Area	2015	Novel AI	\$852B
3	Anthropic	Bay Area	2021	Novel AI	\$350B
4	Thinking Machines Lab	Bay Area	2024	Novel AI	\$50B
5	Figure	Bay Area	2022	Robotics	\$39B
6	Project Prometheus	Bay Area	2025	Robotics	\$38B
7	Astera Labs	Bay Area	2017	Future of Compute	\$35.3B
8	Safe Superintelligence	Bay Area	2024	Novel AI	\$32B
9	Anduril	Los Angeles	2017	Defense	\$30.5B
10	Cerebras Systems	Bay Area	2015	Future of Compute	\$23B

Europe: Top Deep Tech unicorns

#	Name	Location	Launch Year	Sector	Valuation
1	Mistral AI	Paris, France	2023	Novel AI	\$13.8B
2	Helsing	Munich, Germany	2021	Defense	\$13.2B
3	ElevenLabs	London, UK	2022	Novel AI	\$11B
4	Quantinuum	Cambridge, UK	2021	Future of Compute	\$10B
5	Wayve	London, UK	2017	Novel AI	\$8.6B
6	Ineffable Intelligence	London, UK	2025	Novel AI	\$5.1B
7	Advanced Machine Intelligence	Paris, France	2025	Novel AI	\$4.5B
8	Stegra	Stockholm, Sweden	2020	Advanced Materials	\$4.1B
9	Quantum Systems	Munich, Germany	2015	Defense	\$3.3B
10	Black Forest Labs	Freiburg, Germany	2024	Novel AI	\$3.25B

3.1

Novel AI

Biggest trends

World models

AI is shifting from predicting the next word to predicting the next state of a physical, three-dimensional environment. Instead of manipulating text, these systems build an internal, navigable model of reality that can be simulated, explored, and acted within, generating persistent 3D worlds in real time. Defensibility will rest on simulation fidelity and proprietary 3D/video data rather than model architecture alone.

Self-improvement

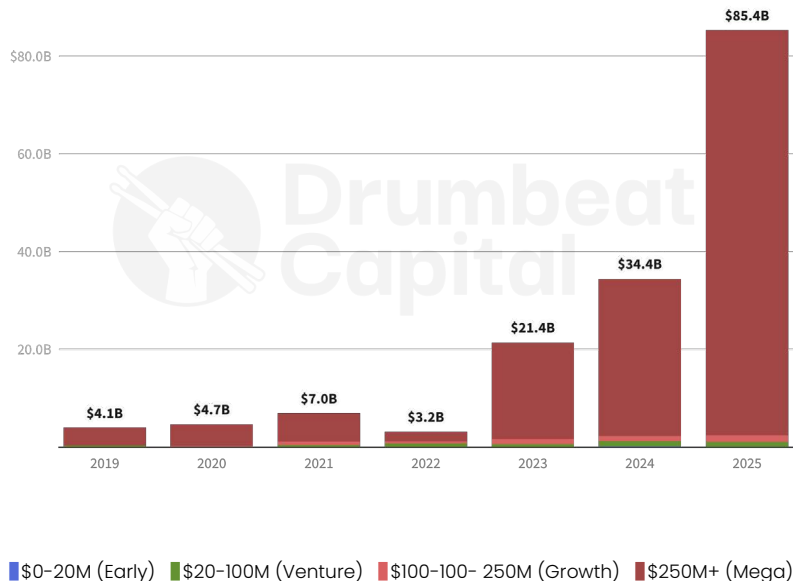
AI is increasingly used to improve AI — generating its own training data, writing and optimizing code, running evaluations, and red-teaming other models. Evolutionary and self-rewarding techniques now let systems propose, test, and refine their own solutions in domains where answers can be verified (math, code). Crucially, no system today rewrites its own architecture unsupervised; humans remain in the loop, but the loop is tightening.

AI for science

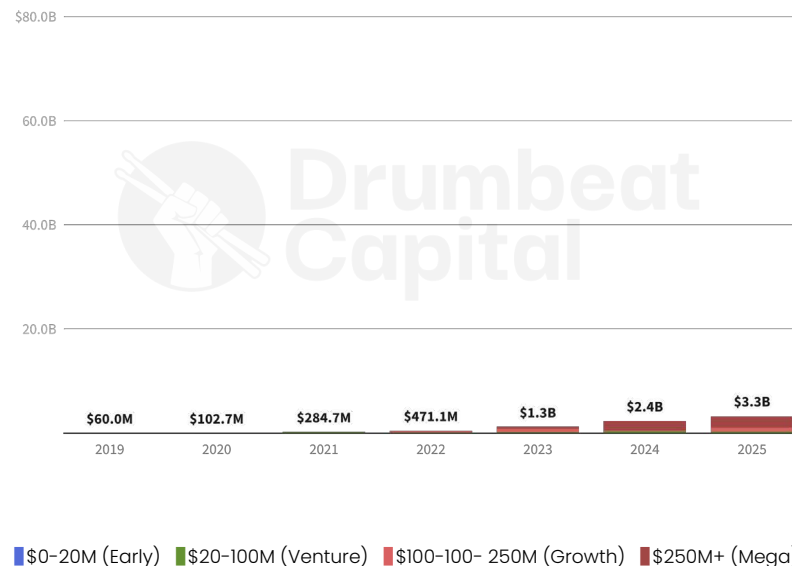
AI is moving from generating language to generating scientific discovery and physical action — treating nature itself as the environment to learn from. The frontier combines predictive models of biology, chemistry, and materials with autonomous laboratories and robotics that can run experiments. Drug discovery is the leading indicator, with AI-designed molecules advancing toward first human trials; materials and the physical sciences follow close behind.

Novel AI at record high in U.S. with \$85B in total capital raised; Europe lagging

U.S.: Novel AI venture capital raised

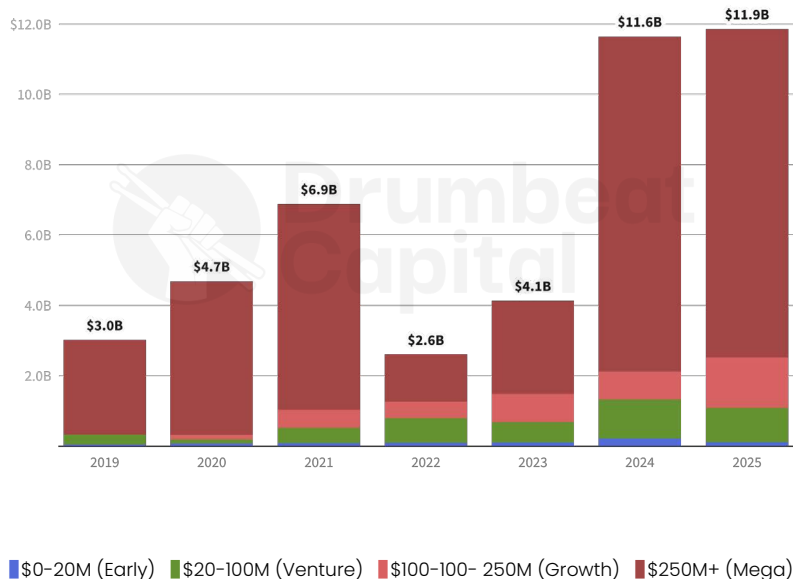


Europe: Novel AI venture capital raised

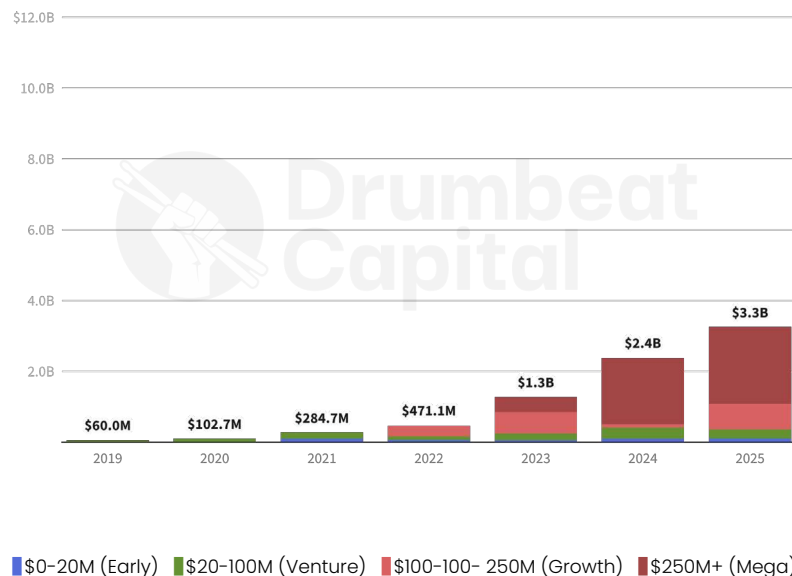


Europe is starting to scale Novel AI companies but growth is slower than the U.S.

U.S.: Novel AI VC raised, excl. foundation models



Europe: Novel AI VC raised, excl. foundation models



Top 10 rounds in 2025

U.S.: Top 10 Novel AI rounds in 2025

#	Name	Location	Round Type	Round Size	Focus
1	OpenAI	Bay Area	Late VC	\$40B	AGI & generative AI models
2	Anthropic	Bay Area	Series F	\$13B	Safe, steerable AI systems
3	OpenAI	Bay Area	Late VC	\$11B	AGI & generative AI models
4	xAI	Bay Area	Growth Equity	\$5B	Grok AI, scientific discovery
5	Anthropic	Bay Area	Series E	\$3.5B	Safe, steerable AI systems
6	Reflection AI	New York	Series B	\$2B	AI software dev agents
7	Safe Superintelligence	Bay Area	Early VC	\$2B	Safe superintelligence development
8	Thinking Machines Lab	Bay Area	Seed	\$2B	AI research & products
9	Luma AI	Bay Area	Series C	\$900M	AI video generation & world models
10	Applied Intuition	Bay Area	Series F	\$600M	AV simulation software

Europe: Top 10 Novel AI rounds in 2025

#	Name	Location	Round Type	Round Size	Focus
1	Mistral AI	Paris, France	Series C	\$1.87B	Open-source frontier language models
2	Black Forest Labs	Freiburg, Germany	Series B	\$300M	Image & video generation models
3	Synthesia	London, UK	Series D	\$180M	AI-generated enterprise video platform
4	ElevenLabs	London, UK	Series C	\$180M	AI voice cloning & synthesis
5	PhysicsX	London, UK	Series B	\$135M	AI-accelerated physics simulation
6	General Intuition	Geneva, Switzerland	Seed	\$134M	Spatial & temporal AI reasoning agents
7	Neural Concept	Lausanne, Switzerland	Series C	\$100M	CAD-native AI engineering platform
8	PolyAI	London, UK	Series D	\$86M	AI voice agents for customer service
9	Gadium	Paris, France	Seed	\$70M	Speech & NLP AI foundation models
10	Zama	Paris, France	Series B	\$57M	Fully homomorphic encryption

John McCarthy

Sr. Director, Special Projects,
Google DeepMind



"We have entered the agentic era, moving beyond text manipulation toward active systems capable of multi-step reasoning, long-horizon planning, and open-ended self-improvement. The front line of Deep Tech is rapidly advancing with architectures that recursively evaluate, adapt, and refine their own code and training loops in verifiable domains. Anchoring these problem-solving capabilities within sophisticated predictive world models shifts simple text prediction toward a comprehensive understanding of physical laws, enabling systems to autonomously learn entirely new skills from scratch. This tight loop between abstract digital intelligence and physical cause-and-effect fundamentally accelerates the velocity of AI-driven scientific progress."

Shahin Farshchi, PhD

Partner, Lux Capital



"We're in the early innings of AI. Chatbots and coding agents are the portable digital assistants that gave way to the iPhone. AI will change the way we do everything, from education to engineering to manufacturing. Time to train talent will collapse; entirely new industries will be born, and manufacturing will be renamed to 'robo'facturing, as it will be done entirely by robots.

I expect companies and products to be separated into 'post-AI' and 'pre-AI,' just as there is a clear difference between pre-Industrial-Revolution arts and crafts and mass-manufactured goods, as well as the companies that build them. This is going to be bigger than the Industrial Revolution, the invention of the transistor, personal computing, and the Internet. What a great time to be building!"

Simon King

Partner, Lakestar



LAKE
STAR

“The Large Language Model war is settled: the U.S. took the closed frontier, and China took open source. But scaling those models will not get anyone to AGI, and the new architectures that might: neurosymbolic systems, world models, and whatever comes after, are still being built with several of the strongest teams sitting in Europe. But unless Europe can channel growth-stage capital to these companies at Series B and beyond, the same pattern will play out and Europe will remain a user and purchaser of these technologies rather than a producer.”

3.2

Future of Compute

Biggest trends

Sovereign semiconductor manufacturing & advanced packaging

The chip supply chain is de-globalizing into regionally anchored blocs where national security, not cost, drive location. The flagship event: TSMC's Arizona buildout grew to a \$165 billion commitment for six fabs, two advanced-packaging facilities, and an R&D center, with the first 4nm fab reportedly matching or beating Taiwan yields. Implication: the binding constraint is now talent, not fab construction.

Silicon photonics & co-packaged optics go to production

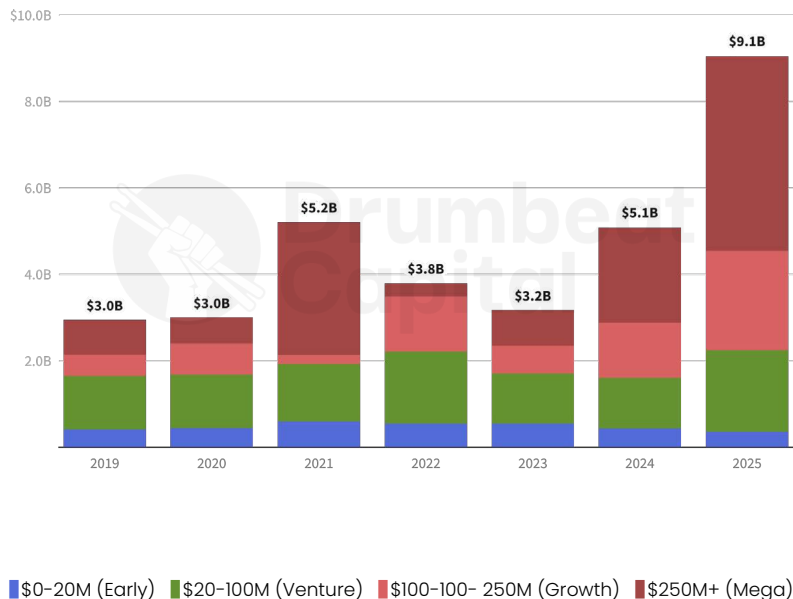
As AI clusters scale, the interconnect between chips, not the chips themselves, has become the limiting factor. Copper links can no longer move enough data at acceptable power for the chip-to-chip fabrics that giant models require. Co-packaged optics solves this by integrating optical engines directly onto the same package as the switching and compute silicon, dramatically cutting power per bit. The technology has moved from research into early production.

Memory bottleneck

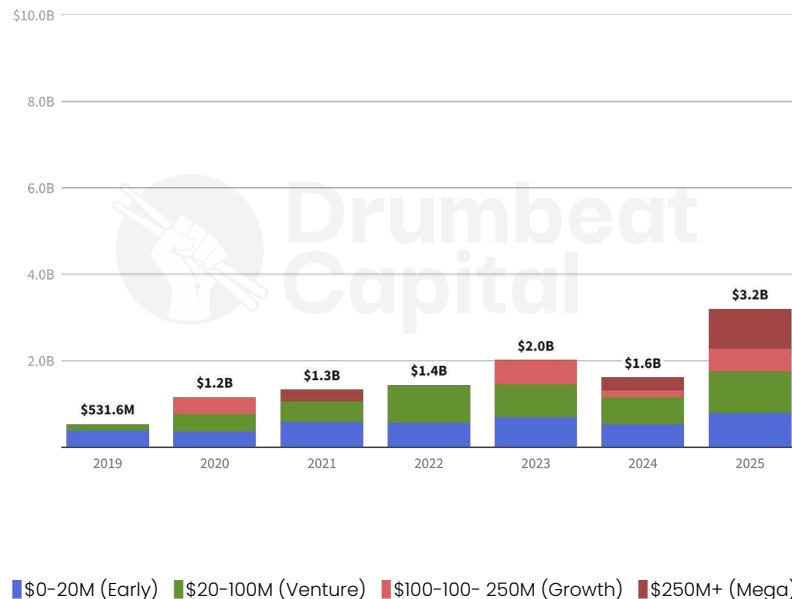
The "memory wall", the gap between how fast processors compute and how fast memory can feed them, has become the defining architectural hurdle of the AI era. The latest high-bandwidth memory stacks dozens of DRAM layers directly beside the processor; next-generation AI chips demand hundreds of gigabytes per package. The market is an extremely tight oligopoly of three manufacturers, and capacity is sold out well in advance, keeping prices elevated and rippling into consumer hardware.

Future of Compute at record levels in U.S. and Europe

U.S.: Future of Compute venture capital raised



Europe: Future of Compute venture capital raised



Top 10 rounds in 2025

U.S.: Top 10 Future of Compute rounds in 2025

#	Name	Location	Round Type	Round Size	Focus
1	Cerebras Systems	Bay Area	Series G	\$1.1B	AI chips for deep learning
2	PsiQuantum	Bay Area	Growth Equity	\$1B	Silicon photonic quantum computers
3	Groq	Bay Area	Series E	\$750M	High-speed AI inference chips
4	Neuralink	Bay Area	Series E	\$650M	Brain-computer interface implants
5	Unconventional AI	San Diego	Seed	\$475M	Brain-inspired neuromorphic chips
6	d-Matrix	Bay Area	Series C	\$275M	Generative AI & LLM chips
7	Celestial AI	Bay Area	Series C	\$250M	Optical interconnectors
8	SandboxAQ	Bay Area	Series E	\$245M	AI & quantum enterprise SaaS
9	QuEra Computing	Boston	Series B	\$230M	Neutral-atom quantum computers
10	Tachyum	Las Vegas	Series C	\$220M	Universal AI & HPC processors

Europe: Top 10 Future of Compute rounds in 2025

#	Name	Location	Round Type	Round Size	Focus
1	Quantinuum	Cambridge, UK	Late VC	\$800M	Full-stack trapped-ion quantum computing
2	IQM	Espoo, Finland	Series B	\$320M	Superconducting quantum computers
3	Multiverse Computing	San Sebast., Spain	Series B	\$207.9M	Quantum computing software
4	Alice & Bob	Paris, France	Series B	\$110M	Cat qubit fault-tolerant quantum computers
5	Ferroelectric Memory Comp.	Berlin, Germany	Series C	\$84.7M	FeRAM non-volatile memory chips
6	Q.ant	Stuttgart, Germany	Series A	\$72M	Quantum sensing & photonics hardware
7	CoMind	London, UK	Series A	\$60M	Brain-computer interface AI systems
8	Nu Quantum	Cambridge, UK	Series A	\$60M	Photonic quantum networking hardware
9	Scintil Photonics	Grenoble, France	Series B	\$55M	Silicon photonics integrated circuits
10	Paragraf	Cambridge, UK	Series C	\$55M	Graphene-based semiconductor devices

Andreas Bechtolsheim

Co-founder and Chairman,
Arista Networks

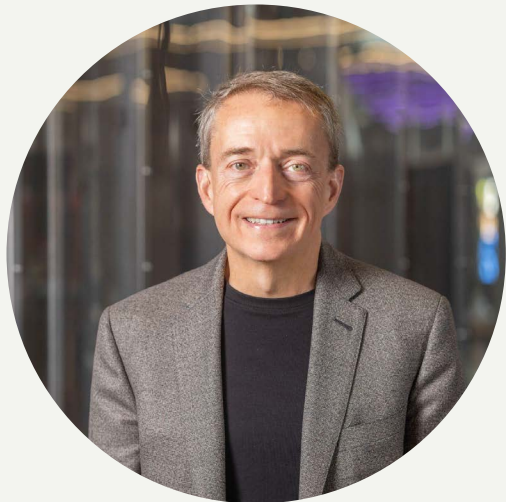


ARISTA

"Artificial Intelligence is the high-velocity catalyst for Deep Tech, turning decades of theoretical 'what-ifs' into months of tangible 'how-tos.' By bridging the gap between raw scientific complexity and scalable engineering, AI is not just optimizing the world we have—it is ushering in a Golden Age where solutions to the most difficult problems in science and technology are finally within our reach."

Pat Gelsinger

General Partner, Playground Global
ex-CEO Intel & VMware



"We're entering a new phase of computing – the trinity of computing – where classical systems, AI, and quantum are no longer separate domains, but part of a single, converging stack. That convergence will define how industries are built and how economies compete. The opportunity now is to build the infrastructure that brings these systems together.

This shift is already underway. The bottlenecks are no longer just in software; they're in power, semiconductors, heat, memory, and interconnects. From next-generation photonics to new materials and system architectures, the computing stack is being rebuilt from the ground up to support entirely new levels of performance and efficiency.

The next era of leadership will belong to regions that can translate this convergence into sovereign capability, pairing deep industrial strength with coordinated investment across the full computing stack."

AJ Cooper

Co-Founder & CEO, Itera



"The days of static hardware are ending."

Physical AI is creating a convergence where electronics co-evolve with software. Delivering on this is a global endeavor uniting Europe's deep R&D, America's IP and venture community with Asia's manufacturing base. The builders who leverage these new capabilities will learn faster, ship sooner, and win."

Walter Aldana

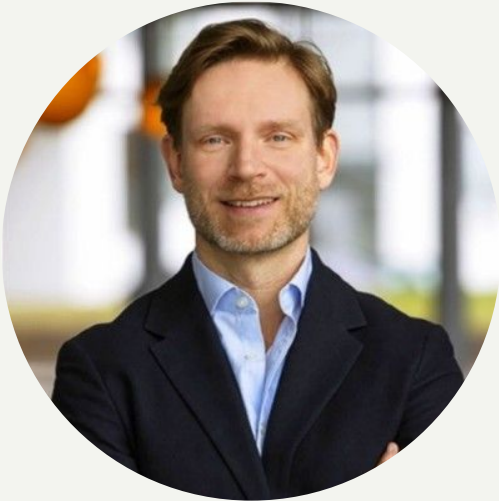
Founder & CEO, Aldana Ventures



"Deep Tech founders are trained to obsess over the breakthrough — but **the real inflection point comes when the ecosystem starts building around you.** From Groq to Snowflake to Dataiku and Alation, the companies that shaped their markets didn't grow alone — they created gravity. Partnerships weren't a later-stage tactic; they were the mechanism that turned innovation into distribution and credibility into momentum. When others make money with you, advocate for you, and build on top of you, your company stops chasing the market and starts shaping it. The deepest moats in Deep Tech aren't technical — they're relational and strategic."

Jeroen Bakker

Partner, Novo Holdings



"It's not a matter of 'if' but 'when' quantum computers add value and things are moving fast here, faster than one sometimes assumes."

Data Centers

Data Centers: Main trends and biggest bottlenecks

Subsystem	Trend 1	Trend 2	Trend 3	Biggest bottleneck
Compute & Storage	Accelerated Server Growth: 80–90% revenue dominance by NVIDIA, with rising custom hyperscaler silicon.	CPU Architecture Shift: Rapid gains for Arm-based processors and AMD EPYC (30–35% market share).	Advanced Packaging: Critical reliance on TSMC CoWoS and HBM3e/HBM4 memory stacking.	Supply Constraints: Production is limited by advanced packaging (CoWoS) capacity rather than wafer fab volume.
Cooling Systems	Direct Liquid Cooling (DLC): Moving from a niche option to a mandatory requirement for AI accelerators.	Sustainability Focus: Shifting from PUE (Power Usage) to WUE (Water Usage) metrics.	Two-Phase Innovation: Exploring waterless two-phase direct-on-chip systems for superior heat transfer.	Coolant Supply: The 2025 phase-out of 3M Novec fluids creates a massive dielectric fluid supply gap.
Networking	Optical Evolution: Transitioning from pluggable optics toward co-packaged (CPO) and on-chip photonics.	Standardization Battles: The Ultra Ethernet Consortium (UEC) emerging as an open alternative to InfiniBand.	CXL Memory Disaggregation: Using CXL 3.0 to enable pooled memory architectures for inference.	Bisection Bandwidth: Scaling 100k+ GPU clusters requires bandwidth that traditional electrical interconnects cannot sustain.
Power & Energy	Nuclear Renaissance: Multi-gigawatt partnerships for SMRs and existing reactor restarts.	Behind-the-meter sourcing: Bypassing public grids to avoid interconnection delays.	Voltage Migration: Shifting from 480V AC to 800V DC architectures to support next-generation AI workloads.	Interconnection Queues: Over 2,600 GW of capacity is waiting in U.S. queues with 5+ year wait times.
Physical Infrastructure	Racks as engineered systems: Integrating compute, power, and cooling into single validated units.	Modular/Pod deployments: Shifting the atomic unit of deployment from single racks to multi-rack clusters.	High-Density Delivery: Adoption of busbar trunking and 48V shelves to handle 120kW–600kW per rack.	Weight & Density: Racks exceeding 1,300 kg require specialized floor reinforcement and structural support.
Compute & Storage	Accelerated Server Growth: 80–90% revenue dominance by NVIDIA, with rising custom hyperscaler silicon.	CPU Architecture Shift: Rapid gains for Arm-based processors and AMD EPYC (30–35% market share).	Advanced Packaging: Critical reliance on TSMC CoWoS and HBM3e/HBM4 memory stacking.	Supply Constraints: Production is limited by advanced packaging (CoWoS) capacity rather than wafer fab volume.

Michael Ptacek

VP, Head of Energy Solutions,
Schaeffler



"Data centers offer significant room for innovation. Schaeffler is exploring opportunities to develop scalable data-center solutions with strong industrialization capabilities and a focus on high-quality execution. By leveraging its expertise in automotive power electronics and industrial solutions, Schaeffler is addressing the growing demands of AI and data management. With innovative R&D, global production capacity, and a resilient supply chain, Schaeffler is well-positioned to advance next-generation data-center infrastructure."

SCHAEFFLER

Jakob Lingg

Partner, Vsquared Ventures



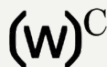
“AI workloads are driving rack power densities up by nearly two orders of magnitude, from ~10 kW today toward 500 kW to 1 MW, forcing a fundamental redesign of data center power distribution around high-voltage DC delivered directly to the rack.

Addressing this requires power electronics expertise sitting at the intersection of high-voltage engineering, compact magnetics, and real-time power management at extreme density, a capability that is fundamentally distinct from both the compute and networking competencies of hyperscalers and the low-voltage heritage of established power conversion companies.”

Nicolas Autret

Partner,
Walden Catalyst Ventures




Walden Catalyst

“The next trillion-dollar opportunity is about making AI infrastructure more efficient, not just adding FLOPS.

The AI era is forcing a re-architecture of compute. Training has largely consolidated around a handful of winners, but inference remains wide open.

The next decade of innovation will be driven by technologies that overcome the fundamental constraints of AI systems: memory bandwidth, power and thermal management, interconnects, and advanced packaging.

As compute scales, the bottleneck is increasingly moving from the processor to the movement of data between processors, memory, and networks.”

Most of OpenAI's 2024 compute went to R&D

OpenAI's 2024 cost breakdown

 R&D compute
\$5 billion

 Inference compute
\$2 billion

\$4.5 billion

Other R&D compute

Includes basic research, experimental/derisking runs for final training runs, and unreleased models.

Excludes Microsoft inference to run OpenAI models for Microsoft products.

\$400 million GPT-4.5 final training run

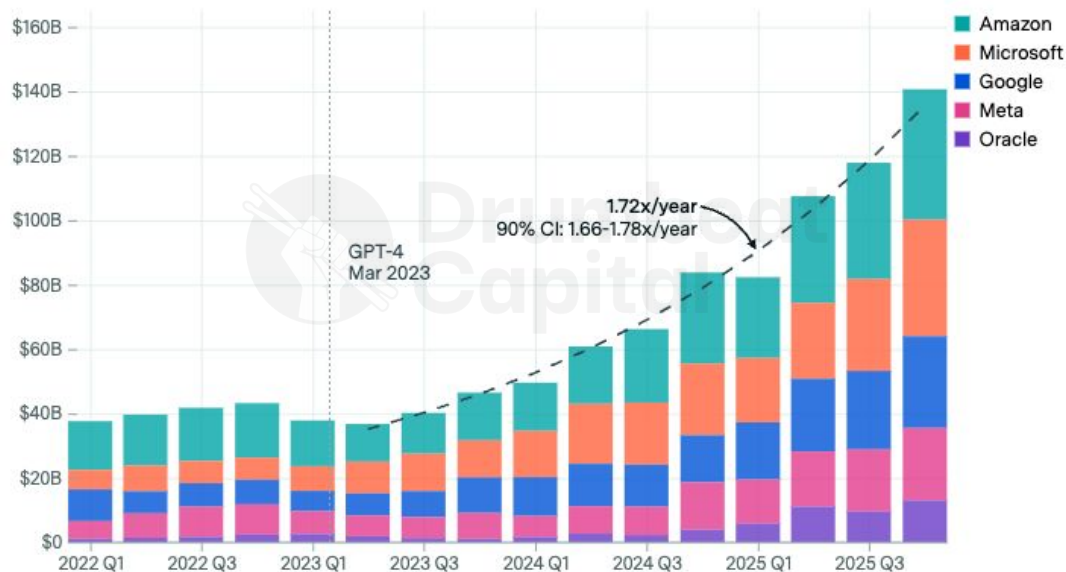
\$80M
Other

\$80M

OpenAI spent billions of dollars on compute in 2024, in the form of renting cloud compute from Microsoft. This reportedly included around \$5 billion in research and development compute, including all training and research compute, and around \$2 billion in inference compute.

Hyperscaler capex has quadrupled since GPT-4

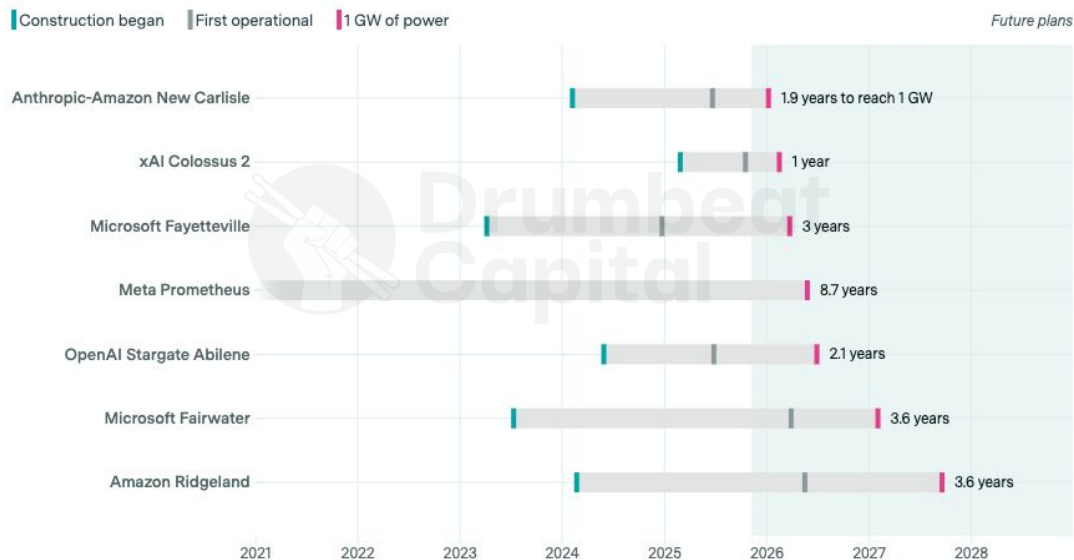
Capital expenditure by hyperscalers, \$USD



Driven by investments in AI infrastructure, the combined capital expenditures at Alphabet, Amazon, Meta, Microsoft, and Oracle have been growing at an average of 72% per year since the second quarter of 2023. If this trend continues, they will spend \$770 billion in 2026.

GW-scale data centers can be built in about 2 years

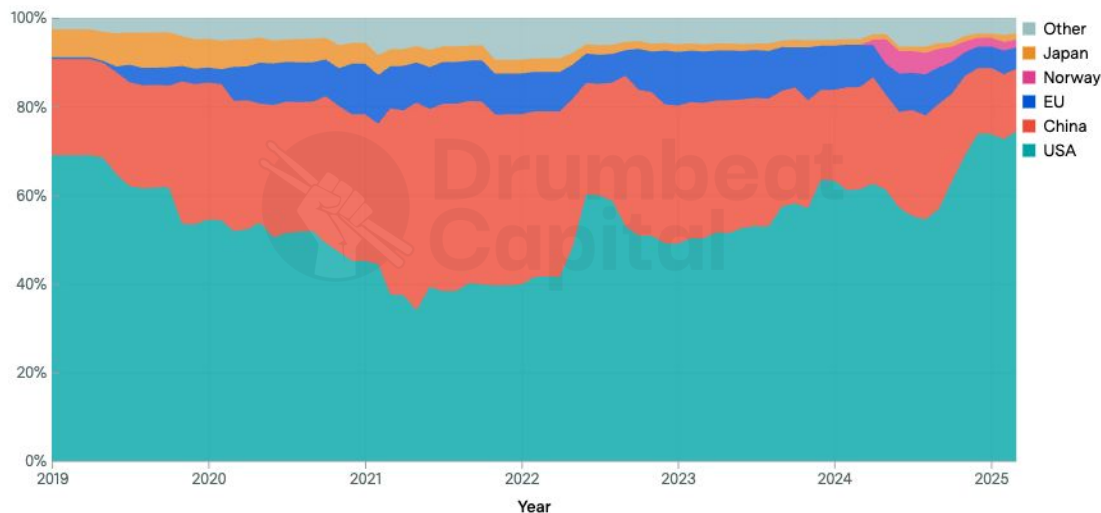
Capital expenditure by hyperscalers, \$USD



Based on 7 planned or in-progress data center projects expected to exceed 1 GW of total facility power, the median construction-to-gigawatt timeline is just over 2 years. Power estimates are informed by satellite imagery, permits, and company disclosures. These plans are subject to change.

The U.S. holds 75% of global GPU cluster performance

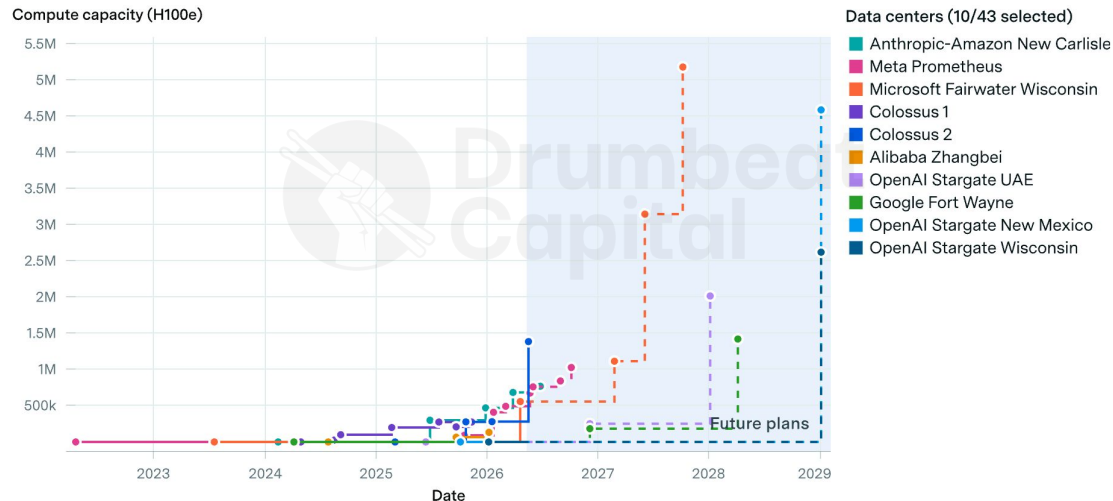
Share of aggregate performance (16-bit FLOP/s)



As of May 2025, the U.S. accounts for roughly 75% of global AI cluster performance, with China a distant second at 15%. Traditional HPC leaders like Germany, Japan, and France now play marginal roles—a shift reflecting the dominance of major tech companies, which are mostly U.S.-based

Data centers continue to increase compute capacity

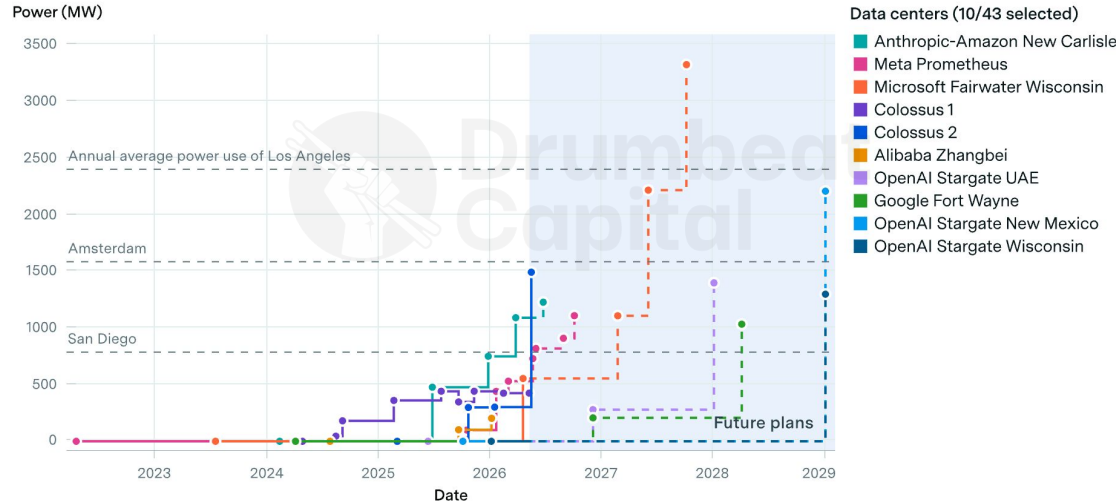
Frontier AI data centers by compute capacity (H100-equivalent)



Anthropic-Arizona New Carlisle has an estimated 1.1 GW of power capacity and \$35 billion in capital costs, making it the largest known AI data center. Microsoft's Fairwater Wisconsin data center is expected to be nearly 8x more powerful, at 5.2M H100-equivalents by September 2027.

...and power requirements

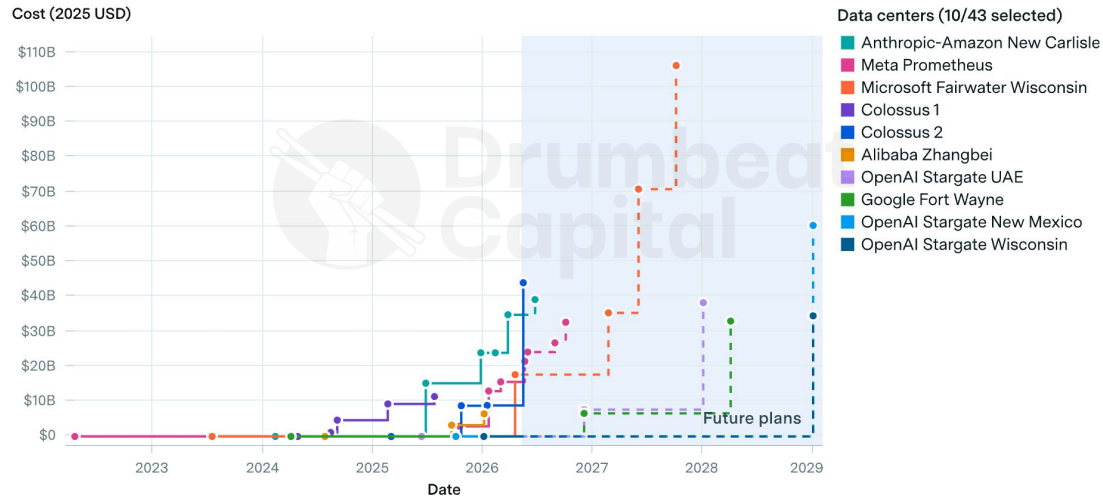
Frontier AI data centers by power (MW)



Microsoft's Fairwater Wisconsin data center is expected to need 3500MW – more than the annual average power use of Los Angeles.

1-GW cost around \$30-40B to build

Frontier AI data centers by cost (2025 USD)

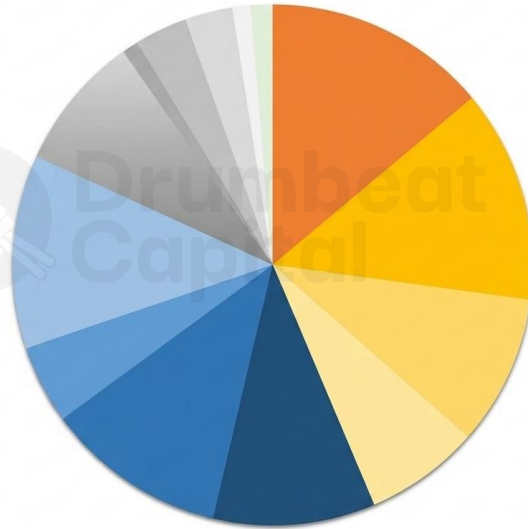


Most announced frontier AI data centers are expected to cost \$20–40B, with some projects—such as Microsoft’s Fairwater, Wisconsin campus—projected to exceed \$100B.

Compute and Cooling are the largest OPEX items

Data center CAPEX per watt per component (estimate)

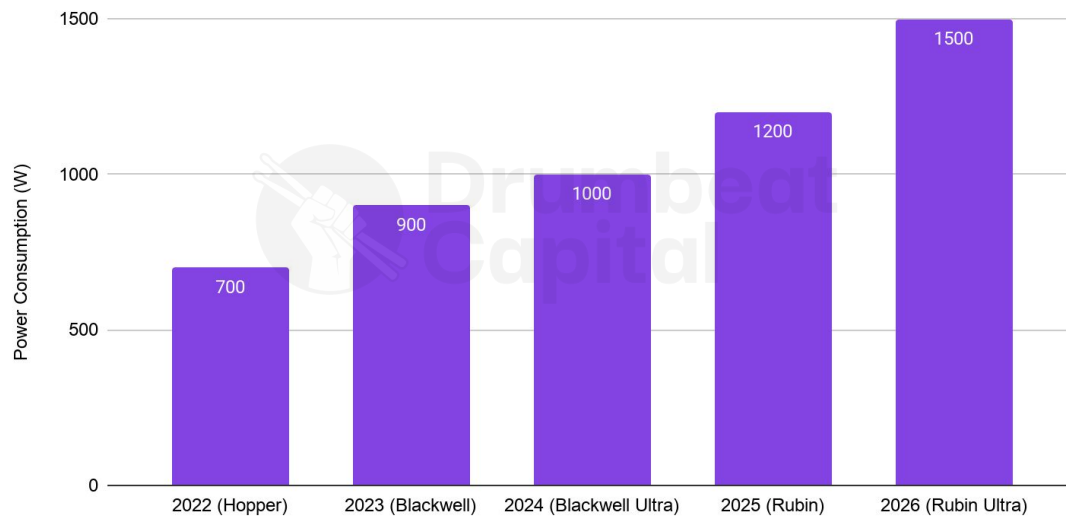
- UPS
- Generator
- Switchgear
- Power Distribution
- CRAH, CRAC, Fan Wall, CDU
- Chillers, Condensers, Cooling Towers
- Pumps and piping system
- Shell
- Project Management and MEP Engineering
- Lighting
- Management and Security
- IT Enclosures and Containment
- Raised floor/dropped ceiling
- Fire protection



In modern data centers, cooling systems are the second-largest capital expense after electrical infrastructure and a key driver of operating costs. Since most non-IT power consumption comes from cooling, minimizing it is critical — though not without tradeoffs.

Power envelopes of GPUs continue to increase

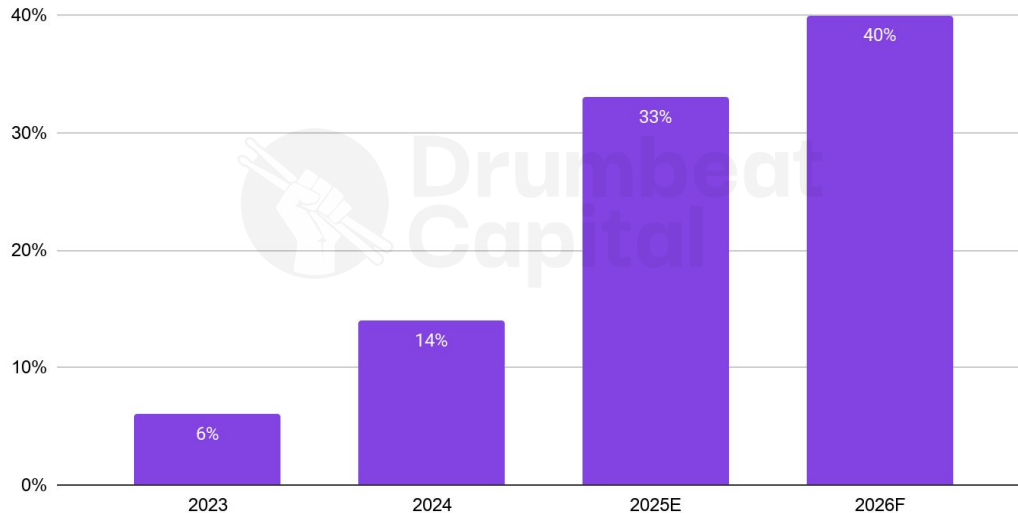
NVIDIA GPU evolution by power consumption (W)



As GPUs become more powerful, power density is rising faster than traditional cooling architectures can handle. This is turning cooling from a facility optimization problem into a core constraint on AI infrastructure scalability, efficiency, and deployment economics. Server rack power requirements are expected to reach 300kW soon.

Liquid cooling will become the standard in data centers

Adoption rates of Liquid Cooling Technology in AI Data Centers



High end AI and HPC server racks hit 100kW plus. Air cooling fails at such high power density.

Hence, we see the adoption of liquid cooling as the standard technology for Hyperscalers

Bert Gyselinckx

Partner, Imec.xpand



“Liquid cooling is moving from bespoke engineering to industrial infrastructure: as standards emerge and basic components commoditize, the real value will migrate upstream to chip packaging and foundries that can make cooling manufacturable at scale.

The winners will not just remove heat more efficiently; they will turn thermal management into a cost, performance, and sustainability advantage.”

Sam Harrison

Co-Founder & COO, Corintis



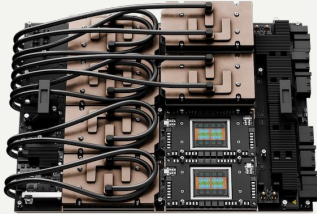
“Europe is a world-class leader in high-end precision manufacturing, and we are proud to be continuing that tradition by leveraging the ecosystem with our highly automated precision manufacturing operations.

A single next-generation AI chip, not much larger than a credit card, will produce enough heat to warm a Seattle family home in winter.

To resolve this cooling challenge, Corintis remains steadfastly focused on designing, validating, and mass-producing the critical microfluidic cores — in the millions of units — that will enable the next generation of silicon compute, the engines of human progress, for our customers around the world. We are set to save our customers up to tens of billions of dollars over the coming years by getting more tokens out of the same silicon compute investment and reducing their OpEx.”

Current solution space: focus of innovation is moving to the chip package

Direct-to-Chip Cooling

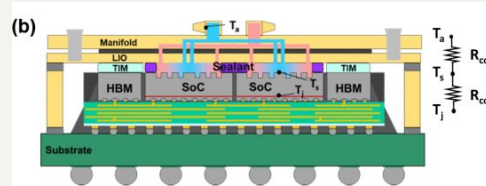


Example of liquid cooling: AMD MI355X with liquid cold plates

Current dominant architecture consists of cold plates and coolant distribution loops

Trend: AI designed and 3D printed cold plates

Direct-to-Silicon Cooling



TSMC Vision: Integrated Direct-to-Silicon Cooling

Co-packaged cooling e.g. through direct jetting of coolant on the chip supported by lidless packages

In-chip cooling e.g. through micro-channels integrated in the silicon substrate

Immersion Cooling

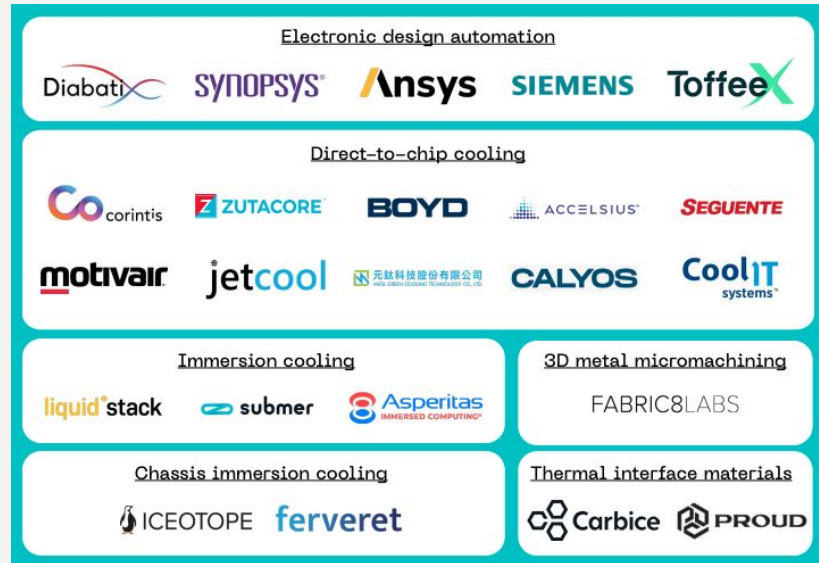


Example of immersion cooling of server racks

Immersion cooling remains a viable alternative if it can show to overcome operational friction at hyperscale

The chip cooling market is fragmented; consolidation & standardization expected

Company Landscape



Future Outlook – Predictions:

- Overall market is still very fragmented.
- Consolidation, standardization and professionalization. E.g. Ecolab acquired liquid cooling system player Cool IT for \$USD 4.75b, the Open Compute Project Cooling Environment project.
- Margin compression for basic components such as cold plates, CDUs, manifolds, and fluids.
- Value accumulation at chip packaging and foundry level because they can unlock mass manufacturing at affordable cost
- Sustainability to become a key design constraint. Data center waste heat can be reused for other applications.

Photonics

Photonics: the physical layer of intelligent systems

Executive summary

Photonics is transitioning from research domain to infrastructure layer. As electronic architectures reach physical limits in bandwidth, energy, and thermal performance, optical systems are taking on critical roles in data transport and sensing across compute, industry, and healthcare.

Manufacturing standardization and AI-native pipelines are accelerating this shift, making photonics more accessible and scalable. The result is a structural transition from specialised hardware to integrated, intelligent systems.

In Europe, the combination of deep research expertise and industrial capability positions photonics as a strategic enabler of the next wave of intelligent systems – and a growing category for venture-scale outcomes.



JULIA HAWKINS
General Partner, Phoenix Court



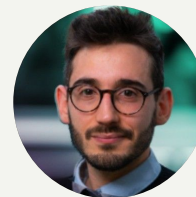
MARIE FOURNIER
Hardware Lead, Spore.Bio



TIM REIN
PhD in Photonics, Imperial



ROB COOPER
Chief Scientific Officer, CoMind



MAXIME MISTRETTA
Chief Technology Officer, Spore.Bio

Photonics is moving from research domain to infrastructure layer

Electronic systems are reaching structural limits

- Bandwidth, energy per bit, thermal constraints

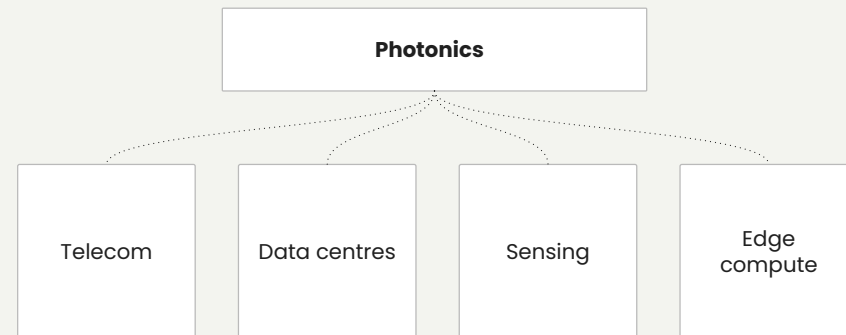
Demand is accelerating beyond what electronics can support

- AI workloads, real-time sensing, data-intensive systems

Optical systems are already taking over key functions

- Majority of long-distance + data centre traffic
- Lower energy cost per bit
- Hybrid optical-electronic systems scaling

The shift is not replacement, but redistribution into the physical layer



Why now: manufacturing abstraction unlocks photonics

Photonics was historically constrained

- High costs, slow iteration, reliance on custom fabrication

A structural shift is underway

- Shared wafer access (MPW) enables rapid, low-cost prototyping
- Packaging platforms standardise what was previously bespoke
- Foundry ecosystems reduce the need for in-house fabrication

Innovation is shifting from fabrication to system design

Startups can now build without owning the fab

- Lower capital intensity
- Faster iteration cycles
- Broader participation

From research domain to venture-scale category

2000–2015

Custom labs
Limited commercialisation

2015–2022

Early ecosystem formation

2023–Now

MPW scaling
Packaging standardization
Startup accessibility

Photonics enablers: the technologies enabling scalable optical systems

Light control & switching

Phase Change Materials (PCMs)

Low-power, non-volatile optical switching with improved thermal stability

Metasurfaces

High-density, sub-wavelength control of optical wavefronts

Integration & system architecture

III-V on Silicon

High-efficiency lasers integrated directly onto silicon platforms.
Enables unified optical-electronic systems

High-speed modulation

Advanced Modulation Materials

TFLN and BTO offer increased speed, density, and energy efficiency in optical-electrical conversion

“Together, these technologies enable wavefront precision, high-speed modulation, and system-level integration; the foundations of photonic scale”

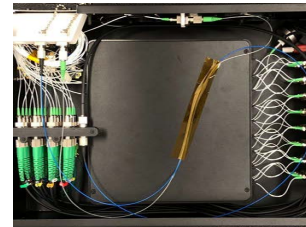
Biophotonics: real-time, non-invasive biology

Photonics enables direct interaction with biological systems at the point of measurement

- Optical systems capture molecular and structural information non-invasively
- Near-infrared (NIR) imaging enables deeper tissue penetration
- Advances in materials and optics improve resolution and signal quality
- Telecom-derived components and CMOS scaling are reducing cost

Case Study: CoMind

- An example of biophotonics enabling continuous, non-invasive measurement of brain physiology
- Operates at the intersection of neurotech, medtech, photonics, and AI
- **Problem:** Limited and often invasive access to brain physiology
- **Approach:** Interferometric optical sensing of brain tissue
- **Product:** CoMind One will provide real-time monitoring in intensive care and surgical settings
- **Platform:** Data generated feeds into CoVision, an AI system that translates high-dimensional neurophysiological signals into actionable clinical insights
- **Impact:** Enables measurement of cerebral signals previously inaccessible or only with invasive procedures



AI as structural catalyst

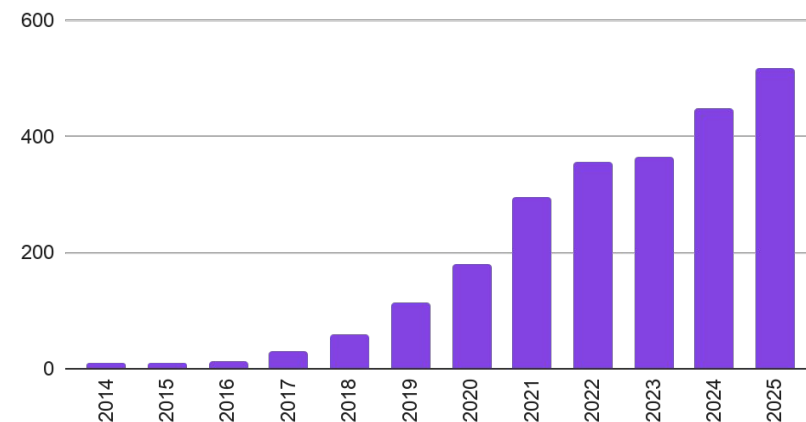
Deep learning enables robust interpretation of high-dimensional optical data, including noisy biological signals

- AI-native pipelines replace handcrafted algorithms in microscopy, imaging, and spectral analysis
- Real-time segmentation, reconstruction, and classification are moving from expert workflows to embedded platforms
- Intelligence is shifting from the operator to the instrument

This convergence: “intelligent photonics” – integrated optical systems with embedded AI

Acceleration in AI–photonics research

Peer-reviewed international publications



Key challenges: from specialised systems to industry standard

Design & Tooling

Limited standardised simulation tools and mature design kits

Fragmented third-party IP ecosystem

Proprietary workflows limiting interoperability and collaboration

Manufacturing

Complex heterogeneous integration of lasers and modulators

Thermal stability and material mismatch challenges

Precision alignment requirements increasing system complexity

Testing & Validation

Lack of unified data standards

Specialised optical probing infrastructure

Testing complexity limiting scalability and parallelisation

3.3

Robotics

Biggest trends

Verticalised robotics vs. general-purpose

The central strategic question of the year is whether the future is one general-purpose robot that learns any task, or specialized machines optimized per industry (automotive, logistics, healthcare). Recent evidence that robotics foundation models follow the same predictable data-scaling laws as language models has strengthened the general-purpose camp — performance improves reliably as training data grows.

The data bottleneck

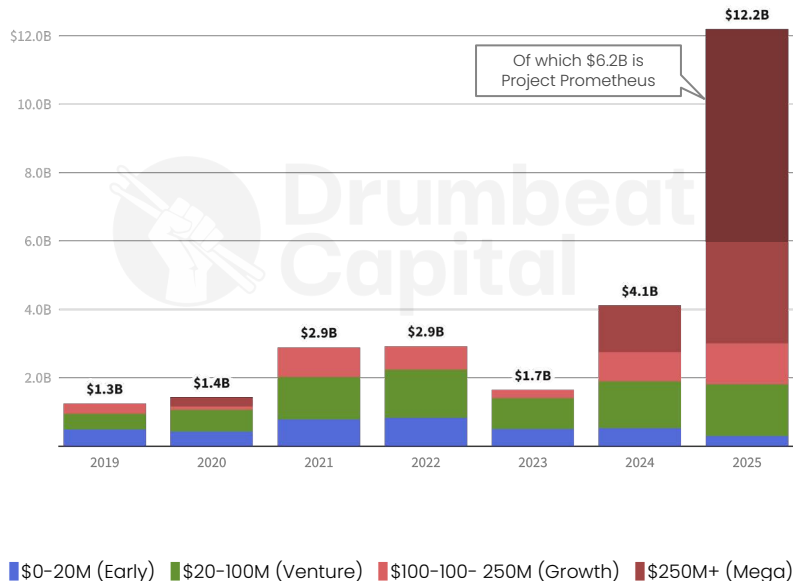
Data, not compute or model design, is the real constraint in robotics. The largest manipulation models train on a tiny fraction of the compute used by frontier language models — not for lack of chips, but for lack of data. Real-world demonstrations are collected by humans teleoperated robots, a process with limited scalability, generating a vanishingly small fraction of the situations a robot must generalize across. The emerging fix blends internet-scale priors, teleoperation, and large volumes of simulated and world-model-generated data.

The sensor & hand bottleneck

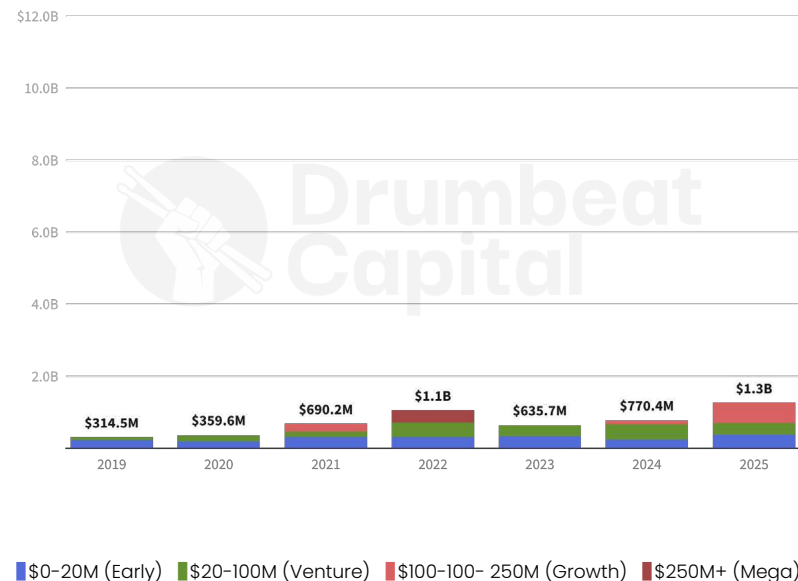
Robot dexterity is limited less by how hands move than by how little they feel. For years machines could replicate the kinematics of a human hand but lacked the rich sensory feedback needed to grasp and manipulate adaptively. Recent breakthroughs have embedded high-resolution touch sensing across most of a hand's surface, enabling human-like adaptive grasping in real-world conditions, and tactile sensors are beginning to reach commercial availability.

Robotics funding has tripled in the U.S. and doubled in Europe

U.S.: Robotics venture capital raised



Europe: Robotics venture capital raised



Top 10 rounds in 2025

U.S.: Top 10 Robotics rounds in 2025

#	Name	Location	Round Type	Round Size	Focus
1	Project Prometheus	Bay Area	Growth Equity	\$6.2B	Physical AI for engineering & manufacturing
2	Figure	Bay Area	Series C	\$1B	Humanoid robots
3	Physical Intelligence	Bay Area	Series B	\$600M	General-purpose robotic intelligence
4	Appttronik	Austin	Series A	\$415M	Humanoid robots
5	Agility Robotics	Pittsburgh	Late VC	\$400M	Humanoid robots
6	Field AI	Los Angeles	Late VC	\$314M	Physics-first robot autonomy
7	Hadrian	Los Angeles	Series C	\$260M	Automated factories for aerospace and defense
8	Skild	Pittsburgh	Series B	\$200M	AI foundation models for robotics
9	Rhoda AI	Bay Area	Series A	\$162.6M	Industrial heavy-lifting humanoids
10	The Bot Company	Bay Area	Seed	\$150M	Household chore robots

Europe: Top 10 Robotics rounds in 2025

#	Name	Location	Round Type	Round Size	Focus
1	Neura Robotics	Metzingen, Germany	Series B	\$132M	Cognitive & humanoid robots
2	XOCEAN	Dublin, Ireland	Late VC	\$119M	Uncrewed vessels for ocean data
3	Ecorobotix	Lausanne, Switzerland	Series D	\$105M	AI precision spraying agri-robots
4	Genesis AI	Paris, France	Seed	\$105M	General-purpose humanoid robot AI
5	Dexory	London, UK	Series C	\$100M	Autonomous warehouse intelligence robots
6	Generative Bionics	Genoa, Italy	Seed	\$77M	Humanoid robots
7	Aerones	Riga, Latvia	Late VC	\$62M	Robotic wind turbine maintenance drones
8	Flexion Robotics	Zurich, Switzerland	Series A	\$50M	Flexible robotic arms for manufacturing
9	Delvitech	Lugano, Switzerland	Series B	\$40M	AI-powered PCB inspection systems
10	Nomagic	Warsaw, Poland	Series B	\$35.2M	AI picking robots for fulfilment centres

Lachy Groom

Co-founder, Physical Intelligence



π Physical Intelligence

“We originally thought it might take us five years to get a robot meaningfully deployed in a commercial environment. It’s taken less than two. A big unlock was the emergence of vision-language-action models, which suddenly made it possible for robots to interpret messy, real-world environments and generalize across tasks in a way that wasn’t feasible before. If progress continues at this pace, it’s hard for me to believe that, in a few years’ time, people won’t have generally useful robots in their homes.”

Haomiao Huang, PhD

Founding Partner,
Matter Venture Partners



“By now, the speed of technological advancement in Physical AI is obvious. The implication is that robots will continue to learn, grow, and improve by leaps and bounds.

There is a saying that first-time founders obsess about product, while repeat founders obsess about distribution. The robots of the past were capital equipment. The robots of the future are not just products, they are distribution channels for services powered by Physical AI.

The best tech companies have always combined digital mastery and physical mastery, think AWS with its data centers and services, Nvidia with its chips and CUDA, Apple with the iPhone and the app store.

The best robot companies to come will have the potential to combine the innovation and massive market sizes of hardware companies like SpaceX and Tesla with the profit margins and enduring stickiness of the SaaS titans of the past.”

Qasar Younis

Founder & CEO, Applied Intuition



"The defining technology platforms of history — steam, electricity, computing — each reshaped how the world works. Physical AI is next. Intelligence embedded in machines will transform farms, mines, factories, and supply chains. The real question isn't whether it happens. It's how we build the infrastructure to deploy that intelligence safely across the systems the world depends on."

Alexander Schmitt

Partner,
Lightspeed Venture Partners



"1-Day Robot Deployments — Demystifying the ChatGPT moment for robotics and instead bridging the gap from demos to working tools

The robotics frontier is exciting not because a single breakthrough is imminent, but because the path is finally clear: Robotics automation is a continuous spectrum from rigid task programming to general autonomy, with enormous economic value at every step along the way. Customers don't care about form factors or algorithms. They need automation that is precise and cost-effective. The question that matters is whether robots can achieve the target metrics.

We see companies attacking this from both sides of the spectrum. Companies like RobCo are closing the gap between demos and deployments in real factories. Skild is compressing the intelligence layer from the other end.

What excites us most is the emerging "deployment stack" that enables instantaneous automation. Weeks of concept design and deployments will be massively compressed. These robots are to be effective within hours. The companies that put robots in production with same-day-setup and immediate ROI will be the next big winners.

We believe that this is what unites the western ecosystems – across EU & U.S. – a demand for real deployed physical AI. Europe's engineering stands out and can be complemented by the speed of adoption in the U.S.."

Anne-Charlotte Philbert

Managing Director, Eurazeo



EURAZEO

"The robotics conversation has been hijacked by the humanoid debate but customers don't care what the robot looks like. They care whether it can do the job cheaper and as reliably as a human. That's the bar, and we're finally close enough to take it seriously.

What changed isn't the hardware. It's that robots can now reason about situations they've never encountered before. A robot on a factory floor today can figure out that two objects sitting next to each other can't be handled the same way because one will break – without anyone telling it. That kind of adaptability is what makes automation viable in the messy, high variability environments that have always been out of reach.

Europe has a real edge here. Engineering depth, industrial density, and the proximity between builders and customers let the best companies fast-track real-world deployment in ways pure software labs cannot.

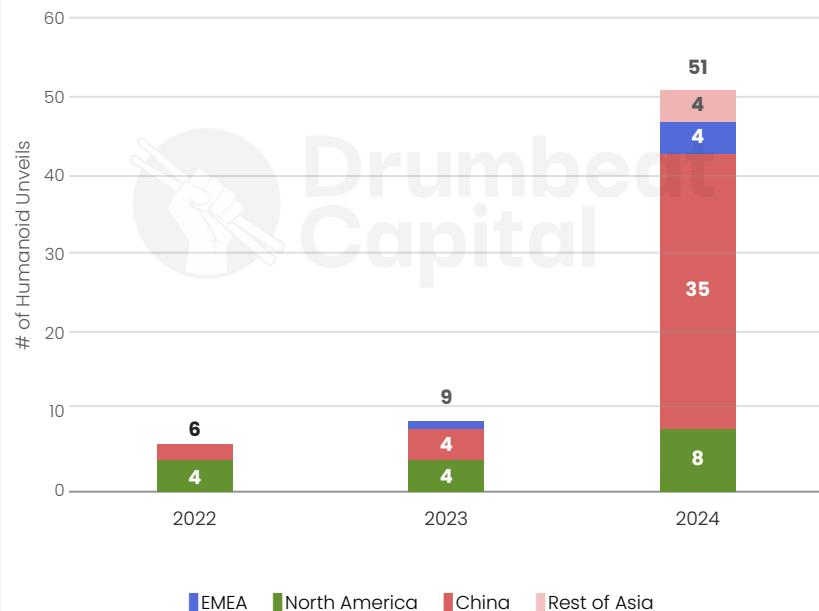
The companies that win this won't necessarily be the ones with the best robot. They'll be the ones that deployed early, learned fast, and built a data loop that compounds. Every hour in the field is an asset, if you've built the system to capture it."

Humanoids: main trends and biggest bottlenecks

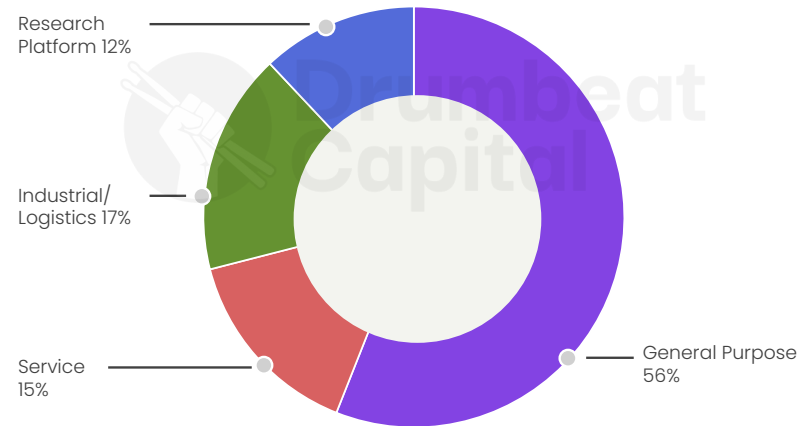
Subsystem	Trend 1	Trend 2	Trend 3	Biggest bottleneck
 Software / brain	Dual-system VLA is becoming standard: fast low-level policies paired with slower planning VLMs.	On-device inference is replacing cloud dependence: models are being distilled to run locally on robot compute.	Synthetic data factories are scaling training: GPU-accelerated simulation is boosting policy learning and sim-to-real transfer.	Data scarcity: most training data still comes from teleop/tabletop setups, not full-body humanoid work. New robot platforms need expensive bespoke datasets.
 Compute	Jetson Thor is the default near-term platform: high TOPS, high bandwidth, and safety MCU integration.	Custom silicon is emerging: Tesla, Figure, and Chinese OEMs are moving toward robot-specific AI chips.	Three-tier compute stack is forming: cloud/data-center training, onboard training/sim, and real-time inference on robot.	Power and thermals: whole-body control plus VLA inference competes with motors and batteries. Cloud offload fails on latency.
 Actuators	Hydraulics are largely out: electric BLDC motors with harmonic drives, planetary gears, or roller screws dominate.	Hands are diverging: low-cost QDD hands at the low end; tendon-driven, high-DoF hands at the high end.	China is attacking actuator cost: domestic harmonic drives, torque sensors, and motors are compressing BOM.	Supply constraint: actuators are a huge share of BOM, with few suppliers and long lead times for precision components.
 Battery	2–3 kWh lithium-ion packs are standard: most humanoids get only a few hours of real work.	Solid-state cells are the big hope: higher Wh/kg could extend runtime, but humanoids are not yet first in line.	Operational workarounds matter: hot-swap, wireless charging, and opportunity charging are compensating for short runtime.	Energy density ceiling: current packs deliver 2–5 hours under load; true 8-hour shifts likely need much higher pack-level Wh/kg.
 Skeleton / structure	Robots are converging toward human scale: roughly human height and weight, with varying payload and DoF counts.	Advanced materials are cutting weight: PEEK, CFRP, CF/PEEK, magnesium-aluminum, and titanium are replacing aluminum.	Manufacturing is moving from CNC to tooling: casting, molding, stamping, and larger factories are needed for scale.	Design instability: changing DoF, hands, hips, and kinematics prevents suppliers from amortizing high-volume tooling.
 Sensors	Baseline stack is stabilizing: RGB-D, IMU, and joint torque sensing are common; LiDAR remains split by philosophy.	Tactile sensing is expanding: whole-hand, multimodal, and foot force/torque sensing are becoming more important.	Force/torque sensors are commoditizing: Chinese and Korean suppliers are pushing prices down.	No standardized touch stack: unlike cameras/depth sensors, tactile and F/T systems remain custom and integration-heavy.

China is dominating the humanoids market - most platforms chase general purpose

Humanoids unveils by year and country



Humanoids unveils since 2022 by Primary Use Case



Notable humanoids and their specs (I/II)

Robot Name	NEO	A2	Digit	Apollo	Atlas (Electric)	Figure 02	GR-2	Menteebot
Company Name	1X Technologies	AgiBot/Zhiyuan	Agility Robotics	Apprtronik	Boston Dynamics	Figure	Fourier Intelligence	Mentee Robotics
								
								
Year Revealed	2023	2024	2022	2023	2024	2024	2024	2024
Primary Purpose	General	Service/Leisure	Industrial/Logistics	Industrial/Logistics	Industrial/Logistics	Industrial/Logistics	General	General
Status	Prototype	In Production	Prototype	Prototype	Prototype	Prototype	In Production	Prototype
Height	5' 5"		5' 9"	5' 8"		5' 6"	5' 4"	5' 9"
Weight	66 lbs	152 lbs	99 lbs	160 lbs		154 lbs	139 lbs	154 lbs
Maximum Speed	2.5 - 7.5 mph		3.4 mph			2.7 mph	3.1 mph	3.4 mph
Carrying Capacity	44 lbs		35 lbs	55 lbs		44 lbs		55 lbs
Battery Life	2 - 4 Hours	2 Hours	2.25 Hours	4 Hours		5 Hours	2 Hours	5 Hours
Degrees of Freedom	55	40	16			16 (Hands Only)	53	40
AI Partners	NVIDIA, OpenAI		NVIDIA	NVIDIA	NVIDIA	NVIDIA, OpenAI	NVIDIA	
Customers/Testers	Everon		Amazon, GXO	Mercedes Benz, GXO		BMW		
Key								
Overview	Dimensions	Capabilities	Notable Partners					

Notable humanoids and their specs (II/II)

Robot Name	4NE-1	STAR1	Phoenix	T-HR3/Punyo	Optimus Gen 2	Walker S	G-1	Iron
Company Name	Neura Robotics	RobotEra	Sanctuary AI	Toyota	Tesla	UBTECH	Unitree	XPENG
	 	 	 	 	 	 	 	 
Year Revealed	2024	2024	2023	2017	2023	2018	2024	2024
Primary Purpose	General	General	General	General Use	Industrial / Logistics	Industrial / Logistics	General	Industrial / Logistics
Status	Prototype	Prototype	Prototype	Prototype	Prototype	In Production	In Production	Prototype
Height	5'11"	5'7"	5'7"	5'11"	5'8"	5'7"	4'2"	5'8"
Weight	176 lbs	139 lbs	155 lbs	165 lbs	160 lbs	143 lbs	77 lbs	154 lbs
Maximum Speed	1.9 mph		3.0 mph		5.0 mph		4.5 mph	
Carrying Capacity	33 lbs		55 lbs		45 lbs		7 lbs	
Battery Life						2.5 Hours	2 Hours	
Degrees of Freedom		55	75	32	50	41	43	60
AI Partners	NVIDIA	Alibaba	NVIDIA, Magna			Baidu	NVIDIA	NVIDIA
Partners / Testers	—					BYD, Geely		
Key					Deep Dive			
Overview	Dimensions	Capabilities	Notable Partners					

Tesla's Optimus was announced in 2021; first commercial deployments in 2027

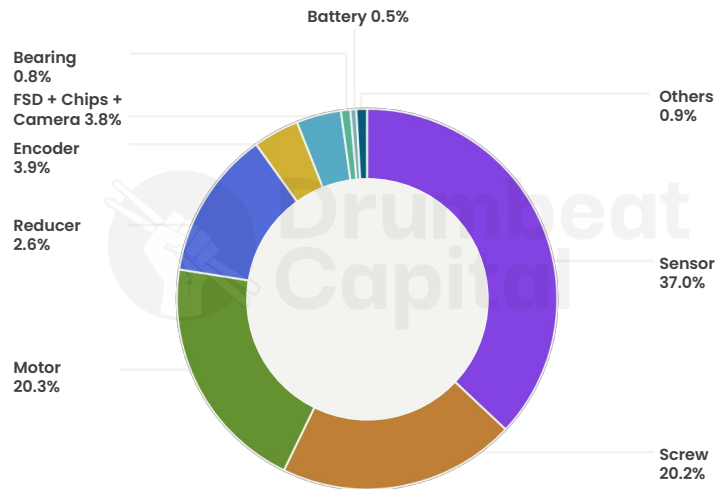


Tesla Optimus

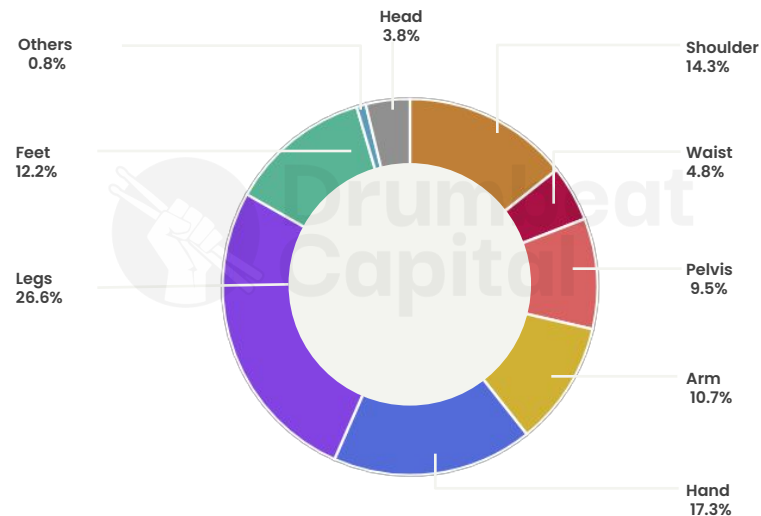
- **Announcement:** Tesla announced Optimus as the “Tesla Bot” on August 19, 2021, targeting dangerous, repetitive, or boring work, and revealed prototypes on September 30, 2022.
- **Specs and BOM:** The original concept was 5 ft 8 in, 125 lb, 45 lb carry, 150 lb deadlift, and 5 mph top speed, while current Gen-2-class BOM estimates are roughly \$50,000–\$60,000.
- **Hardware strategy:** Tesla is using a vehicle-style cost-down strategy with camera-first perception, a 2.3 kWh torso battery, Tesla SoC, Wi-Fi/LTE, and 28 structural actuators across 6 actuator types.
- **Software strategy:** Optimus appears to use a hybrid software stack combining teleoperation, imitation learning, reinforcement learning, simulation, and multimodal AI, with Tesla aiming to reduce human intervention over time.
- **Future outlook:** Tesla’s long-term price target is under \$20,000, but near-term pricing closer to \$30,000–\$50,000+ looks more plausible, with production expected to be slow before meaningful scale.

Sensors and motors for the legs and hands make up around 50% of total BOM cost

Optimus Gen2 BOM breakdown by component
(value estimates)

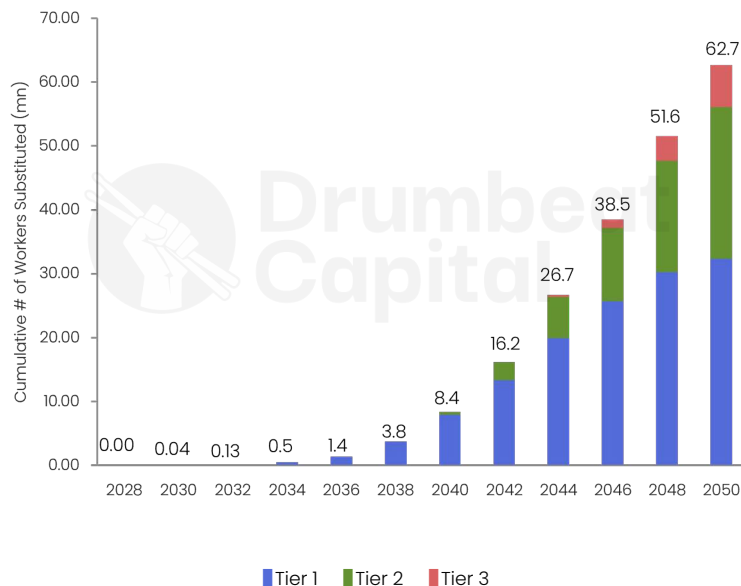


Optimus Gen2 BOM breakdown by location
(value estimates)

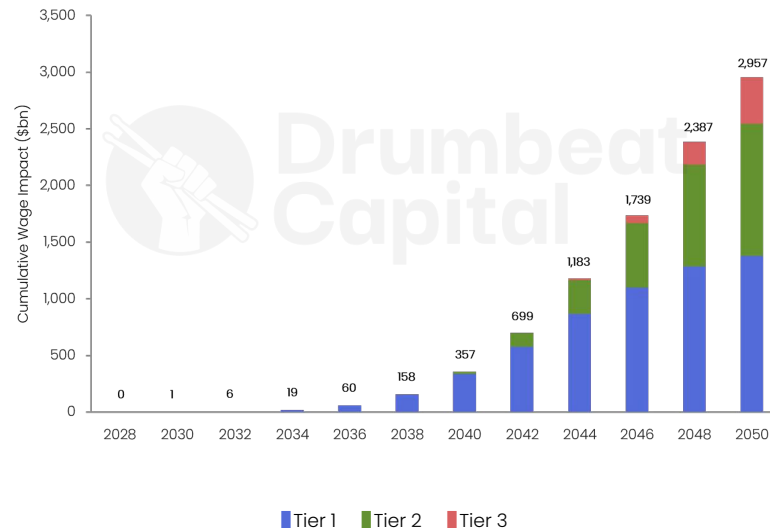


Morgan Stanley expects humanoids to impact the economy in the mid 2030s

Cumulative # of U.S. jobs with humanoids optionality
2028-50 (mn)



Cumulative U.S. wage impact
2028-50 (\$bn)



David Kehr

President, Humanoid Robotics,
Schaeffler



"As humanoid robots move toward industrial scale, Schaeffler is well positioned as a trusted partner from day one. As a leading Motion Technology Company with decades of experience as an automotive and industrial supplier, we combine proven manufacturing expertise, strong vertical integration, and deep application know-how to ramp up production and supply rapidly and flexibly, while delivering application-tailored humanoid components and systems with the quality, reliability, and scalability this market requires."

SCHAEFFLER

Case Study: An outlook towards embodied AI in the cleaning market

The **Roomba** launched in 2002 and became one of the best-selling consumer robots in history. In the professional segment, autonomous scrubber-dryers have been operating since roughly 2017. Yet the range of robotic cleaning products has remained remarkably narrow: a vacuum robot, a mopping robot, an autonomous floor scrubber. Adjacent segments like pool and solar panel cleaning have seen more traction, but **indoor cleaning in variable environments remains, with some exceptions, largely unautomated.**

Compare this to warehouse robotics, where an entire ecosystem of startups, form factors, and VC funding has emerged. Last year's Deep Tech Report maps 14 categories of Novel Robotics startups, from humanoids to construction to sea & subsea. Unsurprisingly, cleaning remains underrepresented in most robotics startup mapping exercises.

Cleaning is a **\$450B+ global market**¹ with **operating margins around 5%**², extreme local fragmentation, and revenue dominated by manual physical labor³. Historically, it is a market ripe for disruption through automation and consolidation, but it has been mostly inaccessible. The classic robotics architecture only works in structured, predictable environments, **which set a hard ceiling on what automated cleaning could achieve.**

\$450B+Global Cleaning Service
Market¹**5%**Operating Margins²**90%**Revenue Spent on Labor in
Commercial Cleaning³

"In the last 20 years, venture-backed cleaning robotics had a structural ceiling.

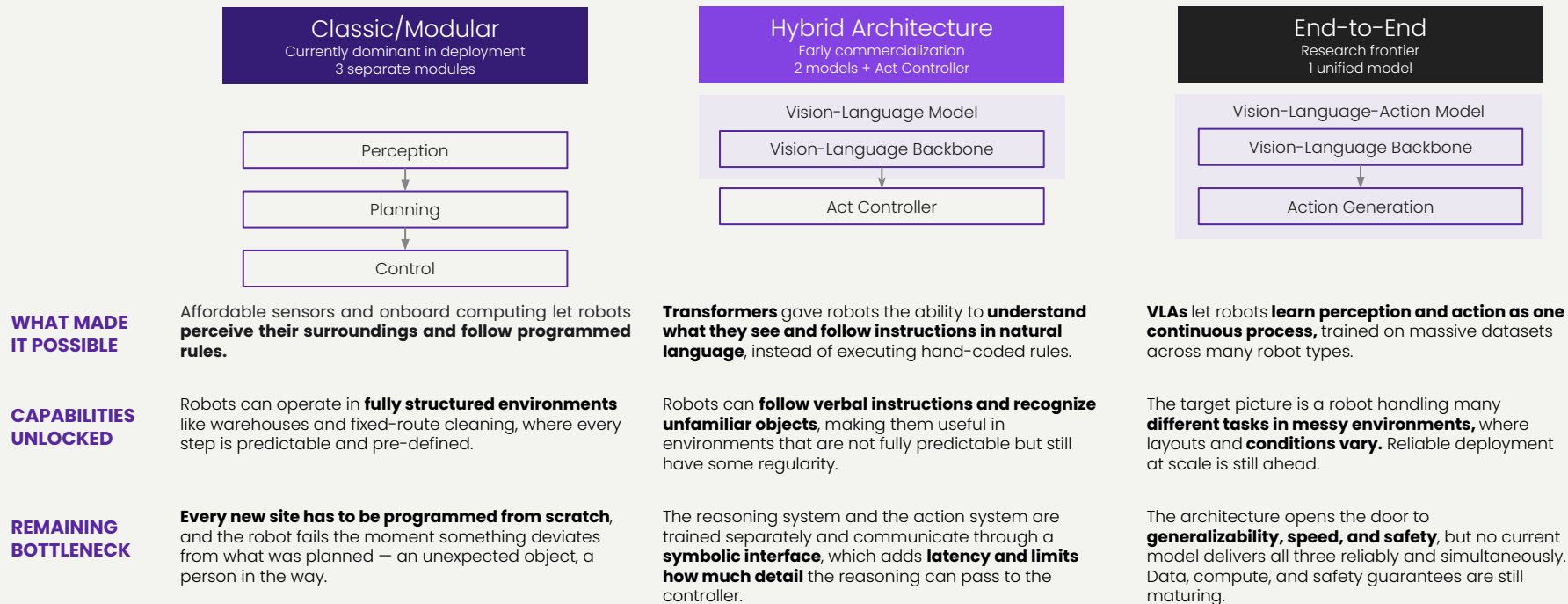
Recent advancements in the robotics architecture still have considerable limits but have also shown a credible path to automation which will eventually cause a fundamental shift in the market. Cleaning will be pushed from mostly labor- towards product and software economics.

This has already caused several well funded companies in robotics across the U.S., China, and Europe to select cleaning as their beachhead for early deployments.

Several players, with fundamentally different strategies to reach fully autonomous cleaning create a compelling competitive landscape, in which timing and endurance create a sustainable edge over ultimate technical capability."

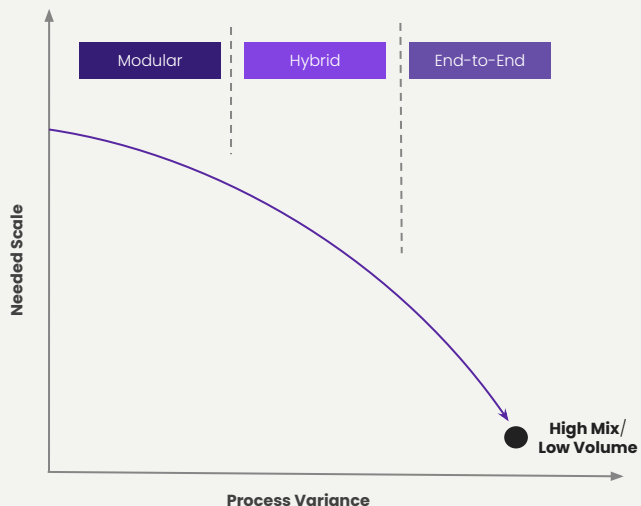
**Maik Therres**Senior Investment Manager,
Kärcher

First VLMs gave robots semantic understanding; now VLAs unify the system, gradually unlocking new capabilities and markets



The move from modular to E2E enables more high-mix / low-volume cases, pushing cleaning from a labor market toward product and software economics

EACH ARCHITECTURE GENERATION EXPANDS THE CAPABILITIES, EVENTUALLY UNLOCKING NEW TYPES OF USE-CASES



High Mix. Handling more diverse tasks and environments rather than a single specialized function.

Low Volume. Lower cost and effort per application reduce needed scale for justifying automation.

AS ROBOTS INCREASE THEIR CAPABILITY TO HANDLE MORE COMPLEX ENVIRONMENTS, THE ECONOMIC STRUCTURE SHIFTS.

"Hire more people" becomes "deploy more robots and update software." Product and software revenues start to outcompete human labour. Recurring revenue and platform dynamics become possible in the cleaning market"



Benjamin Barreuther
Senior Director New Ventures
Kärcher

BEFORE

Scale with people
Service revenue
Labor margins



AFTER

Scale with robots + software
Product revenue
Software margins

PATH TO AUTONOMOUS CLEANING

1 · Modular spreads Cost reduction makes existing architecture viable for new use cases. No tech leap needed.

2 · Low Mix affordable Niche deployments become economical. Still low variance, smaller scale.

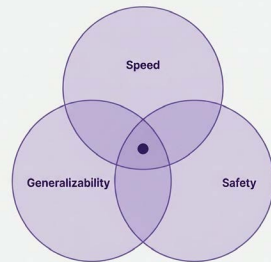
3 · Hybrid adoption Learned perception + rule-based control. Semi-structured environments addressable.

4 · True High Mix / E2E Generalist robots in unstructured environments. Requires several technical leaps.

Models lack capabilities necessary to meet the demands of general purpose cleaning

End-to-end autonomous cleaning does not hinge on one breakthrough alone. It emerges from progress across multiple areas including, but not limited to, dexterous hardware, training data, edge compute, and the model itself. The VLA is one key enabler among several, but it is the clearest place to see how end-to-end behavior is actually formed.

The largest share of the massive cleaning market requires high levels of **generalizability, speed, and safety**. Despite what we see in many impressive demos, **no deployable model today delivers all three reliably and simultaneously**. The three are not interchangeable: a robot that generalizes but is too slow loses to human labor; a fast one that is unsafe cannot operate near people; a safe one that handles only one task is not economic.



	What E2E Cleaning Needs	Where Today's VLAs Fall Short
Generalizability	Cleaning is heterogeneous: toilet cleaning, window cleaning, picking up laundry, dishwashing, dusting shelves. Single-task robots are only economically viable at scale. Cleaning robots need to be able to handle multiple tasks.	$\Pi_{0.8}$ is the first real step toward open-world generalization in unseen homes, but it is data-intensive. GR00T N2 addresses this with world-model architectures, but models this size (14B parameters) currently require whole GPU-clusters and are not yet edge-deployable.
Speed	Speed has two components. Throughput speed: cleaning is performed globally by predominantly low-wage workers, who set a low cost benchmark, so a robot must complete tasks fast enough to be commercially viable. Control speed: dexterous motions like scrubbing, polishing, or squeegee work require high-frequency motor control to execute smoothly.	Flow matching has solved the basic frequency problem and recent advancements have reduced mid-motion latency. The remaining challenge is robustness at production scale: real-world conditions like vibration, varying loads, and contact forces remain unsolved outside controlled environments.
Safety	Cleaning happens almost always in human-populated environments: offices, hotels, homes, hospitals. Architecturally, this requires reasoning before action, failure detection, recovery mechanisms, and tactile sensing.	Self-correcting VLAs (SC-VLA, REFLECT, DoReMi) remain at the research stage. Reasoning VLAs (GR00T N1.6 with Cosmos-Reason) represent first commercial steps. Consequence projection of the robot's own actions for human safety is not yet solved.

Two approaches compete, three forces decides who wins

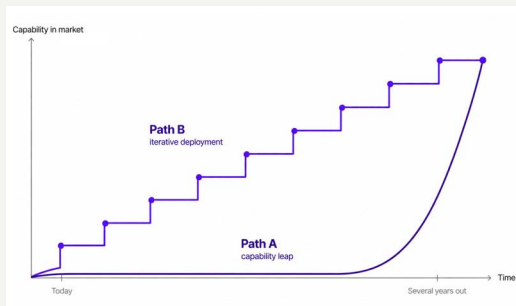
The capability gaps will close eventually. The questions are **when, how, and by whom**.

Path A: Big Bang Capability Leap:

Bet on the architectural leap that delivers all three capabilities at once. Build the moat through performance premium.

Path B: Iterative Capability Build-Up:

Find use cases where not all three capabilities are needed. Deploy now, collect data, stack use case onto use case.



Three Forces:

01 Moats: in physical markets, deploying first creates considerable advantages

The real world has a different lock-in than the digital world. Switching robot fleets is not frictionless: hardware is installed, tied to service contracts, integrated into workflows. Path B builds **distribution, service networks, supply chains, and customer relationships** from day one, an infrastructure that takes years to grow and cannot be acquired through better tech alone.

02 Market type: in some markets (like cleaning), the performance premium of Path A has a ceiling

Good-enough markets like cleaning have a performance ceiling, additional capability stops translating into value. **Never-good-enough markets** like defense do not. Without open-source dynamics, the model layer would capture the margin. But NVIDIA and others open-source aggressively, shifting margin to **compute and customer proximity** in markets that have a performance ceiling.

03 Timing: Path B's window to build moats depends on when Path A leaps

Two timing dimensions matter. **1. When the leap arrives:** if Path A leaps before Path B has built enough deployment depth to be defensible, Path A wins. If later, Path B is entrenched. **2. How long the gap between frontier and open source stays open:** once Path A overtakes Path B's capability while the good-enough threshold is not yet reached, a squeeze period begins. Path B faces margin pressure until open-source models reach that threshold for the use case.

TAKE-AWAY

In cleaning, **timing and endurance**, not ultimate model capability, decide who wins. The same pattern applies to any industry affected by physical AI that operates in a good-enough market.

3.4

Aerospace

Biggest trends

In-space manufacturing

Manufacturing in microgravity is moving from one-off demonstrations toward repeatable operations, enabled by the maturing ability to return materials from orbit reliably and cheaply. The microgravity environment allows certain high-value products, notably pharmaceutical crystals and specialized materials — to form in ways impossible on Earth. The enabling breakthrough is routine downmass: reusable reentry capsules that bring orbital products home on a predictable cadence, increasingly anchored by defense as well as commercial demand.

Proliferated LEO constellations & direct-to-device

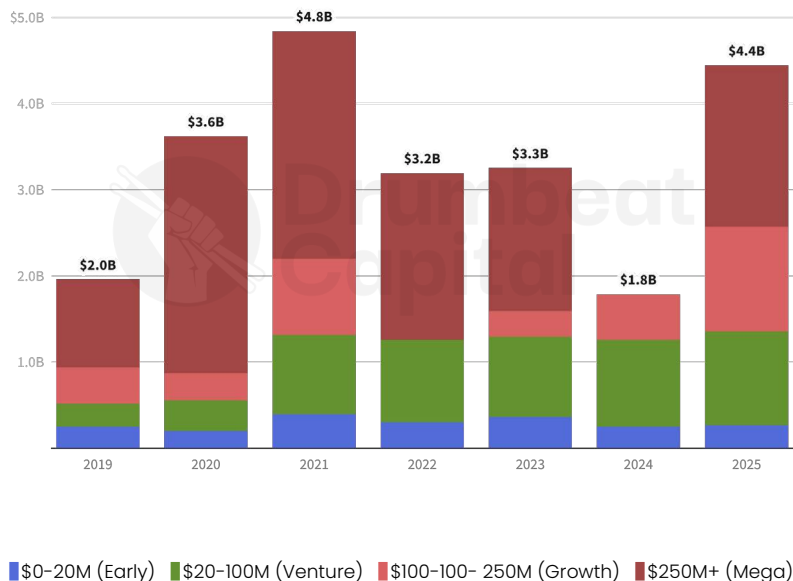
Connectivity is the largest near-term space market, and the race is to extend satellite broadband directly to ordinary smartphones, no special terminal required, alongside sovereign national constellations. Multiple large low-Earth-orbit networks are deploying in parallel, and Earth-observation and radar constellations are converging with defense surveillance needs. Governments increasingly view owning a constellation as a matter of strategic autonomy.

Full reusability

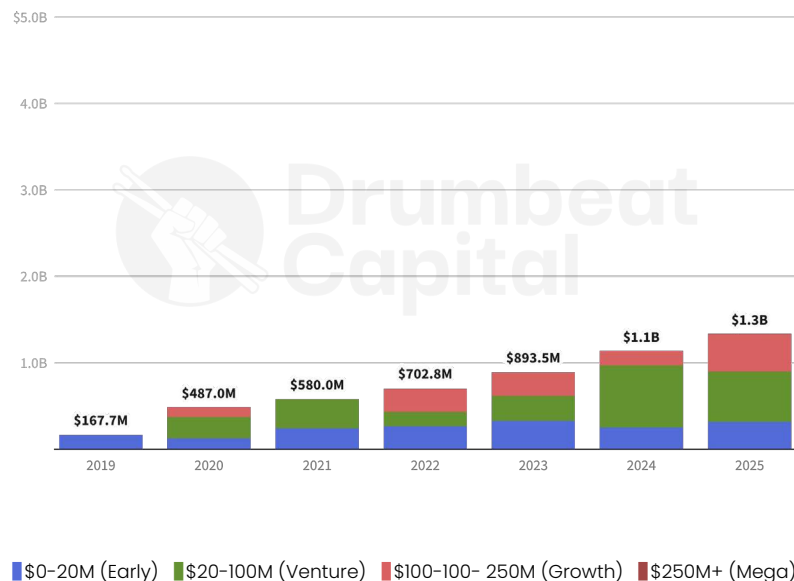
Reusable launch is in its most competitive phase ever, with multiple heavy and medium-lift reusable vehicles advancing toward operation across the U.S., China, and Europe. The frontier is full reusability combined with on-orbit refueling, which together promise step-change reductions in the cost of reaching orbit. China is racing hard to close the gap, while Europe risks falling years behind.

Aerospace at record highs in Europe and U.S. back to 2021 levels

U.S.: Aerospace venture capital raised



Europe: Aerospace venture capital raised



Top 10 rounds in 2025

U.S.: Top 10 Aerospace rounds in 2025

#	Name	Location	Round Type	Round Size	Focus
1	Relativity	Los Angeles	Growth Equity	\$800M	3D-printed rockets
2	Stoke Space	Seattle	Series D	\$510M	Reusable daily-launch rockets
3	Impulse Space	Los Angeles	Series C	\$300M	In-space transport, inner solar system
4	Stoke Space	Seattle	Series C	\$260M	Reusable daily-launch rockets
5	Apex	Los Angeles	Series D	\$200M	Scalable commercial satellite buses
6	Apex	Los Angeles	Series C	\$200M	Scalable commercial satellite buses
7	Loft Orbital	Bay Area	Series C	\$187M	Satellite payload leasing
8	Varda Space	Los Angeles	Series C	\$187M	In-space manufacturing for pharmaceuticals
9	True Anomaly	Denver	Series C	\$130M	Full-spectrum space operations tech
10	K2 Space	Los Angeles	Series B	\$110M	Next-gen low-cost satellite buses

Europe: Top 10 Aerospace rounds in 2025

#	Name	Location	Round Type	Round Size	Focus
1	Isar Aerospace	Munich, Germany	Convertible	\$174M	Small satellite launch vehicles
2	ICEYE	Espoo, Finland	Series E	\$165M	SAR satellite constellation & intelligence
3	EnduroSat	Sofia, Bulgaria	Late VC	\$153M	Modular nanosatellite & data services
4	Aerospacelab	Brussels, Belgium	Late VC	\$61.6M	Small satellite buses & platforms
5	Reflex Aerospace	Berlin, Germany	Series A	\$55M	Modular smallsat manufacturing platform
6	ReOrbit	Helsinki, Finland	Series A	\$49.5M	AI-powered satellite operations software
7	Infinite Orbits	Toulouse, France	Late VC	\$44M	In-orbit satellite life extension services
8	constellr	Munich, Germany	Series A	\$43M	Thermal intelligence satellites
9	Overstory	Amsterdam, Netherlands	Series B	\$43M	Satellite imagery for vegetation risk
10	OroraTech	Munich, Germany	Series B	\$40.7M	Wildfire detection via thermal satellites

Delian Asparouhov

Cofounder of Varda,
Partner at Founders Fund



"We're living through the first time in human history where there's been astronauts in low earth orbit and lunar orbit at the same time!

I like to think of space like a highway: when you first only had a handful of cars there, everybody had to bring their own gas tank. Once you get thousands of cars up there, you can start to invest in a gas station.

There are layers of infrastructure, and as you build up each layer - reusable rockets, space factories, gas stations, ground stations - now you can start building application layers on top of those.

I would bet that in the next five years, we lead a ~\$10M financing round into a lunar ice mining operation."

Alexander Fang

Managing Partner & Co-founder,
Conjure Capital



Daniel Sparacin

Partner & Co-founder,
Conjure Capital



Conjure

Space-Based Datacenters

“Growing interest in space-based data centers is driven by abundant, continuous solar energy and the absence of terrestrial competition for power. On Earth, resource competition is driving up both cost and availability for large-scale compute. Falling launch costs enabled by private spaceflight are opening a potential path to orbit—though the timeline remains uncertain. This raises a critical question: **what technologies must be enabled to make data centers in space viable at scale?**”

What Must Be Enabled to Unlock the Opportunity

Launch cost & deployment capability

Today: ~\$2,000–\$3,000/kg to LEO on commercial launch vehicles; launch dominates total system economics

Target economics: ~\$30–\$100/kg for launch to become a non-dominant cost

- At this level, compute density, power, cooling, and lifetime dominate ROI
- Requires heavy-lift vehicles, standardized payloads, and high launch cadence
- Deployment must shift from bespoke missions to repeatable infrastructure

Unlock condition: Launch cost drops by ~1–2 orders of magnitude and becomes an input, not the constraint.

Radiation as a manageable engineering constraint

What must be true about reliability in space

- Radiation effects must be tolerated at the system level, not eliminated at the device level
- AI workloads must operate under probabilistic fault models
- Shielding mass must scale sub-linearly with compute density
- Packaging, cooling, and structure should be provisioned to provide additional protection
- Failures must degrade performance gracefully rather than catastrophically

Space-native power, thermal, and fluid systems

What must work to sustain dense compute off-Earth

- Near-continuous solar power is achievable in selected orbits
- Radiative cooling must support MW-to-GW-scale heat rejection
- High-density liquid or two-phase cooling must function in microgravity
- Thermal stability must reduce over-design penalties seen on Earth
- Power, cooling, and compute must be co-designed as a single system

Semiconductor-Driven Engineering and Investment Opportunities

Radiation-resilient circuits & system software

Using advanced nodes in space requires trading rad-hard silicon for architectural fault tolerance

- Rad-hard platforms lag generations behind in node size, density, and energy efficiency
- AI-scale compute requires best-in-class, high-performance process nodes
- Radiation is handled via redundancy, ECC, checkpointing, and fault recovery
- SEE-aware memory, interconnects, and accelerators replace device-level hardening
- Hardware/software co-design enables graceful degradation instead of hard failure

Advanced packaging & 3D integration

In space, vertical density trades packaging complexity for survivability and performance

- Planar layouts maximize exposed radiation cross-section per unit compute
- 3D stacking reduces cross-section while increasing compute density
- Chiplets enable isolation, redundancy, and fault containment
- Cooling plates and interposers double as structural and shielding elements
- Packaging becomes a system-level reliability and efficiency lever

Intelligent shielding & materials engineering

Targeted, graded shielding trades design sophistication for mass efficiency

- Bulk aluminum shielding is simple but mass-inefficient at scale
- Graded-Z, multi-layer shielding reduces TID and secondary particle generation
- Localized protection focuses mass only where sensitivity justifies it
- Shielding integrated into structure, cooling, and packaging
- Geometry and material selection optimized computationally rather than heuristically

Vincent Clot

Space Business Catalyst Director,
Thales Alenia Space



“More than ever, 2026 will be crunch time for everybody in space with consolidation at all levels, emerging players becoming main players and geopolitical challenges to tackle (who will be the first to establish back on the Moon?).

Space becomes as well more and more intertwined with other industries, almost as an extension of Earth activities, as we can see on the Moon where a new economy emerges, but even more at the intersection of Space and Digital with digital mega players moving onto orbital data centers and even one merging his space and AI activities.

Defense also becomes a stronger reality in Space due to the environment, possibly here to last.”

Mike Annunziata

Founder, Managing Partner,
Also Capital



“Enter Starship, the “AWS Moment” for Hard Tech. Its successful launch showed that a multi-planetary future is near inevitable, and SpaceX is leading the way. Through their Transporter missions, they’re creating lower cost opportunities for startups to build businesses on their infrastructure, much akin to what AWS did for the last two decades of SaaS startups. This is the beginning of a new era of innovation, and days like yesterday catalyze the enthusiasm and excitement that will create orders of magnitude shifts in what’s possible over the next decade and beyond.

I can’t wait.”

Tripp Jones

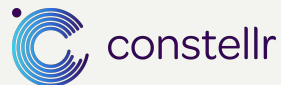
General Partner, Uncork Capital



"The biggest misconception in space tech is that the hard part is getting to orbit. That's increasingly commoditized. The real bottleneck now is what you do once you're there, how quickly you can translate space infrastructure into usable, repeatable value on Earth. The most interesting companies in the future will not be the ones building rockets. The most compelling companies are abstracting away the complexity of space entirely. They're turning satellites into software, programmable, responsive, and integrated into existing workflows."

Max Gulde

Co-Founder & CEO, constellr



"For decades, Europe relied on U.S. defense and space capabilities as the foundation of its security architecture. The loss of trust across the Atlantic may prove to be Europe's greatest strategic opportunity in a generation. As Europe shifts from a mindset of risk minimization to one of opportunity maximization, it will transform not only into an economic powerhouse, but into a leading defense, technology, and industrial power that reasserts its place in the global order. For the foreseeable future, the most exciting place to build in space and defense is not the United States. It is Europe."

3.5

Defense

Biggest trends

Autonomous & attritable systems at mass scale

The decisive shift in modern warfare is toward mass-produced, low-cost autonomous systems built with commercial manufacturing discipline rather than traditional defense timelines. Battlefield experience has validated cheap, expendable drones produced in the millions, and Western militaries are now prioritizing massed autonomy across air, ground, and especially maritime domains. Defense-technology investment has reached record levels as a result.

Drone interceptors → missiles & missile interceptors

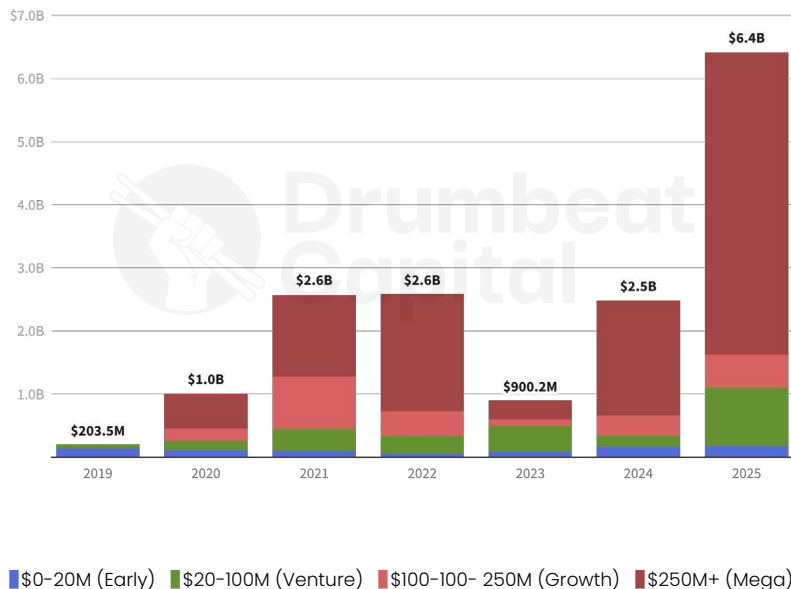
Defense now faces an acute cost-exchange problem: it is unsustainable to fire million-dollar interceptors at thousand-dollar drones. The emerging race is for affordable kinetic interception across the spectrum — drone-on-drone interceptors, low-cost interceptor missiles, and the layered systems that decide which threat warrants which response, preserving expensive high-end munitions for high-end threats.

Battlefield AI & connected systems

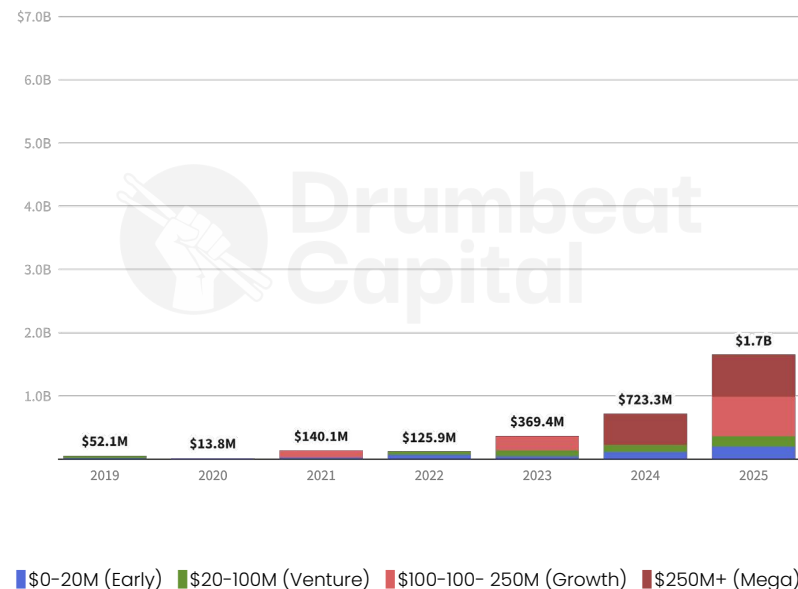
Warfare is being rewritten in software, with real-time data fusion linking any sensor to any shooter across domains. Network-centric command-and-control lets a radar in one place cue an interceptor in another, while battlefield-AI software compresses decision cycles from minutes to seconds. The hardware corollary is energy-efficient edge compute capable of running advanced models at the front line.

Defense investing has gone up by 2.5x in both the U.S. and Europe

U.S.: Defense venture capital raised



Europe: Defense venture capital raised



Note: Defense in this report includes all Deep Tech companies with primary activity focused on the defense market. Autonomous systems (e.g. drones, maritime robotics) are included if their primary focus is the defense market, while not included and counted in robotics if their focus is primarily commercial. Space companies are generally not included here but in the Space section, with the exception of companies focused on hypersonics whose main focus is defense.

Source: Dealroom

Top 10 rounds in 2025

U.S.: Top 10 Defense rounds in 2025

#	Name	Location	Round Type	Round Size	Focus
1	Anduril	Los Angeles	Series G	\$2.5B	Autonomous defense & surveillance systems
2	Saronic Technologies	Austin	Series C	\$600M	Autonomous maritime security vessels
3	Chaos Industries	Los Angeles	Series D	\$510M	AI radar for drone detection & counter
4	Castelion	Los Angeles	Series B	\$350M	Hypersonic strike systems
5	Chaos Industries	Los Angeles	Series C	\$275M	AI radar for drone detection & counter
6	Epirus	Los Angeles	Series D	\$250M	High-power microwave anti-drone systems
7	Shield AI	San Diego	Late VC	\$240M	GPS-free autonomous drone swarms
8	Forterra	Washington DC	Series C	\$188M	Autonomous ground vehicles for frontlines
9	Auterion	Washington DC	Late VC	\$130M	Open-source autonomous drone software
10	Ursa Major	Denver	Late VC	\$100M	Hypersonic & microsatellite propulsion

Europe: Top 10 Defense rounds in 2025

#	Name	Location	Round Type	Round Size	Focus
1	Helsing	Munich, Germany	Series D	\$660M	AI battlefield systems & autonomous drones
2	Quantum Systems	Munich, Germany	Series C	\$374M	AI-powered dual-use drone systems
3	Destinus	Valkenburg, Netherlands	Convertible	\$154M	Autonomous defense UAVs & hypersonic aircraft
4	Cambridge Aerospace	Cambridge, UK	Series A	\$100M	Air and missile defense systems
5	Stark	Berlin, Germany	Late VC	\$62M	Strike drones & counter
6	ARX Robotics	Munich, Germany	Series A	6.2M	Autonomous ground systems
7	Harmattan AI	Paris, France	Series A	\$30M	AI software for drone swarm autonomy
8	Aidoptation	Brussels, Belgium	Early VC	\$22M	AI situational awareness for defense ops
9	Skyral	London, UK	Series A	\$20M	Autonomous drone mission intelligence
10	Orasio	Paris, France	Seed	\$17.6M	AI-powered security software

Robin Dechant

Partner, General Catalyst



"Strategic autonomy is the defining sovereign mission of this decade. And the central insight – which Ukraine made impossible to ignore – is that it has to be manufactured. Not declared, not funded in aggregate, not outsourced to alliance structures built for a different era. The production line is where autonomy is won or lost. Doctrine without replenishment capacity is a plan that erodes under pressure.

Europe and the U.S. are both rebuilding toward that reality, but from different starting points and with different structural advantages. The U.S. carries procurement scale and industrial memory – what it actually takes to move from prototype to volume production. Europe carries something different: engineering density that is genuinely world-class, and a generation of founders who have chosen to build in defense and resilience not because it is fashionable, but because they understand what is at stake.

The convergence point – and the real transatlantic opportunity – is the mission-systems layer underneath the headline platforms. Propulsion, seekers, sensors, and connectivity: fragmented across Europe, underleveraged in U.S. supply chains, and the layer that determines whether deterrence can be sustained or only demonstrated. Building interoperable industrial depth across that layer, together, is what turns strategic autonomy from a political aspiration into something that holds."

Read more in General Catalyst's European Resilience Thesis:

[From Orbit to Factory Floor – Europe's Resilience Stack](#)

Balazs Nagy

Founder & CEO,
Tytan Technologies



TYTAN

“Ukraine has proven that the age of attritable warfare has arrived. Victory no longer belongs to the side with the most expensive platforms, but to the side that can innovate, deploy, and iterate fastest. Development cycles that once took years now take weeks.

Europe has recognized this shift and is investing accordingly. For the first time in decades, Europe has all the ingredients to lead: world-class engineering talent, a deep STEM base, growing capital, and strong public support for defense innovation. We have both the tools and the incentives to protect our own territory and to continuously develop and deploy disruptive battlefield technology in the defense of Ukraine, built by teams that move at the speed of that mission.

In the age of attritable warfare, advantage comes from turning innovation into mass — delivering decisive effects at a fraction of the cost, and at the scale the threat demands.”

Connor Love

Partner,
Lightspeed Venture Partners



"5 years ago venture capitalists had a litany of problems with investing in defense tech companies: opaqueness of customer, bad gross margins, self serving 'moral' beliefs (to name a few). Those concerns have fallen to the wayside. Russia's invasion of Ukraine and the rise of Neo Primes have made an investable category, more than investable, but essential for any multi sector fund"

3.6

Novel Energy

Biggest trends

AI-power nexus: fission & fusion offtake by hyperscalers

The most consequential energy story is that the largest technology companies are directly underwriting firm, clean power to feed AI, signing long-term purchase agreements and equity commitments that de-risk first-of-a-kind plants. This is reviving both nuclear fission, through small modular reactors and restarted plants, and fusion, which has attracted its first major corporate power-purchase commitments. The driver is concrete: AI data-center electricity demand is growing many times faster than overall power demand.

Next-generation geothermal

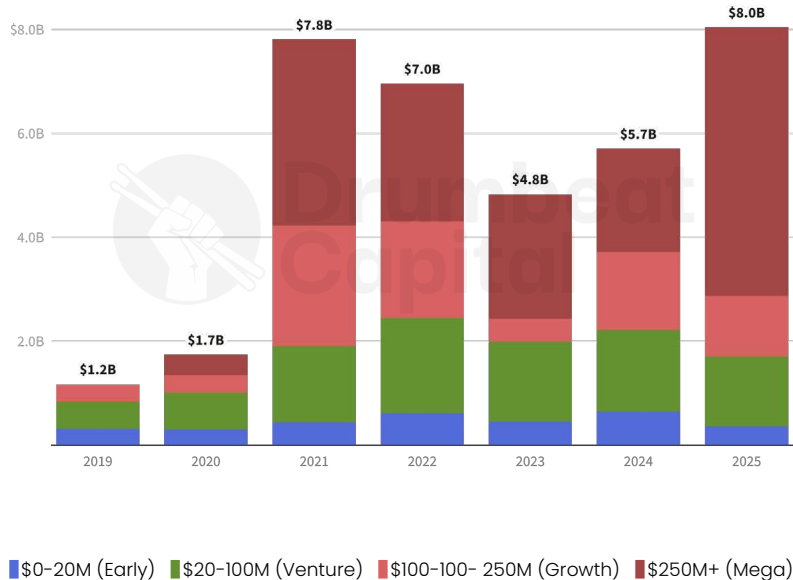
Advanced geothermal has become one of the most credible new sources of firm, around-the-clock clean power. By importing horizontal drilling and fracturing techniques from the shale industry, enhanced geothermal systems can now tap heat almost anywhere, not just in rare volcanic regions. Funding and drilling performance have improved sharply, and costs are falling toward those of conventional generation, drawing the same AI-driven demand for firm power that is fueling nuclear.

Grid bottleneck: solid-state transformers

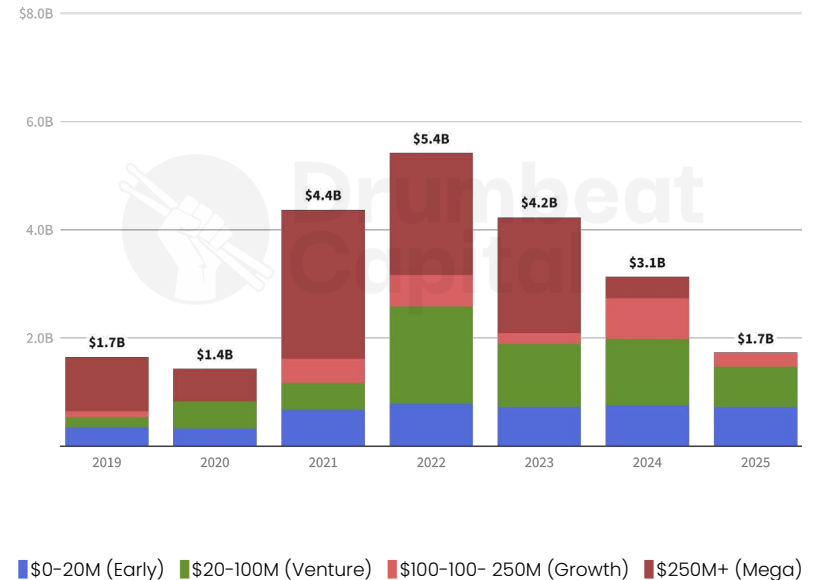
The electrical grid itself has become the binding constraint on AI growth, with a severe shortage of conventional transformers and a meaningful share of planned data centers at risk of delay from grid limitations. Solid-state transformers, built on wide-bandgap power electronics, are emerging as the fix, replacing bulky, slow legacy units with compact, fast, efficient devices that accept medium-voltage input and deliver high-voltage direct current straight to AI racks.

Novel Energy remained flat in the U.S. and decreased to 2020 levels in Europe

U.S.: Novel Energy venture capital raised



Europe: Novel Energy venture capital raised



Top 10 rounds in 2025

U.S.: Top 10 Novel Energy rounds in 2025

#	Name	Location	Round Type	Round Size	Focus
1	Commonwealth Fusion Systems	Boston	Series B	\$863M	Compact superconducting fusion power
2	X-energy	Washington DC	Series D	\$700M	Next-gen carbon-free nuclear power
3	X-energy	Washington DC	Series C	\$700M	Next-gen carbon-free nuclear power
4	TerraPower	Seattle	Late VC	\$650M	Traveling wave nuclear reactor
5	Group14 Technologies	Seattle	Series D	\$463M	Silicon anode materials for Li-ion batteries
6	Fervo Energy	Houston	Series E	\$462M	Dispatchable geothermal clean energy
7	Helion Energy	Seattle	Series F	\$425M	Pulsed fusion using helium-3 fuel
8	Redwood Materials	Reno	Series E	\$350M	Recycled battery materials
9	Radiant Industries	Los Angeles	Series D	\$300M	Portable small nuclear microreactors
10	Mainspring	San Francisco	Series F	\$258M	Fuel-flexible linear generators

Europe: Top 10 Novel Energy rounds in 2025

#	Name	Location	Round Type	Round Size	Focus
1	Proxima Fusion	Munich, Germany	Series A	\$167.6M	Stellarator-based fusion power plants
2	Climeworks	Zurich, Switzerland	Late VC	\$117.6M	Direct air capture of CO ₂
3	Marvel Fusion	Munich, Germany	Series B	\$55M	Laser-driven inertial confinement fusion
4	Hy2gen	Wiesbaden, Germany	Late VC	\$51.7M	Green hydrogen production & supply
5	Blykalla	Stockholm, Sweden	Late VC	\$50M	Lead-cooled fast nuclear reactors
6	Hycamite TCD Technologies	Kokkola, Finland	Series A	\$45.4M	Turquoise hydrogen via methane pyrolysis
7	Protium Green Solutions	London, UK	Series B	\$41.1M	Green hydrogen energy solutions
8	H2site	Bilbao, Spain	Series B	\$39.6M	Hydrogen separation membranes
9	Echandia	Stockholm, Sweden	Late VC	\$39.3M	Battery systems for electric marine vessels
10	Hystar	Oslo, Norway	Series C	\$36M	Proton exchange membrane electrolyzers

Francesco Sciortino

Co-Founder & CEO, Proxima Fusion



"The global fusion ecosystem is expanding rapidly through the private sector, with almost \$15B invested to date. Hardware milestones will define the next phase. As prototypes are built and tested, capital and talent will consolidate around a small number of companies that can execute industrial-scale engineering programs, develop reliable supply chains, and vertically integrate critical components.

1. Tech: The fusion field has been fairly crowded over the past few years. Some consolidation is naturally happening now that some companies are scaling whereas others struggle to fundraise. The SPARC tokamak of CFS is deep into assembly, less than 2 years from completion. The success of SPARC, generating up to 10x more energy than goes into the plasma, will be a tide lifting all boats. At the same time, alternative concepts are clearly gaining steam -- stellarators are particularly understood now to leverage the same physics basis as tokamaks, but offering intrinsic stability and continuous rather than pulsed operation. We are now in a phase of industry evolution where it's not just about feasibility, but economics and industrial scaling.

2. Timing: The SPARC tokamak is expected to enter operation within 2 years and show 10x more energy out than goes into the plasma. That result will ignite the next phase of the fusion industry. Meanwhile, alternative concepts are rising to challenge tokamaks, trading off physics risk for engineering complexity. Over the next 2 years, key hardware demonstrations will come to life. One among those: Proxima Fusion's Stellarator Model Coil (SMC), showing that stellarators can now leapfrog tokamaks on a commercial path.

3. Winning: The competitive field in the U.S. remains crowded; however, the best-funded companies are pulling away. Magnetic confinement fusion companies are clearly in the lead, with much higher TRLs. CFS is widely seen as leader of the pack. The European landscape has activated later, but has now entered the game at scale, with massive acceleration through partnerships with national labs and government funding. Proxima Fusion is broadly seen as the European fusion champion. In China, the talent pool and public projects are rapidly catching up with the west, with the BEST tokamak project showing that China can leverage the ITER project knowhow and develop a new critical national industry. Chinese efforts are strongly government-directed and comprehensively de-risking key technologies on the path to fusion reactors. Fusion is now one of China's national priorities, with the expectation that the country that will first control fusion may pull ahead to an extent that makes it hard for other geopolitical blocks to remain competitive. Fusion energy is progressively being associated with national security, energy resilience, and technological hegemony."

Zachary Bogue

Co-Founder and Managing Partner,
DCVC



“The risks and uncertainties that have always made planning difficult are only growing as powerful technologies collide with physical and institutional limits. For example, if supplies of AI chips keep growing at current rates, the electricity required to operate and cool those chips will exceed the power capacity of the entire state of California by 2028, according to RAND. Trajectories like this are obviously unsustainable.

Exponentially improving technological capabilities cannot be allowed to translate into exponentially increasing energy requirements, costs, material demands, and project timelines—if they do, the system will collapse under its own weight. But the way we see things at DCVC, there’s still one critical lever that can help bend escalating cost and schedule curves downward, “cancel the apocalypse,” and begin to restore predictability. **That lever is fundamental Deep Tech innovation.**”

Return of generalist funds into energy investing in the post-ChatGPT era

AI is Energy, Energy is AI. That is not just a catchy line. It is the operating reality of the market. The International Energy Agency says electricity demand from data centers worldwide is set to more than double by 2030 to around 945 terawatt-hours, with AI as the biggest driver of that increase. In the United States, Grid Strategies says national peak-load forecasts have risen to 166 gigawatts by 2030, roughly six times the “flat growth” expectations utilities were carrying in 2022.

In plain English, AI is no longer just a software story. It is a generation story. It is a transmission story. It is a storage story. It is an interconnection story. It is an AI story. And that is exactly why energy has moved from the edge of venture discussion to the center of it.

Anil Achyuta

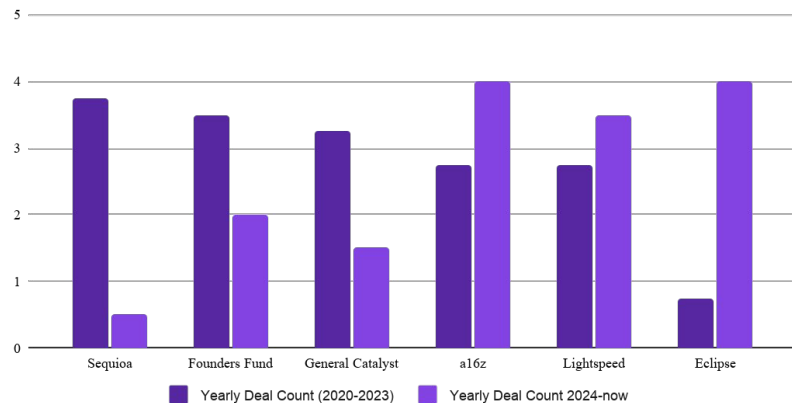
Partner,
Frontier at Energy Impact Partners.



Return of generalist funds into energy investing in the post-ChatGPT era

This quick study looks at how top-tier generalist funds are behaving in that shift. We define the shift as “pre-Chat GPT moment”, which is roughly before 2024 and post Chat GPT moment after 2024. The set of top-tier generalists includes firms like a16z, Founders Fund, Sequoia, General Catalyst, Eclipse, and Lightspeed, all of which have made visible bets tied to power systems, grid infrastructure, industrial energy, climate hardware, or the broader physical stack around electrification. The point is not to map the entire climate market. It is to see when mainstream venture firms start treating energy as an “important” category. The study therefore excludes specialist investors who have shown deep commitment towards climate and energy investments such as Capricorn Investment Group, Breakthrough Energy Ventures, Energy Impact Partners (where I work), DCVC, Khosla Ventures, Prelude Ventures, Lowercarbon Capital, and At One Ventures. Those firms remain important and continually active. They are simply not the subject of this comparison. Pure software is not included either, even including climate-software, where some funds are specializing such as Energize. Stealth companies that do not have data on Pitchbook, Harmonic, and other databases are not included either. The goal is to compare visible generalist behavior in physical energy and climate systems, not every adjacent climate or industrial tech investment.

**Deep Tech Energy Investments from Top-tier Funds
Pre- and Post-ChatGPT Moment**



Return of Generalist Funds into Energy Investing in the Post ChatGPT Era

From 2020 through 2023, the pattern in this dataset was relatively steady, broad-based annual activity, with Sequoia, Founders Fund, and General Catalyst leading the group and a16z and Lightspeed not far behind. Across the firms in scope, the annualized pace was roughly 16.8 physical-asset-related energy investments per year. The right read on that period is that generalists were building early conviction, but energy was still not a standard lane for most broad-based venture firms. From 2024 to the latest point shown, the picture looks materially different. The same firms were still operating at a similar aggregate annual pace, at roughly 15.5 investments per year, but the center of gravity shifted toward a16z, Lightspeed, and Eclipse, while Sequoia, Founders Fund, and General Catalyst were less active than in 2020 through 2023. What matters even more is the dollars deployed. Base Power raised a \$1B led by top-tier firms like Lightspeed, Thrive Capital, and Valor Equity Partners. Redwood Materials, the battery recycling and now also an energy storage company raised \$425m Series E financing from generalist funds like Eclipse and welcomed Google as their investor in January 2026. Heron Power, the solid-state transformer company (an EIP portfolio company) raised \$140m led by a16z in February 2026. That comparison matters. It suggests that the key change is not a simple increase in total volume, but a change in which top-tier firms are underwriting the physical infrastructure associated with energy investments in an AI-heavy, electrified economy.

From this quick study, **a16z and Eclipse look like the most prolific incoming generalist funds** in the energy space post-ChatGPT moment. That matters because the market now has real proof points. Oklo's market cap was above \$16 billion on March 6, 2026, and Crusoe's October 2025 Series E financing valued the company at \$10 billion. Google purchased Intersect Power for over \$5B in December 2025. Fervo Energy, the geothermal developer on January 22, 2026 filed for its long-awaited IPO. These are not niche outcomes. They are venture-scale outcomes in businesses built around power, compute, and real infrastructure. That changes the psychology of the category. Energy no longer looks like a side project for specialists alone. It looks increasingly like a place where breakout venture companies can be built. That is exactly why more generalist funds should come in, do the work, and invest with conviction with us. The invitation is clear: come into energy, back the real-world stack, and help build the next generation of breakout companies. The upside is financial. And it is also a chance to strengthen our critical infrastructure and drive real-world economic and climate impact.

Written by: Anil Achyuta, Partner, Frontier at Energy Impact Partners.

Martin Schilling

Co-Founder & CEO,
Deep Tech Momentum



“The greatest opportunities in European Deep Tech arise at the intersection of verticals — where new industry value chains form through the collaboration of global corporates and the next generation of fast-moving scaleups. Transformational breakthroughs such as fusion only become possible when advances in AI, novel materials, and engineering innovation converge to make the previously impossible achievable.”

3.7

Advanced Materials

Biggest trends

AI-driven materials discovery & autonomous labs

AI is now generating genuinely novel materials and validating them in autonomous laboratories, collapsing discovery timelines from decades toward months. Generative models can propose inorganic compounds tuned to target properties, with some predictions confirmed experimentally and vast libraries of candidate crystals computationally identified. This has triggered a wave of new "AI science factory" ventures, though some early novelty claims have faced scientific scrutiny.

Critical materials sovereignty

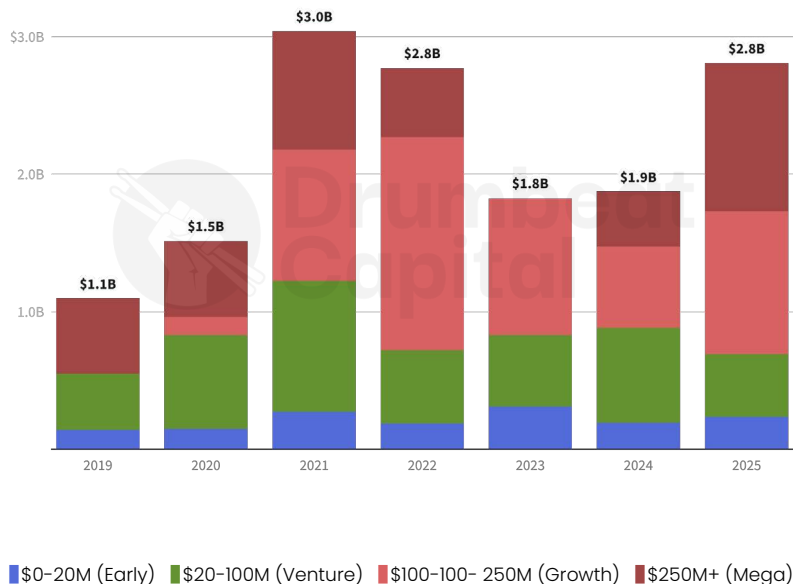
Materials have become a top-tier geopolitical chokepoint, with rare earths the sharpest example: production and especially processing are overwhelmingly concentrated in China, which now wields export controls as an active instrument of leverage. Restrictions on heavy rare earths and key metals have already disrupted magnet supply and forced some manufacturers to curtail output; a broad expansion of controls was temporarily paused, but the underlying dependency and the threat of re-imposition remain.

New semiconductor materials (wide-bandgap: SiC & GaN)

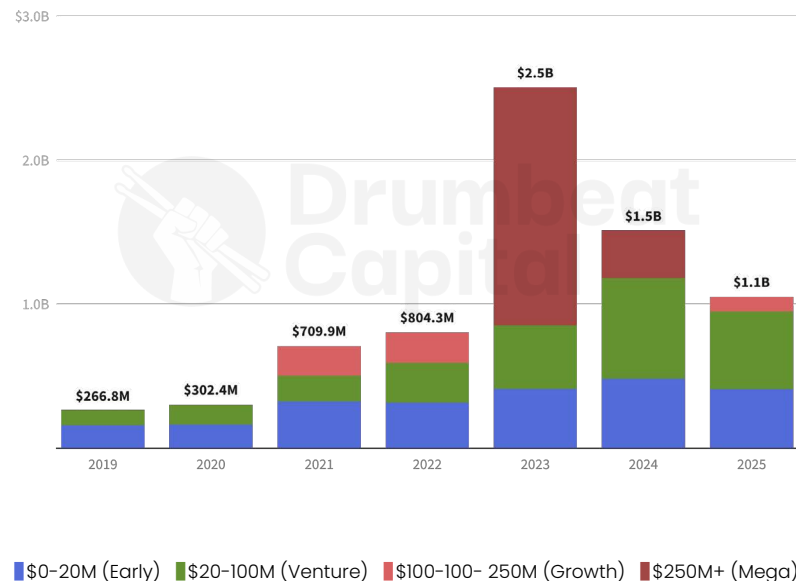
Wide-bandgap materials, silicon carbide and gallium nitride, are "breaking the energy wall" for both AI and electric vehicles by handling far higher voltages, temperatures, and switching speeds than conventional silicon. This enables the high-voltage architectures now being adopted in EV powertrains and in next-generation data centers, with reported efficiency gains halving power losses. The industry is racing to larger wafers and lower cost, with ultra-wide-bandgap materials such as diamond & gallium oxide.

Advanced Materials investment is below 2021 levels

U.S.: Advanced Materials venture capital raised



Europe: Advanced Materials venture capital raised



Top 10 rounds in 2025

U.S.: Top 10 Advanced Materials rounds in 2025

#	Name	Location	Round Type	Round Size	Focus
1	KoBold Metals	Bay Area	Series C	\$527M	AI-driven critical mineral exploration
2	Lila Sciences	Cambridge	Series A	\$350M	Scientific superintelligence for materials
3	Periodic Labs	Bay Area	Seed	\$300M	AI platform for scientific discovery
4	Divergent Technologies	Los Angeles	Series E	\$250M	Software-driven industrial manufacturing
5	Lila Sciences	Cambridge	Seed	\$200M	Scientific superintelligence for materials
6	Electra	Boulder	Series B	\$186M	Green steel via renewable ironmaking
7	KoBold Metals	Bay Area	Late VC	\$163M	AI-driven critical mineral exploration
8	Tidal Vision	Bellingham	Series B	\$140M	Scalable biomolecular chemistry solutions
9	Twelve	Bay Area	Series C	\$83M	Carbon transformation chemicals & fuels
10	Vulcan Elements	Durham	Series A	\$65M	Rare-earth magnets for motors & defense

Europe: Top 10 Advanced Materials rounds in 2025

#	Name	Location	Round Type	Round Size	Focus
1	CuspAI	Cambridge, UK	Series A	\$100M	AI discovery of novel materials
2	Pulpex	Cambridge, UK	Series D	\$82.2M	Paper-based sustainable packaging
3	Gravithy	Marseille, France	Early VC	\$66M	Hydrogen-based green steel
4	AMSilk	Munich, Germany	Late VC	\$57.2M	Engineered spider silk biomaterials
5	Alloyed	Oxford, UK	Series B	\$49M	AI-designed advanced metal alloys
6	GenoMines	Paris, France	Series A	\$45M	Biosynthetic critical mineral extraction
7	Caracol	Milan, Italy	Series B	\$37.8M	Large-format additive manufacturing systems
8	Fairmat	Paris, France	Series B	\$29.2M	Carbon fibre composite recycling
9	OXCCU	Oxford, UK	Series B	\$27.5M	CO ₂ to sustainable fuels & chemicals
10	MagREEsources	Grenoble, France	Series A	\$25.3M	Rare-earth magnet recycling

Marc Thom

Head of CVC, Henkel Ventures



HENKEL
VENTURES

“Advanced materials are being reshaped by Deep Tech on two fronts: how they're discovered and how they're applied. AI-driven computational chemistry is accelerating our ability to create higher-performing and more sustainable formulations, from adhesives to consumer products.

Simultaneously, we see new intelligent manufacturing and robotics approaches opening entirely new use cases in demanding sectors like next-gen chemical R&D and industrial BioTech, driving new avenues for growth and innovation at Henkel – significantly expanding our capabilities beyond today's core business.”

Alexander Hammer

Co-Founder & CEO, Dunia



"Over the past 12 months, AI for science and materials discovery has become geopolitical. In the U.S., initiatives like the GENESIS mission aim to mobilize hundreds of millions around AI-driven scientific discovery. In Europe, programs like RAISE are emerging with similar ambitions. At the same time, China is already investing at multi-billion-dollar scale, and the upcoming Five-Year Plan is expected to put AI for science and frontier materials front and center.

What makes the Western ecosystem interesting is that its strengths are split across the Atlantic. The U.S. is exceptional at building AI startups like Lila Sciences or Periodic Labs. Europe, meanwhile, still anchors much of the world's materials industry and specialty chemicals sector.

You can see that complementarity in practice. Many U.S. startups found some of their earliest industrial customers in Europe. Citrine Informatics with LANXESS and Evonik, Kebotix with BP and Johnson Matthey, Aionics with Cellforce, Calicat with De Nora, Mattiq with Heraeus. Even in earlier waves, Symyx found its first major customer in Hoechst.

And the flow goes both ways. Dunia.ai's first paying customer was a U.S. hyperscaler, showing that demand for materials innovation is also emerging from the American tech sector.

Facing a Chinese system investing across the entire stack, the opportunity is clear: **combine American strength in AI and venture building with European strength in materials and industrial systems. The winning strategy is transatlantic.**"

Chad Edwards

Co-Founder & CEO, CuspAI

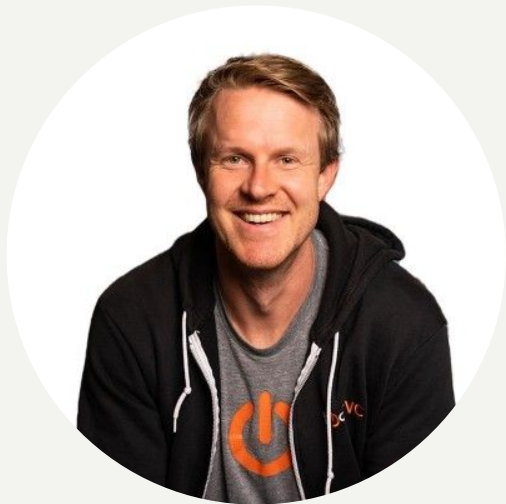


"Human progress is no longer a software problem; it is a thermodynamics problem. From AI to semiconductors, every vertical was hitting the physical limits of known materials until we collapsed the distance between discovery and deployment, moving from conceptual prediction to production-ready platforms.

Algorithms are now a commodity, but material breakthroughs are the ultimate moats. To sustain the next 1000x in compute, we had to move beyond optimizing code and start reinventing the substrate. At Cusp, we built the search engine for materials to ensure that the next decades of intelligence and progress aren't just simulated, but forged into the physical fabric of our world."

Brayton Williams

Founding Partner, Boost VC



boostVC

"We believe the next trillion-dollar industry is human enhancement. AI is accelerating scientific discovery faster than ever before, while breakthroughs in biology are making it possible to redesign how humans age, heal, learn, and perform. We're backing the founders building a world where humans have superpowers."

PART 4

Founder *Resources*

4.1

VC 101 for Deep Tech Founders

Written by: Prof. Ilya Strebulaev, Yana Pavlovskaya
Stanford GSB



VC 101 for Deep Tech founders

What founders and investors want — and where things go wrong.

FOUNDERS WANT

- Get funded** — without giving away too much equity or control.
- Smart money** — investors who understand long R&D timelines.
- Preserve optionality** — the science can serve many markets.
- Keep control** — once lost, it's lost forever.

INVESTORS WANT

- Maximize returns** — and get compensated for extreme technical risk.
- Downside protection** — most Deep Tech bets fail. Recover what you can.
- Aligned incentives** — founders with skin in the game, 10+ year horizon.
- Influence & information** — board seats, veto rights, milestone reporting.

AGENCY PROBLEMS — WHAT CAN GO WRONG

Concealing bad news	Founders may hide negative signals — failed prototypes, lost customers. Nikola concealed non-working tech for years.
Dishonesty	A whiff of dishonesty ends investor interest instantly. Trust is the #1 factor VCs evaluate.
Zombie companies	Founders keep failing companies alive with investor money due to emotional attachment.
Gambling for resurrection	Asymmetric payoffs incentivize founders to take outsized risks — they lose nothing, investors lose everything.
Firing the founder	In ~50% of successful VC-backed IPOs, the founding CEO was replaced.



Follow a Deep Tech startup's fundraising journey

Term-sheet principles, then meet IonWorks — the Series A we'll trace through every term that follows.

— THE TERM SHEET

Not legally binding (with two exceptions) — it's a blueprint for negotiation.

- **Investors expect you to negotiate.**

Not negotiating signals weakness. Over-negotiating signals unreasonableness.

- **First contracts are sticky.**

Terms persist round to round. Each new investor: "The last got this, so I want it."

- **Two questions for every term.**

When does it activate? How does it affect founders vs. investors?

- **Two binding exceptions.**

The no-shop clause and the confidentiality clause are binding.

— MEET IONWORKS — OUR RUNNING EXAMPLE

*These are the Series A terms we'll trace through every slide that follows.**

\$10M

invested

\$40M

post-money valuation

25%

investor ownership

75%

founders' ownership

****These numbers stay constant. Every slide that follows shows how different terms change what founders actually take home.***

Liquidation preference

The #1 term VCs refuse to give up — and the most important cash flow term in your deal.



1X

Standard multiple for first priced round

HOW IT WORKS

Investors are paid first, before common shareholders get anything. If the company sells for less than the liquidation preference, founders get zero.

IONWORKS EXAMPLE

Investor put in \$10M at 1X. Company sells for \$8M → investor gets \$8M, founders get \$0. Company sells for \$25M → investor gets \$10M, founders get \$15M.

RED FLAG

Anything above 1X in your first priced round. 15% of unicorns gave >1X — typically in later or distressed rounds.

WHY THIS HITS DEEP TECH HARDER

Your path to exit is longer and less predictable. A high liquidation preference compounds the cost of every year of R&D before revenue.

Optional conversion

THE SETUP

IonWorks: \$10M invested at \$40M post-money. Investor owns 25% if they convert to common stock. Liquidation preference = \$10M.

THE CHOICE

At exit, the investor picks whichever option pays more:

Option A: Keep the \$10M liquidation preference.

Option B: Convert to 25% of common stock.

They will never do both — it's one or the other.

THE CROSSOVER

$25\% \times \$40M = \$10M$. So at exactly \$40M (the post-money valuation), both options pay the same. Above it, conversion wins.

Exit \$0 – \$10M

Liq pref dominates

Investor takes entire exit value. Founders get \$0.

Exit \$10M – \$40M

Liq pref still better

Investor keeps \$10M. Founders get the rest.

Exit > \$40M

Investor converts

Investor takes 25%. Founders take 75%.

Cap table & post-money valuation

The cap table is built on the most optimistic scenario. It assumes all convertible holders convert — which only happens at high exit values.

IonWorks founders' 75% "ownership" may be worth 0% in a bad outcome.

Post-money valuation is a defined financial term, not what the company is "worth."

Higher PMV = better for founders

Your existing shares are worth a larger fraction of the company.

Higher investment = worse for founders

More shares issued to investors, diluting your ownership.
But too little investment and you can't win over the competition!

Share count is irrelevant

Only ownership fractions matter. The number of shares is just a numeraire.

Pre-money = Post-money - Investment

Pre-money valuation is NOT what your company is "worth" before the round.



Participation: The "Double Dip"

How it works:

Investor gets liquidation preference PLUS pro-rata share of remaining value. They don't choose — they get both.

Why Deep Tech founders should care:

Most Deep Tech exits cluster at 1–4X post-money. This is exactly the range where participation shifts the most value.

Capped participation (2X–3X) is the common compromise — but the cap often only bites at exits most Deep Tech companies never reach.

IonWorks payoff at \$30M exit (\$10M invested, 25% ownership)

Term	Investor	Founders
No Participation	\$10M	\$20M
Full Participation	\$15M	\$15M
Capped (3X)	\$15M	\$15M

What smart investors will ask you

Do due diligence on yourself before investors do it for you.

FOUNDERS

Why you? Domain depth? Technical credibility?
Resilience for a 10-year journey?

TEAM

How long have co-founders worked together?
Who covers science, engineering, and business?

TECHNOLOGY

What's the TRL? IP defensibility? Key technical
de-risking milestones?

MARKET

How big is the addressable market? Are you
preserving optionality across applications?

REGULATION

Approval pathway? Timeline and cost? Is the
regulatory framework even defined yet?

FUNDING

How much now? Expected burn? Milestones
before next round? Capital-heavy?

Identify your red flags first. Investors will find them anyway — being ahead of them builds trust.



The Deep Tech founder's cheat sheet

Cash Flow Terms — when this term increases, who benefits?

Term	Investor	Founder
Post-money valuation	Worse	Better
Investment amount	Better	Worse
Liquidation multiple	Better	Worse
Conversion ratio	Better	Worse
Participation	Better	Worse
Participation cap	Worse	Better

Zero-sum at exit: what benefits investors comes at the expense of founders.

ADVICE FOR DEEP TECH FOUNDERS

- Understand every term on your term sheet. Lawyers help, but they don't have your incentives.
- 1X liquidation preference is standard. Anything higher in Series A is a red flag.
- The cap table shows the rosier scenario. Your real ownership depends on exit value.
- Post-money valuation is a defined term, not a fair-value appraisal.
- Participation matters most at 1–4X PMV exits — the range where most Deep Tech companies land.
- Control matters more than cash flow terms. Board composition is paramount.
- Preserve your option space. The science can serve many markets — don't lock in prematurely.

Ilya Strebulaev

The David S. Lobel Professor of Private Equity and Professor of Finance; Director of the Venture Capital Initiative, Graduate School of Business, Stanford University



Yana Pavlovskaya

Head of Communications and Impact, Venture Capital Initiative, Graduate School of Business, Stanford University



“When we built the unicorn founder dataset, one finding kept resurfacing: a small number of research universities account for a disproportionately large share of the most successful companies, and the founders behind them are older, more experienced, and more often repeat founders than is commonly believed.

In Deep Tech, these characteristics are not just an advantage, but a necessity: you cannot build these companies with two people in a garage. The science demands sustained proximity to research institutions, specialized human capital, long development cycles, and considerable capital.

Deep Tech should not be treated as yet another category. It operates under a fundamentally different mindset, and capital allocation should reflect that. Hopefully, this report represents a step in that direction.”

4.2

The Deep Tech Pitch Deck Template

Tell a clear and concise story that highlights what investors need to know

1.

We solve a **problem** that is severe...

2.

with a **product** that is 10x better than existing solutions...

3.

and has clear **differentiation** from our **competitors**...

4.

in a **market** that is huge...

5.

leveraging a proven **technology** with a clear roadmap to commercialization.

6.

We have significant **traction** with customers who are willing to pay for our product.

7.

Our **vision** is to build a multi-billion-dollar company in the next 10 years...

8.

using our uniquely capable AAA **team**...

9.

and a \$XM round of **funding** to achieve Y **milestones**.

10.

Appendix: Here are the data we have collected to prove these **hypotheses** and the **experiments** we want to run next.

4.3

Transatlantic Recruiting for Deep Tech

Across the U.S.-Europe Corridor: A Practical Guide for Deep Tech Founders

Written by: Erevena



The first U.S. hire: commercial versus technical profiles for European founders

European Deep Tech founders entering the U.S. market face a pivotal early decision: should the first hire be a commercial or technical profile?

A commercial-first hire, typically a VP of Sales or Head of North America, works when the technology is mature enough to clearly demonstrate value. A commercial-first hire, typically a VP of Sales or Head of North America, works when the technology is mature enough to clearly demonstrate value. This hire can generate early revenue, build customer relationships, and validate demand while the core team remains in Europe.

A technical-first hire is more appropriate when the product requires localisation, regulatory adaptation, or deep integration with U.S.-specific infrastructure, particularly in sectors like medtech, fintech, or aerospace.

This is not an emotional decision. It is determined by product readiness, customer proximity, regulatory context, and the founding team's own strengths and weaknesses.

Accessing scarce Deep Tech talent in Europe

For U.S. founders expanding into Europe, it is critical to recognise that Europe is not a single, uniform market. There are clusters with centres of excellence, each anchored by world-class research institutions and producing specialists that are genuinely difficult to source elsewhere.

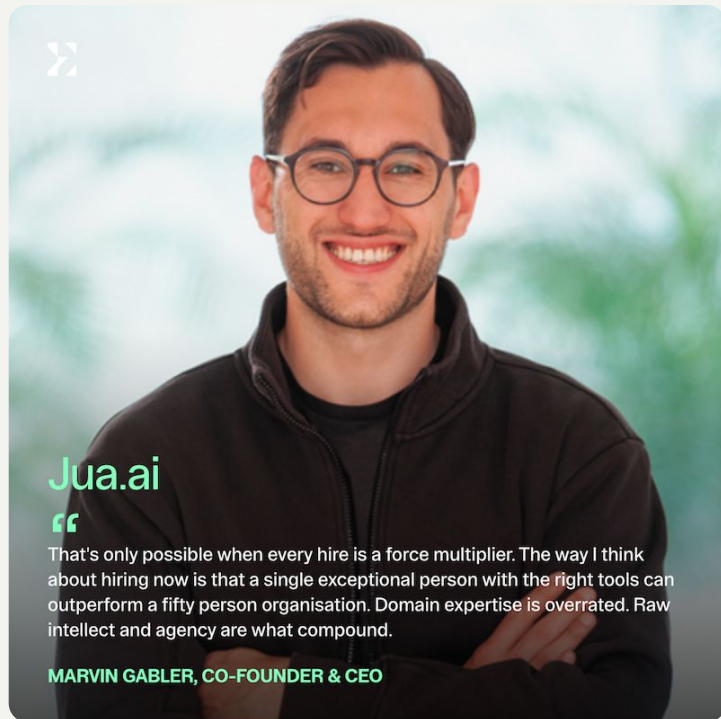
Examples include:

- Delft and Paris – Quantum computing expertise
- Cambridge and Stockholm – advanced materials science
- Cambridge and Copenhagen – Synthetic biology
- Zurich and Munich – robotics
- London, Paris, Berlin, and Cambridge – AI/ML talent.

These are the direct output of Europe's elite technical universities and applied research institutes such as Imperial College, Cambridge, Oxford in the UK, TU Delft, TU Munich, EPF Lausanne, and ETH, and not forgetting the applied powerhouses such as Fraunhofer, TNO, and SINTEF.

The implication is simple: accessing top-tier European talent requires precision. Generic, location-agnostic hiring strategies do not work in Deep Tech.

What founders are really saying



Marvin Gabler, Co-Founder & CEO at Jua.ai, shares his approach to hiring, expansion, and building high-impact teams:

“We went from two enterprise customers to forty in the last twelve months with a very small team. That’s only possible when every hire is a force multiplier. Our first hire outside Zurich was in sales in London, about three years in, because that’s where many of our customers are. Everything else we automate. The way I think about hiring now is that a single exceptional person with the right tools can outperform a fifty-person organisation. We pay up to four times the market rate for extremely smart, high-agency generalists and get a hundred times the output. Domain expertise is overrated. Raw intellect and agency are what compound.”

Labour law, compensation architecture, and cultural dynamics

For U.S. Founders looking to hire in Europe, they should be fully aware that employment law fluctuates from one country to the next.

In the U.S., employment is primarily treated as a private contract between employer and employee, with relatively limited state intervention.

In Europe, employment is treated as a social contract with a public interest dimension. Regulation is more extensive, shaped by frameworks such as the EU Working Time Directive, alongside national labour laws, works councils, and statutory protections.

This difference has real implications for hiring, managing, and exiting employees.

Where founders get it wrong

The Compensation Arbitrage Trap:

Hiring in Europe purely for cost while maintaining U.S.-level performance expectations creates misalignment quickly. Lower salaries do not equate to lower expectations, and the resulting tension erodes performance and culture.

The Premature Infrastructure Hire:

European founders frequently hire U.S. commercial talent before achieving genuine product-market fit, misinterpreting early customer interest for validated demand. This is seen a lot less with U.S. firms entering Europe.

The Remote Management Delusion:

Managing transatlantic teams remotely without meaningful in-person time consistently underdelivers. Regular calls are not a substitute for presence, especially in the early stages of building a market.

The Legal Compliance Gamble: Entering Europe without proper entity setup or employment compliance exposes founders to financial and legal risk. Shortcuts here tend to surface later, and expensively.

The Cultural Translation Failure:

Imposing one market's communication style, decision-making cadence, or management norms onto another creates friction. This applies equally in both directions.

The First Mover Disadvantage: Unknown companies entering new markets face a credibility gap. High-quality candidates often reject otherwise strong opportunities due to perceived risk. Overcoming this requires deliberate investment in marquee early hires, brand, and visibility.

These first hires may command premium compensation specifically to overcome risk perception, and investing heavily in employer branding through content, community engagement, and visible leadership.

For European founders making first U.S. hires

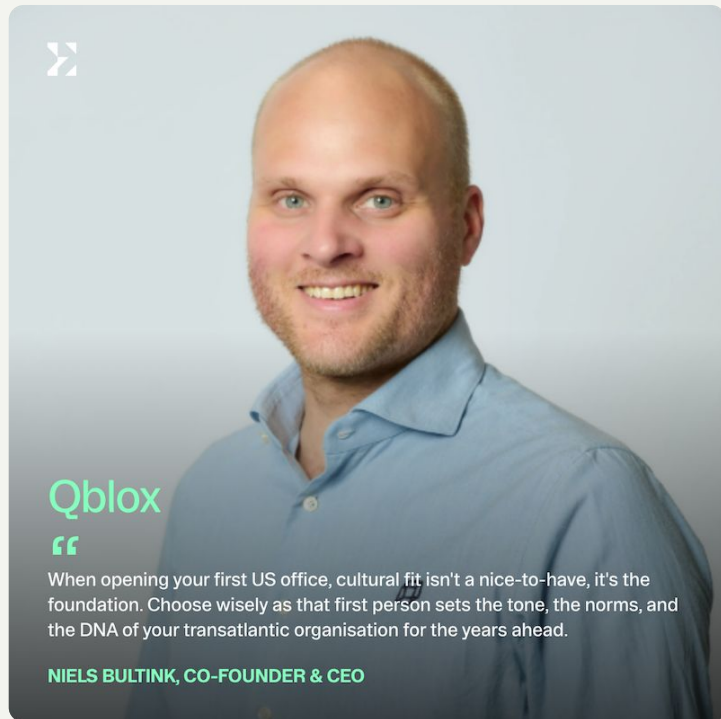
Warm introductions outperform cold outreach. Trusted networks remain the most effective way to access senior talent in the U.S. market.

At the same time, prior success is no longer a guarantee of future success. In fast-moving, AI-driven environments, playbooks expire quickly. Founders should prioritise adaptability and judgement over pattern-matching CVs.

Budget expectations also need recalibrating. Compensation is often 40–50% higher than initial assumptions so we advise founders to be brave here.

Equally important is founder presence. Spending meaningful time in the U.S., particularly aiming for 5–10 days a month for the first six months, materially increases the likelihood of success. This is a non-negotiable to set them up for success.

What founders are really saying



Niels Bultink, Co-Founder & CEO at Qblox, shares his approach to hiring, expansion, and building high-impact teams:

"When opening your first U.S. office, cultural fit isn't a nice-to-have, it's the foundation. Choose wisely as that first person sets the tone, the norms, and the DNA of your transatlantic organisation for the years ahead."

For U.S. founders making first European hires:

Europe should be approached as a set of distinct labour markets, each with its own legal, cultural, and operational realities from contracts to termination, payroll taxes, to mandatory benefits and more.

For your first one to five hires in a new country, using an Employer of Record or PEO (Professional Employer Organisation) is typically the most pragmatic solution. This offers a comparatively cost-effective solution against establishing a legal entity. The latter is more expensive, complicated and time consuming!

Established providers in the European market include Deel, Remote, Rippling, and Velocity Global.

Once a company reaches five or more employees in a single country and has long-term conviction, establishing a local, legal entity becomes more viable.

There are three practical implications to plan for:

When extending an offer to a candidate currently employed, you might have to wait three to six months before they start so factor this into your hiring timeline. If you need to exit an underperformer or restructure, you cannot move quickly; you are legally obligated to honour the notice period and, in many cases, pay in lieu. The upside to this is the same rules protect your employees from being poached and walking out overnight giving you time to backfill in this eventuality.

So, for U.S. founders: hire thoughtfully, manage proactively, and never assume you can move at Silicon Valley speed when it comes to hiring or firing in Europe!

Equity: a structure difference

Equity compensation in Europe is more complex, less standardised, and historically less embedded than in the U.S.

This is changing. The UK, Germany, and France have all recently introduced reforms to make equity more attractive and competitive. However, the landscape remains fragmented. Tax treatment, legal structures, and employee expectations vary significantly by country. Founders need to understand these nuances rather than applying U.S. models directly.

Certain principles apply regardless of direction:

- In-person engagement matters. Senior hires form their view of a company through direct interaction, not remote processes.
- Local understanding is a differentiator. Founders who take time to understand local norms outperform those who do not.
- Immigration must be planned early. Visa processes, sponsorship requirements, and timelines can materially impact hiring. This cannot be left until offer stage. Whether navigating a Tier 2 Skilled Worker visa in the UK, an EU Blue Card, or an O-1 or EB-1 in the U.S., the lead times, sponsorship obligations, and cost of getting this wrong are significant enough that immigration counsel should be sought early.

The strategic calculus

Transatlantic expansion is not a tactical hiring exercise. It represents a strategic inflection point that determines whether Deep Tech companies can access sufficient capital, talent, and market opportunity to achieve their ambitions or remain constrained by the limitations of their home market.

European founders must access U.S. commercial expertise, venture capital, and enterprise customers to build genuinely global businesses. U.S. founders must access European technical excellence, research ecosystems, and sophisticated early adopter markets to remain competitive.

Success requires treating transatlantic hiring as a strategic capability that demands investment, expertise, and founder attention. Companies that develop genuine competency in cross-border hiring, management, and cultural integration establish enduring competitive advantages. Those that approach it casually, cheaply, or as an afterthought face predictable failures that damage reputation, waste resources, and potentially prove existential.

The founders who succeed recognise that building across the Atlantic requires patience, cultural humility, substantial investment, and willingness to adapt rather than impose. They accept that different markets require different approaches whilst maintaining clarity around company mission, values, and standards. They invest in relationships, both with early hires who become advocates and ambassadors and with advisors who provide market-specific expertise. Most importantly, they recognise that talent remains the ultimate constraint for Deep Tech companies, and accessing the best talent regardless of geography represents not a cost to be minimised but an investment to be maximised.

If you're navigating transatlantic hiring or thinking about your first move across markets, we're always happy to share perspective based on what we're seeing across our clients.

Grant Hayward

Partner, Erevena
hello@erevena.com



"The Deep Tech founders we've worked with who've built successfully across the Atlantic understand something their peers often miss: that accessing the best talent, regardless of geography, is not a cost to be managed but an investment to be maximised.

Those who approach it with the seriousness it deserves: investing in expertise, relationships, and cultural understanding, establish advantages that are genuinely difficult to replicate. Those who treat it casually pay a price that goes well beyond the financial.

The Atlantic is not a barrier. For the founders willing to cross it properly, it is the opportunity."

4.4

Intellectual Property for Deep Tech

Written by: Jeffrey Schox
Founder, Schox Patent Group
Lecturer, Stanford University

SCHOX

Broad in the wrong direction

Deep Tech startups often want three things from their early patent portfolio: comprehensive coverage, efficient spend, and an impressive narrative for investors. Omnibus filings, which bundle multiple inventive concepts into the same patent application, seem to offer all three. But omnibus filings are often broad in the wrong direction. They bundle many inventive concepts into one document, while often failing to protect the most important inventions deeply. When used to bundle nascent ideas, especially in Deep Tech, omnibus filings can create apparent coverage while destroying actual protection.

Two kinds of breadth

The word “broad” creates a lot of confusion in early patent strategy. For purposes of this article, it is useful to distinguish between breadth within an invention and breadth across many inventions:

- **Breadth within an invention** means protecting one invention across many embodiments, variations, alternatives, fallback positions, and claim paths. This is the goal of an invention-based patent application. The cost of an invention-based patent application varies depending on how comprehensively the application supports embodiments, variations, alternatives, fallback positions, and claim paths.
- **Breadth across many inventions** means placing multiple inventive concepts into the same application. This is often the goal of an omnibus application. The cost of an omnibus patent application varies depending on the number of inventive concepts included, with each typically receiving shallower treatment than it would receive in an invention-based patent application.

When breadth across many inventions works

Breadth across many inventions is not inherently bad.

It can increase the patentability of two or more inventive concepts that are not yet strong enough to be patentable on their own. It can also decrease legal fees when multiple ideas reinforce the same technical architecture, solve a shared problem, or support a common inventive concept.

An omnibus patent application with significant breadth across several inventive concepts can also be appropriate when the company is protecting a fixed product whose details will be disclosed anyway, such as through regulatory submissions (e.g. FDA or FAA) or during a public product launch.

The key principle is this: breadth across multiple concepts is powerful when it reflects invention architecture. It is dangerous when it reflects administrative convenience.

Deep Tech is different

Deep Tech companies often have a very different patent fact pattern from software, consumer products, or even many medical device companies for the following reasons:

- **Development cycles are long.** Prototyping and testing in hardware is significantly more time-intensive than in software. In our work with more than 500 venture-backed startups, including more than 250 hardware and Deep Tech companies, the best inventions often emerge years after the founding of the company.
- **Foreign protection may be critical.** Protecting inventions in commercially important markets outside the United States is often more important in Deep Tech than in software.
- **Some of the most valuable ideas may be better protected as trade secrets.** In many Deep Tech companies, the manufacturing process, operating parameters, or system know-how may be the most valuable intangible asset.

That combination means the upfront strategy — including timing, sequencing, and whether inventions should be combined or separated — can be unusually important.

The bundled conversion cliff

The core problem with omnibus filings is that they bundle decisions that should remain separate.

A year after filing, the company may discover that one idea should be converted into a full patent application, another should be kept secret, another should be delayed to preserve patent term, another needs more experimental support, and another should be abandoned. One idea may benefit from the non-publication option available in the United States, while another may require broad foreign protection.

Those are separate strategic decisions. But if those inventive concepts were bundled into one omnibus filing, the company has tied them to the same clock, publication path, conversion moment, and often the same foreign filing architecture.

Omnibus filings avoid decisions on the front end at the cost of destroying options on the back end. That bundled conversion cliff creates three major downstream problems: over-disclosure, self-prior-art, and foreign cost.

Problem 1: over-disclosure

Some ideas should not be disclosed.

For Deep Tech companies, this can be especially important. The most valuable know-how may involve manufacturing processes, calibration methods, operating windows, material handling, control parameters, failure-mode learnings, supplier methods, or process recipes. Those ideas may be difficult for competitors to reverse engineer. If so, trade secret protection may be more valuable than patent protection.

An omnibus filing can force the wrong decision. When a provisional application is relied on in a later patent application — referred to by lawyers as a “non-provisional application” — the provisional generally publishes in its entirety. This means that if multiple inventive concepts are bundled together, preserving patent rights for one idea will push the other ideas toward publication.

Disclosure has a cost — often far greater than legal fees. That cost can include giving competitors an early look at what the company believes matters, disclosing ideas that cannot be effectively protected, and publishing know-how that would have been more valuable if kept secret.

If the company does not yet know what should be patented and what should be kept secret, bundling those ideas into one filing is not comprehensive protection. It is an irreversible decision made before the company knows what should be disclosed.

Problem 2: self-prior-art

Self-prior-art is one of the most important reasons Deep Tech companies should be careful with nascent filings.

In long-cycle technology development, the company's first idea is often not the final invention. It may be an incomplete mechanism, an early architecture, a hoped-for parameter window, an untested manufacturing path, or a preliminary embodiment.

Years later, after technical failures, simulations, prototypes, materials changes, supplier constraints, regulatory input, and system integration, the company may finally understand the real invention. But if the early version was filed and published, that disclosure now sits in the prior-art landscape. The company's first approximation can become prior art against its best version.

In the worst case, the company files too early, fails to obtain meaningful claims, and then later files again when the real invention emerges — only to face its own earlier publication as prior art. The result can be two failed patent applications and a donation of the invention to the public domain. This is why filing early is not always safer. In Deep Tech, patent strategy must account for the fact that the invention may not be ready to bear the consequences of publication.

Problem 3: foreign cost and claim-control problems

Foreign protection often matters in Deep Tech. Manufacturing, energy, aviation, robotics, semiconductors, fusion, space, and other infrastructure-scale technologies frequently require protection outside the United States.

But foreign patent systems are less forgiving than the U.S. system, where companies often have more ability to adjust claim strategy over time.

An omnibus filing that bundles unrelated or weakly related inventions may create serious foreign problems, including unity-of-invention objections, divisional complexity, government and translation fees driven by excessive page and claim counts, and expensive national-phase decisions before the company knows which inventions matter.

Omnibus may reduce the number of provisional filings, but later multiply the number of foreign problems.

Strategic patience and the better investor story

The better approach is strategic patience coupled with invention-based patent applications. Strategic patience does not mean doing nothing. It means actively managing the invention pipeline until ideas are ready to become durable patent assets.

Filing invention-based patent applications at the right point in the technology development cycle avoids the two biggest dangers of premature omnibus filings. It avoids over-disclosing inventive concepts that were merely dragged along by a bundled application. And it avoids the disaster of self-prior-art, where an early, immature disclosure later blocks the company from protecting the invention that ultimately matters.

Over the long term, this approach can also significantly reduce spend. The company can file one strong patent application when the invention is ready, instead of filing one application prematurely and then another after the invention matures. It can also file fewer and shorter applications, which can dramatically reduce foreign filing costs, especially when government fees and translation fees are driven by page count and claim count.

The challenge: Deep Tech companies need an impressive IP narrative for investors

We have been helping startups tell that story for two decades. In our experience, the best IP narrative is similar to the product slide of a pitch deck: it shows both the current status and the future trajectory. The company should show the patent applications that have already been filed, the invention concepts that have been captured, the development status of those concepts, and how the pipeline is expected to increase the size and impact of the patent portfolio over time.

The message is not “we filed everything.” The better message is: “We know what we have, what we are filing, what we are watching, and what we are deliberately not publishing.”

For Deep Tech companies, that is often the more sophisticated story. It shows discipline. It shows that the company understands the difference between apparent coverage and actual protection. It shows that the company is not merely trying to create comfort through filings, but is building a portfolio around invention architecture, commercial timing, foreign strategy, and secrecy.

Jeff Schox

Founder, Schox Patent Group
Lecturer, Stanford University



SCHOX

“The best Deep Tech patent portfolios are not built by stuffing more ideas into each filing. They are built by identifying the right inventions, waiting until those inventions are ready, and protecting those inventions deeply.

The goal is not to be broad everywhere. The goal is to be broad in the right direction.”

4.5

Strategic M&A for Deep Tech

Written by: Daniel Saposnik
Partner, Technology M&A, Goodwin



Know the Deep Tech M&A you're actually in

Usually a strategic sale, not selling to a financial buyer. The company is bought for a capability the buyer cannot build or hire for fast enough. The right buyer is the strategic party for whom that capability is **load-bearing and scalable** — something that can change the buyer's roadmap, platform or product strategy. That changes the sale process. Leverage does not come from running the broadest financials-led auction. It comes from identifying the buyer with the most acute strategic need and **building conviction** that the technology is real, differentiated and capable of moving the needle.

	Regular Tech M&A	Deep Tech capability deal
What they're buying	Accretion — revenue to cross-sell, new TAM, a re-rated multiple	A capability they can't build or hire for fast enough
The buyer	Whoever clears the process	The one party who can scale it strategically
The clock	Quarters; you prepare into it	Months; often before there's a business to sell
The risk	Price and terms	The team — if it doesn't hold, value evaporates

The hardest version of the deal is when the capability is not just the technology — it is the people. Terms matter, but success depends on navigating the people, incentives and industry context that keep that capability intact.

M&A: The team is the asset — and the deal depends on keeping it intact

In Deep Tech, the technology is real, but it delivers only through the team behind it — and the capability a buyer wants holds only while that team stays intact. **The sale process can break that cohesion before a deal is even done, so the work becomes holding the team together through that process, not just executing on a locked-in cap table allocation.**

This is structural. Equity was the agreed map of how value gets shared — among investors, founders and the team. But Deep Tech talent markets have strained against that map. In acquihires, value routes around the cap table directly to contributors. In traditional acquisitions, large retention packages can do the same. Either way, settled economics are reopened. Capital structure still matters, but people management increasingly determines whether value survives.

The cap table did more than allocate ownership; it embedded the conversion of below-market cash compensation into equity upside. **Fragility emerges when payout expectations no longer match today's market price for the same talent:** the deal can no longer simply distribute proceeds according to ownership — and economics are reopened to retain the team that makes the deal work.

M&A: The team is the asset — and the deal depends on keeping it intact

Staging who is read into the deal.

Protecting the team means controlling every disclosure: who is brought inside, when, and with what information.

The rule: bring someone under the tent only when (1) they have a critical-path role in execution, or (2) you have a complete answer for their own outcome — role, level, reporting line, compensation, equity — so the conversation is a clean decision, not an anxious stretch in limbo.

In practice this stages outward — founders first, other essential contributors only as late as the deal allows, the broader organization after signing. The animating concern throughout is to keep the team together while the company is in play.

Daniel Saposnik

Partner, Technology M&A,
Goodwin



“In Deep Tech, the technology is real — but it does not stay valuable on its own. What lasts is the team that can keep advancing it. Get that team through the deal intact: the value does not transfer without them, and neither do the economics.”

4.6

Venture Debt: An Introduction

Written by: Marshall Hawks
Author, Venture Debt Deals



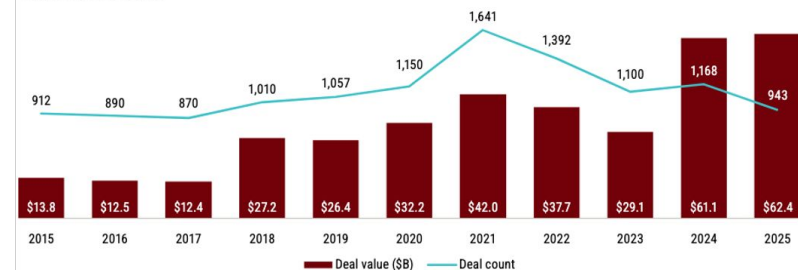
State of the venture debt market

Venture debt is runway extending capital, provided by either banks or private credit funds, that usually comes in the form of a term loan that lasts three to five years. The debt has minimal restrictions that allow it to be used to add another three to twelve months of runway on average. This kind of debt is a tool that can be used in both good and bad ways. If used appropriately, it helps minimize dilution to founders, employees and existing shareholders, which makes it an appealing option as companies scale. Particularly more capital-intensive businesses like those in the Deep Tech world.

The amount of venture debt deployed has never been greater, hitting successive all-time highs in the U.S. the past two years. Though the number of venture debt deals closed has declined from the high point of 2021, mirroring venture capital investment. That means that a large chunk of venture debt dollars deployed in the past two years have been to larger companies at scale.

High venture loan value outpaces loan count

Venture debt deal activity



PitchBook/NVCA Venture Monitor • As of December 31, 2025

The impact of SVB's failure & acquisition

Several groups of talented bankers from within SVB left during the Q2'23 to start or significantly grow innovation banking practices globally, particularly Stifel and HSBC. SVB itself, was acquired by First Citizens Bank, and after saying "I'm not quite dead yet", is back in business in the U.S., though with a smaller market share than before March of 2023.

The number of private credit firms active in the venture ecosystem has expanded significantly over the past 24 months. Partly due to SVB's failure but also driven by high interest rates and later stage companies asking for previously unseen levels of venture debt. Later stage deal sizes now regularly eclipse \$75MM, which has drawn the large private credit players into the market. In total, there has never been more potential partners in the venture lending space for founders looking for debt capital.

Most Active Venture Lenders in the U.S.

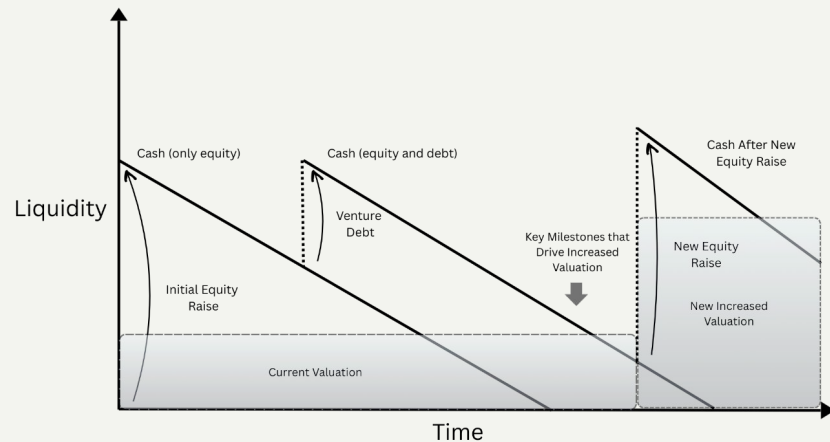
- SVB
- HSBC
- Stifel
- Comerica Bank
- Western Alliance (fka Bridge Bank)
- JPM
- PacWest (fka Square One)
- Hercules
- Trinity
- TriplePoint
- Alliance Bernstein
- WTI
- Neuberger Berman
- Sixth Street
- Golub
- ORIX
- Horizon
- Blackrock
- TPG

The potential benefit of venture debt

The whole purpose of putting venture debt in place is to help optimize (i.e. lower) the overall amount of dilution that a company needs to experience ahead of, hopefully, a positive outcome in the future..

In combination with existing equity dollars, venture debt when used appropriately, should be utilized to scale further or achieve a meaningful business milestone(s) before the next venture capital fundraise. Or for later stage companies, venture debt may be used as a bridge to cash flow positive operations, M&A or IPO.

The effect is to hopefully raise the next venture capital round at a higher valuation that would have otherwise been possible or to completely displace the need for a last late stage equity round. Helping to maintain higher levels of ownership for founders, employees and existing shareholders.



What to expect during a venture debt fundraise

The typical venture debt fundraise will take between three and five months. Lenders evaluate a lot of the same diligence items used when raising venture capital, but generally the level of depth will be a step function lower. In addition to reviewing diligence items and multiple conversations directly with a company, lenders will also want to talk with several board members as well. Most often, lenders want to talk with the board member that led the last round and the board member with the largest ownership stake, if not the same firm.

Diligence items unique to Deep Tech

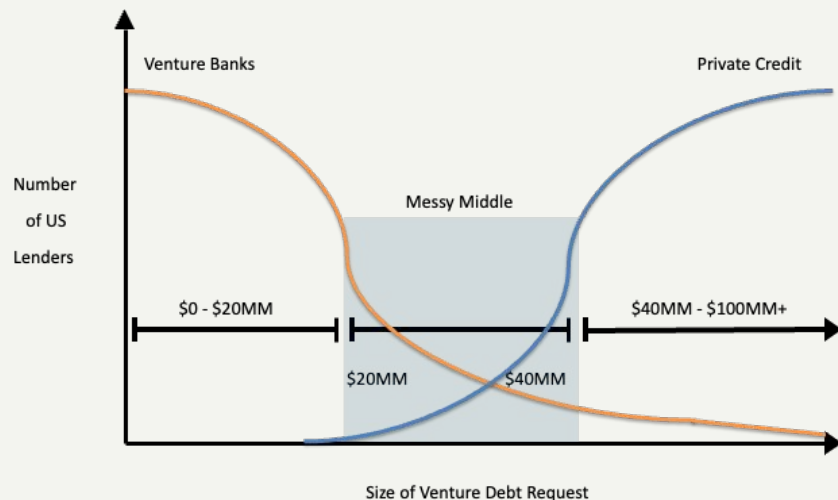
- Detail on manufacturing process and supply chain
- Breakdown of full bill of materials (BOM)
- Location of all physical assets or inventory
- Launch manifests, if applicable
- Evaluating IP and its defensibility
- Unique insurance policies in place (i.e. launch insurance) and their potential assignability

Sample Lender Diligence List

- Company overview or investment pitch deck, used during most recent equity fundraise
- Annual and monthly historical financials going back two years, if available
- Monthly or quarterly projections going out at least twelve months, ideally eighteen to twenty-four months, including both income statement and balance sheet
- A/R, if generating revenue, and A/P agings from prior three months
- Detailed cap table, including preferred shareholder and founder level ownership detail
- Most recent Articles of Incorporation
- Most recent 409a Valuation

The right amount of venture debt

For transactions below \$20MM, the amount lenders, usually venture banks, are willing to provide a company will be a percentage of the most recent equity round. 25%-40% is the normal range a company will see from lenders, assuming they are comfortable providing capital. As the debt need increases to \$40MM or more, where private credit firms are more active, transaction sizing will shift to a percentage of revenue, ARR or similar metric. Most later stage lenders would like leverage to remain at or below 1:1 to revenue or ARR. If borrowing between \$20MM and \$40MM, a company will find less venture banks and private credit firms active, because it is a bit outside the sweet spot of either type of firm. It may be worth considering having a bank and private credit fund partner together to get the right debt capacity for the company.



The economic cost of venture debt

The cost of this type of debt capital can be broken into three buckets. Interest & Fees, Warrant and Expenses. Interest is the amount the company will pay on amounts borrowed, generally tied to some underlying index, like WSJ Prime. Most venture debt structures have an upfront fee (paid at close of the deal), a prepayment fee (due if paid debt is paid off early), and a back-end fee (paid at final maturity of the debt). Warrants will be a part of any venture debt transaction and will vary in size depending on the profile of the individual company, but generally warrants will equate to less than 1% of fully-diluted ownership.

Like venture capital, the expenses of the lender are paid, unfortunately, by the company. This is primarily going to be legal costs from outside counsel. It is worth discussing lender expenses up front and ideally agreeing to a reasonable fee cap from the start.

Outlined below is the relative cost of capital by stage of company and size of the debt request, as of the 1st half of 2026:

Stage of Company	Seed	Early Stage	Mid Stage	Later Stage
Size of Debt	<\$3.5M	Up to \$15M	\$15M-\$35M	\$35M+
Lenders	A few funds and 1-2 banks	All banks and occasionally funds	Most banks and most funds	All funds and occasionally banks
Covenants	No	Occasionally	Likely	Yes
Milestones	Possible	Possible	Possible	Possible
Interest Rate	WSJ Prime + 1.0%-2.5%	WSJ Prime + 0.5%-1.5%	WSJ Prime + 0.5%-1.5%	WSJ Prime + 3.0%-6.0%
All Fees (% of Debt)	0.25%-0.50%	0%-0.25%	0.25%-0.50%	0.50%-1.25%
Warrants (FDO)	25-75bps	10-30bps	10-30bps	15-75bps

Nuances specific to Deep Tech companies

Increasingly, venture banks and private credit funds have been getting comfortable both banking and providing capital to Deep Tech companies. That increasing interest has grown as venture capital dollars invested in Deep Tech have ramped (see rest of this entire report) and with western governments taking a more collaborative stance with these types of companies as well. Particularly in the aerospace and defense tech verticals.

Deep Tech company's may be able to find even more bespoke types of financing for their unique needs, beyond even what venture debt has to offer. A handful of lenders in the innovation economy are willing to consider Hardware As A Service (HaaS) style financing structures. Essentially, a lender will look to provide financing that will be based on purchase orders or signed contracts, that covers the upfront inventory or BOM costs, with the payback period tied to (1) the useful life of the hardware or (2) length of contact with the underlying customer. This type of financing may allow for early stage companies to access larger amounts of leverage beyond the 25%-40% of the last equity round mentioned previously. HaaS structures also typically are a bit less expensive than regular venture debt, given the requirement for purchase orders or contracts up front and the relatively short repayment period.

Marshall Hawks

Author of Venture Debt Deals,
Twenty-year venture lender



venturedebtdeals.com

4.7

Loan Structures for Deep Tech

Written by: Matt Trotter
Managing Director, Venture Banking, Stifel Bank

From proof of concept in 2025 to proof of scale in 2026

Pilot → Production

Demonstrating the technology is no longer enough

Companies must win AND deliver on large contracts The risk profile has shifted from "does it work?" to "can the team execute at scale?"

Increase in Available Capital

Deep Tech valuations don't follow traditional SaaS logic

Growth investors look for proven technology, real-world deployability, a large total addressable market, and customers ready to buy at scale

Revenue multiples are not the primary input for valuations

Appearance of Growth-Stage Investors

The Deep Tech investor base is expanding

Firms that historically avoided the sector are now actively participating

Later-stage capital is showing up earlier than ever

More capital is flowing into Deep Tech than ever

Loan structures for Deep Tech

Facility Type	Venture Debt	Working Capital Line of Credit	Hardware as a Service	Project Financing
Purpose	Runway extension, growth with limited dilution	Bridge cash flow gaps	Finance upfront capex using long-term contract payments	Finance infrastructure by leveraging contracted cash flows through a bankruptcy-remote SPV
Commitment Amount	Bank Financing: Up to \$15M. Typically 25-30% of most recent financing round. Debt Fund: Up to \$100M. Much higher cost than bank financing.	Up to \$50M	Up to \$50M	\$35M+ given complexity of structure and legal. Only makes sense for larger facilities
Borrowing Formula	Non-formula	Up to 80% advance rate on AR Up to 50% on POs	Up to 100% advance rate on capex backed by longer term contract	Discounted cash flow on future payments
Draw Period	12-18 months	12-36 months	12-18 months	Funding based on milestones
Repayment Period	36-48 months, with ~12 months interest only	Based on receivables cycle	24-36 months	Up to 5 years
Warrants	Yes	No	Sometimes	No
Covenants	Typically none	Yes	Sometimes	Yes

Venture Debt Facilities

Who Is This Best For?

Venture debt facilities are an excellent choice for companies that:

- Have raised a Series A or a substantial seed round of at least \$5M
- Are in periods of intense R&D or early scaling
- Do not have defined working capital needs yet but would like flexible capital to help achieve key milestones

Founders Should...

Know investors. Lender underwriting starts with your cap table. The quality of your backers is a financing asset.

Start before the runway is short. Lenders want 12–18 months of cash remaining. Approaching from strength opens doors.

Know milestones before walking in. Be able to articulate clearly where the capital will take you.

Have a Plan A and a Plan B. Show the Plan A forecast, but be prepared to discuss what actions you can take if things aren't going according to plan.

Know your debt provider. The capital is only as valuable as the reputation and track record of the debt provider. Do reference checks and leverage your board to understand who you are entering a financial relationship with.

Working Capital Line of Credit

Who Is This Best For?

Deep Tech companies that:

- Sell hardware outright
- Receive full payment upon shipment
- Have an ongoing but smaller maintenance or software revenue stream

A revolving line of credit is the primary instrument for managing the working capital gap for these companies.

Founders Should...

Know customers. Enterprise and government customers with strong payment histories are a financing asset.

Negotiate terms with working capital in mind. Better terms with your contract manufacturer and customers mean less debt needed to bridge the gap.

Get inventory and receivables tracking in order early.

Clean, auditable visibility is a prerequisite, not a nice-to-have.

Show a growing, predictable order flow. Irregular or lumpy revenue makes lenders nervous. Consistent pipeline signals a stable, scalable facility is warranted.

Build financial infrastructure needing credit. Revolving facilities require regular reporting, and lenders want organization early.

HaaS Financing

Who Is This Best For?

Companies that:

- Sell in a subscription based revenue model as opposed to a one-time capex sale.
- See upside-down cash flow for a year or more on each deal

Founders Should...

Understand risk. The quality of your backers, the strength of your team, and your IP position are all part of underwriting.

Know your customers and contracts. Lenders scrutinize contract lengths, cancellation policies, and payment terms. Structure contracts with financing in mind from day one.

Understand what your hardware is worth. Redeployable hardware gives lenders a recovery path. Highly customized hardware does not.

Build debt cost into your gross margin from day one. Ensure you are earning appropriate unit economics with each contract.

Project Financing Facilities

Who Is This Best For?

This is not an early-stage instrument and is best for companies:

- That have moved past the pilot stage and are winning large, defined contracts
- Where the technology has been proven
- Facing execution challenges, for example fulfilling a contract that requires significant upfront expenditure before customer payments begin

Founders Should...

Know customer credit profiles. A Fortune 500 or government agency on the other side of a contract starts a different financing conversation than a startup customer.

Understand how cancellable contracts are. Lenders assess mission criticality. The harder it is to cancel, the stronger your borrowing position.

Structure contracts with financing in mind. Cancellation rights, SLAs, and payment triggers all help determine whether a lender will back you.

Tie precise CAPEX needs to milestones. Vague capital requirements signal operational immaturity. Lenders fund specificity, not approximations.

Prove experience. Prior execution on contracts of similar complexity is one of the strongest signals a project finance lender can receive.

Matt Trotter

Managing Director,
Venture Banking, Stifel Bank



STIFEL | VENTURE BANKING

"Deep Tech is fundamentally different from software when it comes to scaling. At some point, **debt becomes more important than equity**—and most founders don't see that transition coming.

By the time you're staring down a \$30M CapEx requirement to fulfill a contract, you don't have the revenue to raise a round, and you don't have time to go find a lender. **You need to know your financing options before the dog catches the bus.**

That means understanding what lending products exist, what lenders look for, and how to structure your contracts. CFOs and founders who think about this early have a massive advantage over those who don't."

4.8

Equipment Financing for Deep Tech

Interview with Brian Geraghty
Managing Director, Trinity Capital Europe



Brian Geraghty

Managing Director, Trinity Capital

What is Equipment Financing?

Equipment financing is a form of capital that allows a company to acquire machinery, hardware, or other physical assets while keeping precious equity dollars from being sunk into CapEx spend.

The equipment itself acts as the collateral, which means there is no lien over IP, bank accounts etc., leaving a company the ultimate flexibility should they decide to complement the equipment financing with other types of debt at any point in the future.

How does it work?

We structure our equipment facilities with flexibility where a company can draw down on the funds over a 12-18 month period alongside equipment delivery in that timeframe. It is structured as financing, rather than a true lease, which provides many more benefits to the company.

For example; the company retains ownership of the assets on their balance sheet providing the tax benefit from the depreciation, and the company also doesn't have to buy the equipment back at some arbitrary price at the end of the lease.

The total cost is defined on day 1 with a target all-in IRR of low to mid-teens and a term length of anywhere from 24 to 60 months.

What do you look for when evaluating a business?

We want to understand the Business (tech risk), and financial performance – so revenue, growth rate, unit economics burn, runway etc.

We want to understand what the assets are, how standard are they, and how much can they be used across different industries and how mission critical they are to the company.

We want to understand our debt to the assets (LTV), and what the secondary value is of those assets.

We want to understand investor support and what the equity picture and go forward strategy looks like.

Brian Geraghty

Managing Director, Trinity Capital

What is Equipment Financing for?

At its core, equipment finance is about leveraging your capital assets with non-dilutive funding to save on equity dilution and help extend runway. Whether that's for a machine, a production line, a piece of lab equipment, or a GPU cluster powering your AI workload — if it generates revenue or enables revenue, and it holds tangible value, it's exactly what this product is designed for. You get the asset working for the business while preserving runway.

We also do Hardware as a Service. This works really well for Robotics, Drone or Energy companies, that more assemble rather than manufacture their products and usually sell these as opex options to their clients on a 3- or 5-year deal. We can fund a combination of the value of those contracts and the value of hardware.

What is it not for?

We describe our product as just-in-time financing because we fund alongside equipment delivery. I have conversations regularly with founders who want a facility today for equipment that won't arrive for 18 months or two years.

I understand that they're planning ahead, but because we're secured solely on the asset we're funding — not your IP, equity, or cash — we can only lend once that asset is physically in your facility. Because of this, we don't have any collateral until the asset is delivered.

What do most people get wrong?

Most founders come to us thinking equipment finance is just another flavour of venture debt. It isn't — and that's an important distinction.

Venture debt is typically tied to your equity story, your burn rate, your last round. Equipment finance is tied to the asset itself. That said, the two can complement each other well, and we actively co-exist alongside venture and other debt providers.

The management teams we work with think about the whole capital structure and equipment finance is such a pivotal part of that for Deep Tech companies.

Diversified across investment type, transaction size, industry and geography

Tech Lending

Senior secured term loans to institutionally backed technology companies

Equipment Finance

Financing mission-critical manufacturing equipment and hard assets

Healthcare & Life Sciences

Senior secured term loans for growth capital to commercial stage life sciences companies

Asset Based Lending

Asset-based lending to bankruptcy-remote SPVs

Sponsor Finance

Enterprise value secured term loans to private equity-backed growth companies

Enterprise value secured term loans to private equity-backed growth companies

Platform transaction size up to:

\$100M

Brian Geraghty

Managing Director, Trinity
Capital



"Equity is your most expensive capital. Treat it that way. Use it to fund R&D, to hire world-class people, to build the product — the things that create enterprise value. Fund your equipment and capex with equipment specific debt."

The all-in cost of equipment financing will almost always be lower than the dilution you'd take by using equity to buy machinery and physical assets."

4.9

Asset-Backed Financing for Deep Tech

Written by: Sam Cash
Director of Ventures, ATEL Capital Group



ATEL
Capital Group®



Non-dilutive capital that scales with deployment

What is Asset-Backed Financing (ABF)?

Non-dilutive capital secured against a company's hard assets — equipment, infrastructure, and deployed hardware — rather than equity or future revenue.

When do founders use it?

- After an equity raise, when the company is capital-intensive and has purchased or plans to purchase equipment.
- Does not want to use equity dollars to pay for equipment — freeing them up to meet business milestones.
- Reduces dilution while extending runway to help get to a higher valuation / reach milestones.

What can it be used for?

- We can fund highly customized equipment if the company has ~12 months of runway and strong institutional investors.
- Fund up to 100% of invoice cost for equipment purchased in the last ~12 months. Lender secured by assets alone — not a general lien on the company.

Why founders partner with private credit firms like ATEL Ventures

Flexibility

- No covenants — no financial maintenance requirements
- Custom structures tailored to the deal
- Flexible drawdown as you deploy equipment

Speed & Certainty

- Fast IC process + rapid execution — no drawn-out diligence

Built for Deep Tech

- Understands hardware, infrastructure, and deployment risk
- Scales across multiple financing rounds as the company grows
- Can fund equipment up to 100% of invoice cost if purchased in the last 12 months

Sam Cash

Director of Ventures,
ATEL Capital Group



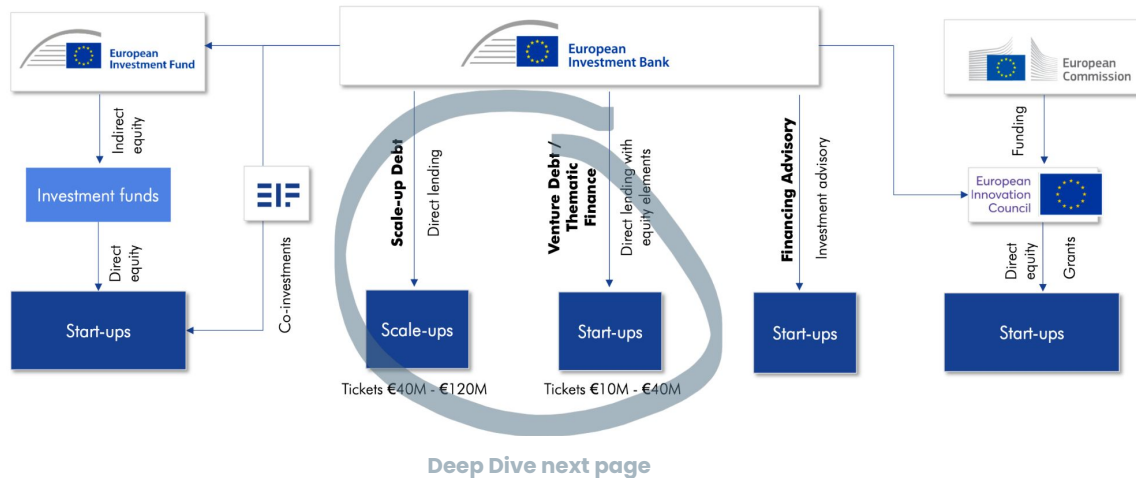
“Private credit is built for speed and flexibility—especially in Deep Tech where banks often can’t get comfortable. Banks focus on low-risk, standardized lending with tighter constraints, while private credit structures around assets and growth. It’s typically more expensive, but founders gain certainty, customization, and a partner that can move at the pace of the business.”

4.10

Public Financing for Deep Tech

The EIB Group offers a wide range of services for founders and GPs

EIB Group: Range of Instruments to Finance Innovation



The European Investment Bank (EIB), established in 1958 and owned by the EU Member States, is the European Union's long-term financing institution.

Together with the European Investment Fund (EIF), the EIB Group provides a broad range of financing instruments—from venture capital and guarantees to venture debt and growth finance—helping innovative European start-ups and scale-ups access the capital they need to grow and compete globally.

EIB Venture Debt facilities are important tools for scaling European companies

EIB Venture Debt & EIB Scale-up Venture Debt: Key Terms

Instrument

Legal form of loan, although taking equity risk

Ticket

VD: €10m – 40m
Scale-up: €40m – [120]m

Full commitment upfront

gradual disbursements in tranches subject to milestones – de-risking

Availability

Up to 36 months
(hence long commitment period in support of the tech champions)

Maturity

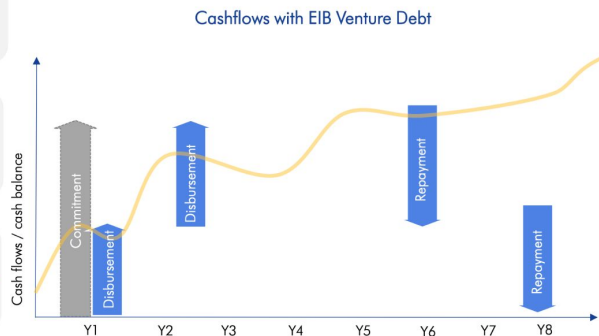
5-6 years from disbursement, to allow exit via sale / equity raise / IPO

Repayment

Typically bullet or convertibility option

Pricing

Interest + equity kicker (warrants, profit participation or synthetic convertibility option, royalties, etc)



Companies seeking EIB Venture Debt financing generally need a substantial operational presence in Europe, such as significant R&D activities, employment, or investment projects within the EU. While the ultimate parent company does not necessarily have to be European, the financed activities must generate clear economic and innovation benefits for Europe..

European non-dilutive programs

#	Programme	State/Body	Description	Size	Funding Type	Stage
1	EIC Accelerator	EU Commission	Flagship EU instrument for Deep Tech companies commercialising and scaling high-risk innovations; use the grant-only path if you want to stay non-dilutive.	Grant component below €2.5m; investment component €1m–€10m is optional but dilutive.	Grant-only or blended finance	Seed to growth; TRL 6–8
2	EIC Transition	EU Commission	Funds maturation and validation of research results toward first commercial applications; strong fit for spinouts bridging lab proof to venture-ready asset.	Up to €2.5m grant; booster grant up to €50k	Grant	Spinout / pre-seed / seed; TRL 4 to 5/6
3	EIC Pathfinder	EU Commission	Early-stage frontier research for breakthrough Deep Tech; best for very high-risk technical bets before productization.	Up to €4m grant, higher if justified; booster grant up to €50k	Grant	Research / pre-company / spinout formation; TRL 1–4
4	Eurostars	National funding bodies + EU Commission	Cross-border R&D programme for innovative SMEs/startups; especially useful where national co-funding is generous and founders can structure a focused international technical consortium.	Country-dependent; often ~€100k–€1m+ per partner; funding rates can reach 50–80% in some countries	Grant or soft-loan	Seed to Series A; collaborative R&D
5	Innovation Fund	EU Commission / CINEA	Large EU climate-tech deployment fund for FOAK and net-zero industrial projects in energy, storage, CCUS, mobility and manufacturing.	Usually multi-million; regular grants cover up to 60% of relevant costs	Grant	Pilot / FOAK / first commercial plant
6	European Defence Fund	EU Commission	Major collaborative defence R&D programme across AI, cyber, space, drones, quantum-secure networks and other strategic technologies.	Topic budgets commonly ~€10m–€50m+	Grant / R&D contract	Seed to scale-up, but usually consortium-led
7	NATO DIANA	NATO	Dual-use accelerator with non-dilutive contractual funding plus access to accelerator sites, test centres, end users and NATO pathways to adoption.	€100k Phase I + up to €300k Phase II	Non-dilutive contract / grant-like accelerator funding	Pre-seed to seed; dual-use validation
8	ESA Business Incubation Centres	ESA	Equity-free incubation for space and space-enabled startups; useful for EO, satcom, GNSS, robotics, materials and dual-use space applications.	Typically €50k–€60k equity-free, depending on ESA BIC information/update	Grant + incubation	Idea / pre-seed / spinout

European National non-dilutive programs

#	Programme	State/Body	Description	Size	Funding Type	Stage
1	ZIM	Germany — Federal Ministry for Economic Affairs and Energy	Germany's flagship technology-neutral SME R&D support scheme; highly practical for applied Deep Tech development, often with industrial or research partners.	Cooperation projects: funding up to 55% of eligible costs; official example shows up to €380k per company	Grant	Seed to growth; applied R&D
2	EXIST Research Transfer	Germany — BMW / EXIST / ESF co-financed	Research-commercialisation programme for complex, risky, research-based spinouts coming out of universities and research institutes.	Phase I usually <€2.5m total requested; Phase II grant up to €180k	Grant	Academic spinout / pre-seed
3	i-Lab	France — French State / Bpifrance	Prestigious Deep Tech creation competition for startups emerging from research; strong signalling value in France.	Grant up to €600k	Grant	Academic spinout / pre-seed / seed
4	Bourse French Tech Emergence	France — Bpifrance	Very early Deep Tech emergence grant for founders shaping a science-based startup before it is fully formed.	Grant up to €90k	Grant	Pre-company / pre-seed
5	Contracts for Innovation	UK — Innovate UK / UK Government	SBRI-style procurement competitions paying companies to solve public-sector problems; often one of the best non-dilutive routes for UK dual-use, robotics, sensing and industrial tech.	Competition-specific; recent live/open examples range from multi-hundred-thousand to multi-million total challenge budgets	Procurement contract	Seed to pilot / demo
6	Innovate UK Innovation Loans	UK — Innovate UK / UKRI	Commercialisation loans for late-stage innovation where founders want to avoid equity dilution and already have credible technical/commercial traction.	£100k–£5m	Soft loan	Seed+ / Series A / pre-commercial scale-up
7	Defence Innovation Loans	UK — Innovate UK / Ministry of Defence	Defence-focused extension of the innovation-loan model, useful for UK dual-use and defence tech that is near commercialisation.	Up to 100% of eligible project costs under the loan structure	Soft loan	Seed+ / Series A / transition to market
8	Innovation Credit	Netherlands — RVO / Ministry of Economic Affairs	Dutch recoverable financing for high-risk technical or clinical development; especially relevant for hardware, AI, medtech and therapeutics.	Usually finances up to 45% of project costs; up to 50% for SMEs with collaboration	Soft loan / repayable innovation credit	Seed to Series A; high-risk development
9	MIT R&D Collaboration Projects	Netherlands — RVO / MIT	SME collaboration subsidy for product/process/service development, including AI-themed windows when opened.	35% of eligible costs	Grant	Seed to early growth; collaborative R&D
10	Deep Tech Accelerator	Finland — Business Finland	Finland's dedicated Deep Tech startup instrument for research-based companies commercialising recent scientific know-how.	Recent 2025 cohort averaged roughly €400k per company; company-specific award sizes vary	Grant	Spinout / pre-seed / seed
11	Start-up Innovation Projects	Switzerland — Innosuisse	Science-based pre-market support for Swiss startups preparing first market entry without requiring a research partner.	Innosuisse covers up to 70% of direct project costs	Grant	Pre-seed / seed / pre-market entry
12	Swiss Accelerator	Switzerland — Innosuisse	Larger-scale Swiss transition instrument for market-established startups/SMEs with near-market, high-disruption innovations.	Innosuisse contribution up to CHF 2.5m, covering max 70% of eligible costs	Grant	Seed+ / Series A / scale-up

European equity programs

#	Programme	State/Body	Description	Funding Type	Stage
1	EIC Fund	EU	EU innovation VC fund for Deep Tech startups	Direct equity (co-invest)	~€0.5–15M per company
2	Bpifrance	France	State VC bank investing via funds and directly in startups	Direct & fund-of-funds	Varies widely (often majority stake ≤20%)
3	Scale-up Direct – KfW	Germany	Co-investment SPV with VC funds to boost German scaleups	Direct co-investment	€10–50M per company
4	Invest-NL Direct Financing	Netherlands	NL development bank financing (equity/loans) for innovation	Direct equity / hybrid	€5–50M (typically 50% of round)
5	Tesi	Finland	State co-investor taking minority stakes with VCs in Finnish startups	Direct co-investment	~€2–10M (venture); €10–50M (growth)
6	EIFO	Denmark	Denmark's investment fund: ~€300M/year (⅔ via funds, ⅓ direct)	Fund-of-funds & Direct	Varied (largest Danish VC investor)
7	SmartCap Green Fund	Estonia	Public fund backing VC funds + direct greentech startups	Fund-of-funds & Direct	Via funds (typ. seed/early VC); direct deals possible
8	Patient Capital Funds – BBB	UK	£2.5bn programme investing in UK VC/growth funds; co-invests in growth companies	Fund-of-funds & Co-invest	Fund cornerstone commitments; co-invest into portfolio rounds
9	Angel CoFund – BBB	UK	Invests £0.1–1M alongside angel syndicates in UK early-stage companies	Co-investment	£100k–1M per deal
10	CDP Venture Capital	Italy	Italy's sovereign VC manager (€4.9B AuM) investing via funds and direct vehicles	Fund-of-funds (and Direct)	Via funds (e.g. Fondo Innovazione invests €1–10M); direct may be larger

U.S. non-dilutive programs

#	Programme	State/Body	Description	Size	Funding Type	Stage
1	America's Seed Fund	National Science Foundation	Top-tier U.S. non-dilutive source for commercial Deep Tech across most science and engineering domains; widely used by venture-scale hard-tech founders before institutional rounds.	Phase I up to \$305k; Phase II up to \$1.25m; overall programme messaging often says startups can receive up to \$2m	Grant	Pre-seed / seed
2	DOE SBIR/STTR	DOE	Core U.S. programme for energy, climate, advanced manufacturing, HPC, materials, grid and related Deep Tech.	Typical Phase I around \$200k; typical Phase II around \$1.1m	Grant	Pre-seed / seed
3	NIH SBIR/STTR	National Institutes of Health	Main U.S. non-dilutive pathway for biotech platforms, synthetic biology, diagnostics, devices and therapeutics.	Phase I \$323,090; Phase II \$2,153,927; CRP pilot up to \$4,191,495	Grant	Pre-seed to Series A for health/biotech
4	DARPA SBIR/STTR	DARPA	High-prestige defence Deep Tech funding in AI, autonomy, semis, biotech, photonics, materials and dual-use systems.	Phase I typically \$250k over ~6 months; Phase II typically \$1.8m over 24–36 months; follow-on enhancement up to \$500k matching	Grant / contract	Seed to transition
5	NASA SBIR/STTR	NASA	Excellent non-dilutive option for space, autonomy, AI processors, advanced materials, sensing and dual-use aerospace technologies.	Phase I up to \$150k; current Phase II solicitations show up to \$1.275m for SBIR Phase II and up to \$850k in other programme materials	Grant / contract	Pre-seed / seed / prototype
6	NASA SBIR Ignite	NASA	Faster-commercialisation NASA track for early-stage technologies with strong market pull beyond NASA missions.	Phase I up to \$150k; Phase II up to \$850k	Grant / contract	Pre-seed / seed
7	AFWERX STRATFI / TACFI	Air Force / AFWERX	One of the strongest U.S. transition-capital tools for defence and space startups after Phase II, designed to bridge the valley of death.	TACFI: \$375k–\$2m; STRATFI: \$3m–\$15m	Matching grant / contract	Post-Phase II / pilot / procurement transition
8	ARPA-E OPEN	ARPA-E / DOE	Transformational energy-tech R&D programme for breakthrough concepts across the energy system; especially suited to radical hardware and platform bets.	Awards may vary between \$250k and \$10m	Grant / cooperative agreement	Seed to scale-up, depending on scope
9	Title 17 Clean Energy Financing Program	DOE Loan Programs Office	Large-scale project finance/guarantees for innovative clean-energy deployment; relevant mainly once a company is building first commercial plants or infrastructure.	Most guarantees are over \$100m; DOE can support up to 80% of eligible project costs under Title XVII rules	Loan guarantee / direct loan	First commercial plant / scale-up / infrastructure
10	CalSEED	California – California Energy Commission / EPIC / New Energy Nexus	Earliest-stage California climate-tech grants designed specifically to back fragile concepts before conventional investors will.	Historic awards shown at \$150k concept stage and \$450k–\$500k later-stage grants	Grant	Idea / pre-seed / seed

U.S. State non-dilutive programs

#	Programme	State/Body	Description	Size	Funding Type	Stage
1	CalTestBed	California — California Energy Commission / EPIC / New Energy Nexus	Voucher programme that pays for access to UC and Berkeley Lab testing infrastructure; powerful for hardware de-risking without equity.	Program has awarded \$16.5m in vouchers to 63 startups since 2021; individual voucher sizes vary	Voucher / in-kind testing support	Seed to pilot / validation
2	Advanced Industries Proof of Concept Grant	Colorado — OEDIT	State grant for research with commercial application in Colorado advanced industries; useful for technical proof before federal grants or larger customer pilots.	Typically up to \$150k	Grant	Pre-seed / proof of concept
3	Advanced Industries Early-Stage Capital and Retention Grant	Colorado — OEDIT	One of the stronger U.S. state programmes for early commercialisation of advanced-industry technologies.	Up to \$250k	Grant	Seed / early commercialisation
4	InnovateMass	Massachusetts — MassCEC	Demonstration funding for new clean-energy and climatetech solutions with commercial potential in Massachusetts.	Up to \$350k	Grant	Seed to pilot / first field demo
5	CriticalMass	Massachusetts — MassCEC	Deployment-scale climatetech grant for startups ready to prove a near-commercial solution in the field.	Up to \$1m	Grant	Seed+ / Series A / deployment-ready demo
6	AmplifyMass	Massachusetts — MassCEC	Cost-share “adder” programme for companies or academic groups pursuing major federal/non-federal prime awards such as ARPA-E, NSF or DOE.	Up to \$300k for projects tied to prime awards	Grant / cost-share support	Seed to growth

4.11

LP Perspective on Deep Tech

Written by Selma El Ouardi
Investor Relations, Hello Tomorrow



**hello
tomorrow**

LPs invest in Deep Tech primarily for four reasons



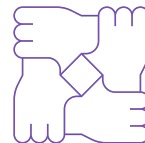
Financial Returns

Deep Tech ventures offer asymmetric upside potential with significant defensibility through IP and hard science.



Innovation Access

Exposure to cutting-edge technological shifts that could disrupt existing industries and create entirely new markets.



Strategic Alignment

Aligning capital with long-term corporate missions, sustainability goals, or industry-specific transformations.

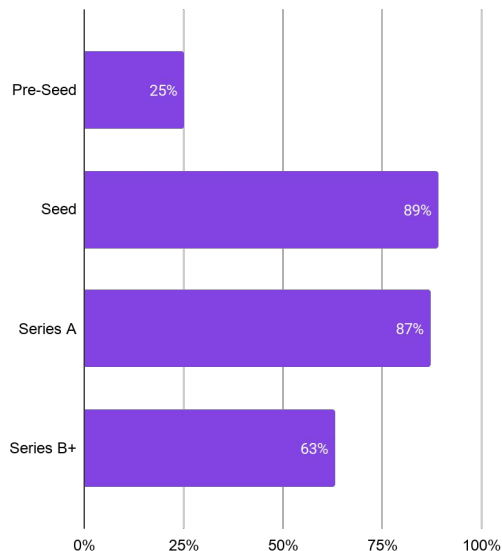


Geopolitical & sovereignty

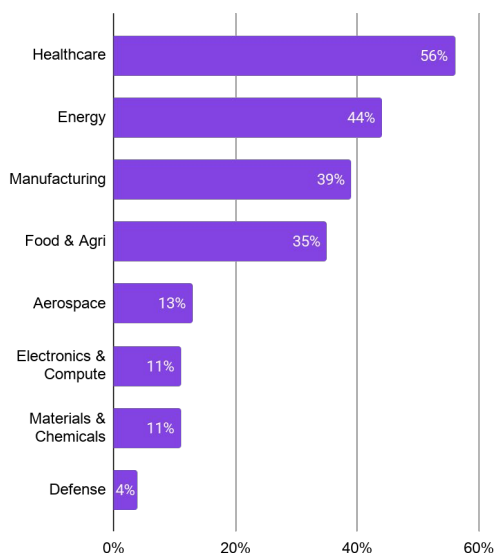
Supporting regional competitiveness and ensuring autonomy in critical technological supply chains and security.

Survey: 48 Deep Tech funds closed in 2025, raising \$4.6B in capital

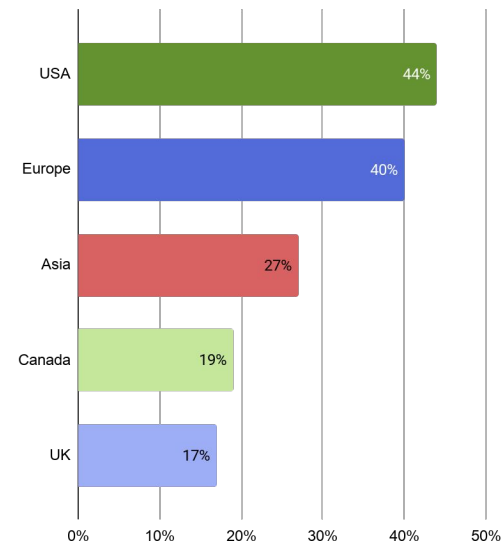
1. Investment Stage



2. Verticals



3. Geography: Where they invest



How LPs expect to evolve their Deep Tech involvement

LP appetite for Deep Tech is strong, but the next phase of allocation will be defined less by headline enthusiasm and more by structure.



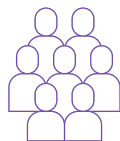
More structured exposure

LPs expect Deep Tech involvement to become more deliberate, with clearer allocation strategies rather than opportunistic participation.



More active participation

Some LPs expect to move closer to companies through co-investments, direct exposure, or more selective strategic engagement.



Specialist funds remain central

Even where LPs increase exposure, specialist GPs remain the core access route because they provide sourcing, technical underwriting, and access to high-quality opportunities.

LP type plays a meaningful role in Deep Tech capital allocation



Sovereign Wealth Funds & Fund-of-Funds

More likely core allocators

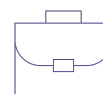
- More likely to treat Deep Tech as a core allocation
- Long-term horizon and thematic conviction
- Higher tolerance for early-stage and strategic risk



Family offices

More heterogeneous

- Wide variation in exposure and approach
- Mix of core, thematic, and opportunistic strategies
- Driven by preferences, risk tolerance, and flexibility



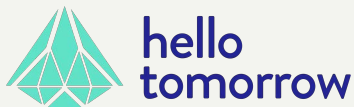
Corporate investors

More thematic

- Focus on specific Deep Tech areas
- Strong alignment with strategic priorities
- More selective and use-case driven

Selma El Ouardi

Investor Relations, Hello Tomorrow



"I launched the LP Network at Hello Tomorrow in 2023, at a time when fundraising for Deep Tech GPs was particularly challenging. My ambition was to democratize access to Deep Tech and create a trusted space where different types of LPs could meet, exchange perspectives, and learn from one another.

Something powerful happens when a family office sits down with an institutional investor, when a corporate meets a high-net-worth individual, or when investors with different mandates compare notes. These conversations broaden perspectives, build conviction, and ultimately help channel more capital into venture, supporting the next generation of Deep Tech champions.

Today, I am proud to see that we have created more than a network: we have built a space where LPs can connect, collaborate, and take the ecosystem one step further."

4.12

Website Design for Deep Tech

Written by: Li Zeng

How to tell a simple story of *complex technology*



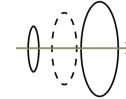
Research overview

- 150 Deep Tech landing pages analyzed
- Vertical: AI infrastructure, aerospace, semiconductors, defense, energy, robotics



Research question

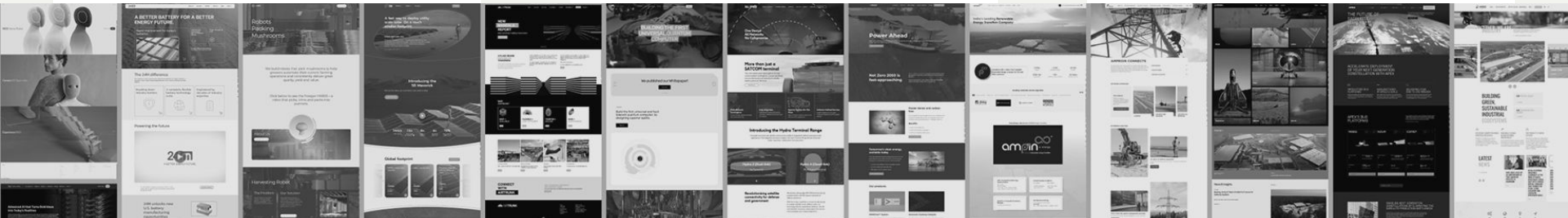
How do Deep Tech companies explain complex, unfamiliar technology with clarity and credibility for their online presence?



Key challenges

Deep Tech startups must address:

- highly technical products
- long, high-risk buying cycles
- multiple stakeholders (engineers, executives, governments)
- unfamiliar product categories



Deep Tech website sells *credibility*

Most SaaS websites
optimize for *conversion*

- sign up
- start free trial
- book demo

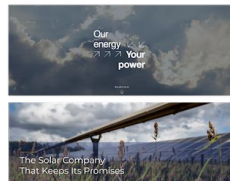
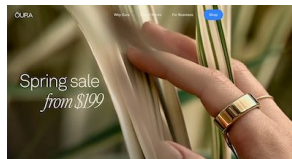
Book demo →

Sign up +

Start free trial

Deep Tech websites answer
a different question:

“Should this company exist?”



Deep Tech website sells *credibility*

Common credibility signals:

- press coverage
- institutional partnerships
- government / defense relationships
- company origin stories
- manufacturing and facility imagery
- deployed infrastructure

The World's First
ASIC Processor
for Analytics

Hardware
Designed for
Production
at Scale

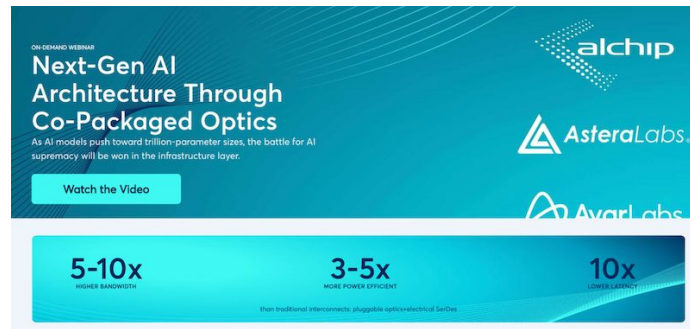
Your Partner in
Reaching Net-Zero

One Device
All Networks
No Compromise

Deep Tech website sells *credibility*

Proof replaces claims: after the hero section, most pages move quickly to a credibility pivot

- system diagrams
- benchmark charts
- facility imagery
- deployed-at-scale metrics



Founded in 2016, India's First Complete Renewable Energy company for C&I and Utility customers.

5 GWp
Portfolio

\$700+ Mn
Equity Raised

2 GW
Late-Stage Pipeline

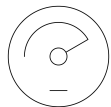
100+
Customers across 10 sectors

25 GW
By 2030

23 States
Pan India Presence

The *design playbook* for Deep Tech startups

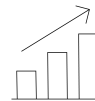
Messaging themes:



Performance (throughput, latency)



Efficiency (power, cost, footprint)



Scale (utility-scale, sovereign-scale)



Reliability (mission-ready, proven)



Control (deploy, own, reconfigure)



Economics (lower TCO, fewer racks)

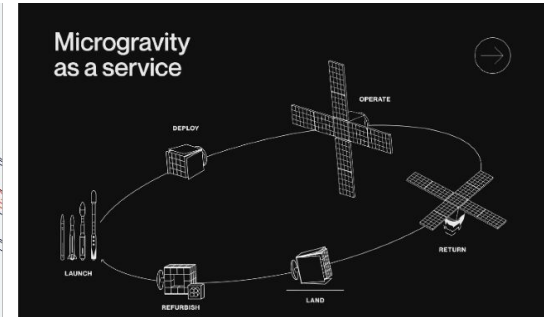
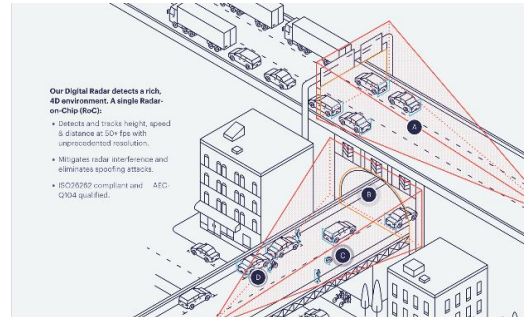
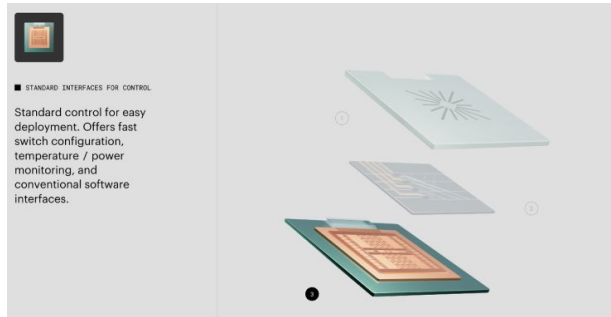
The design playbook for Deep Tech startups

Design patterns:

- large typography and whitespace
- modular content blocks
- a single system / architecture diagram
- real hardware imagery
- full-bleed visuals separating sections

Key Takeaways

Deep Tech websites are not designed for *speed*. They are designed to earn *trust* in complex technology.



Li Zeng

Founder, Studio Salt



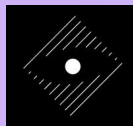
 Studio Salt

“Deep Tech websites are not designed for *speed*. They are designed to earn *trust* in complex technology.”

4.13

Event & Media for Deep Tech

Written by: Andrew Cote
Founder, Deep Tech Week, Hyperstition





Driving the Hype Cycle

Digital Media

Top of funnel lead generation and brand awareness

Control narrative, establish thought leadership, become a known figure

Breaks the ice for all subsequent meetings; best case, people have 'heard of you / your company'

Compelling content captures virality, drives momentum and generates interested inbound interest

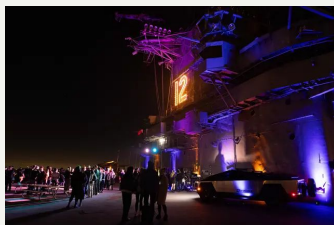
Events

Convert top of funnel interest into close relationships, partnerships, customers and investors

Provide proof-of-work as to the teams credibility, competency, speed of execution and brand strength

Establish degree-centrality in the social network of economic actors

Compelling events makes for great content

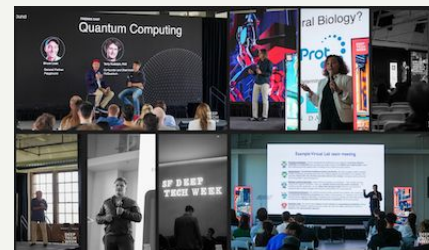


Deep Tech Week year 1: 45 events, aircraft carrier party

Drives attendance to



Provide content for



Deep Tech Week Year 3: six cities, thousands of VC funds, startups



Case Study: Valar Atomics commanding attention in nuclear fission

Digital Media

Multiple social media posts by high level officials in the U.S. Government as well as official social media channels through Department of War and Department of Energy, establish Valar as central to an emerging narrative around small-modular fission reactors



creates hype and attention



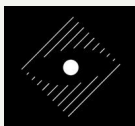
Event

Valar Atomics loaded a prototype small modular nuclear reactor on board a C-17 Globemaster transport plane and flew it from California to Utah



Andrew Côté

Founder, Deep Tech Week,
Hyperstition



“Where attention goes, capital follows. Commanding the narrative around an emerging technology area, making it compelling to outsiders, demonstrating legitimacy and strength all come down to understanding attention markets.”



Drumbeat
Capital

Thank you