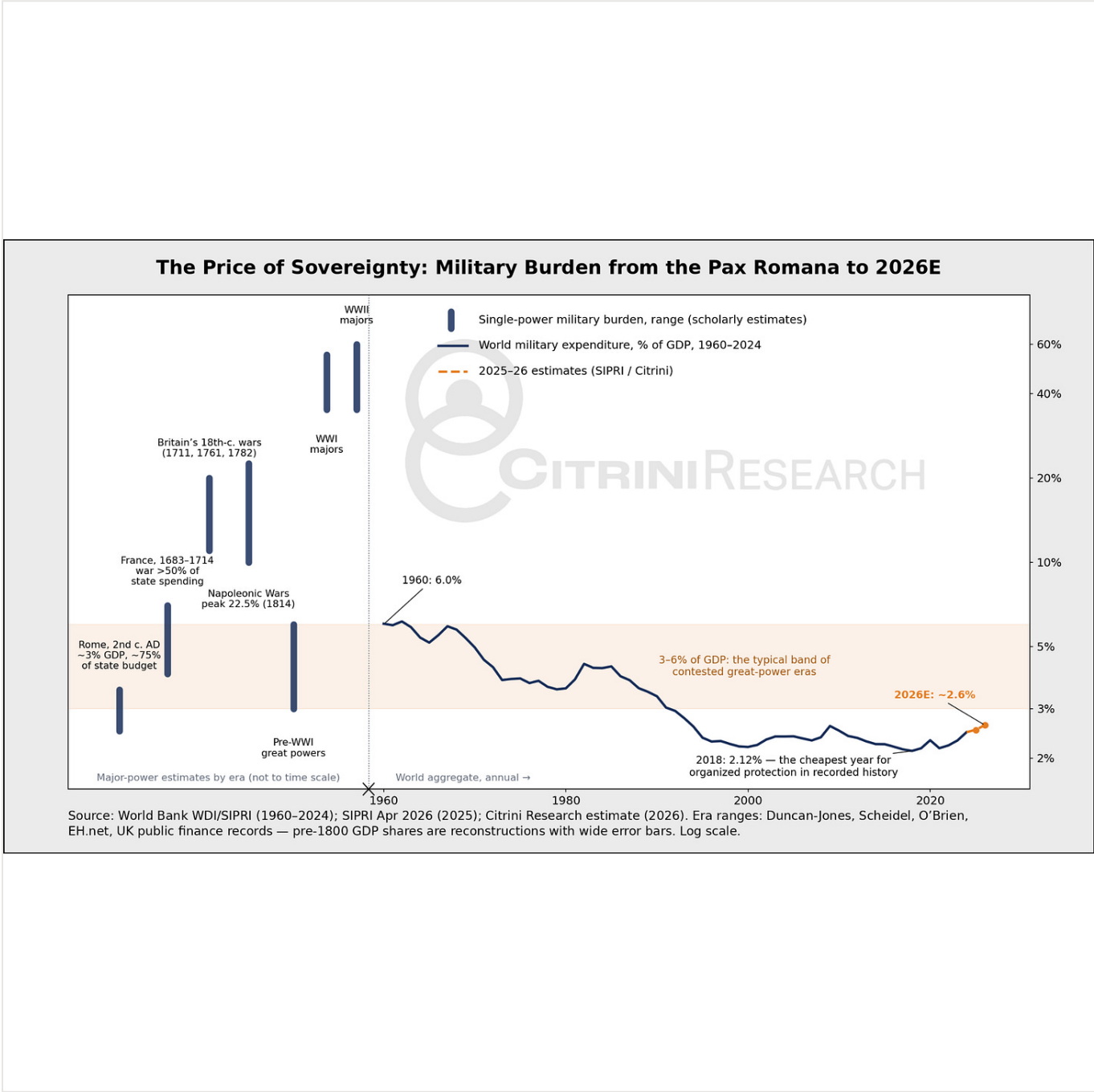


Missile Restocking

The Bottleneck Moves to the Battlefield

Our goal at Citrini is to identify trends that are going to sustain longer than a few good earnings reports. And while the collective attention of market participants has been fixated on building out compute, capital cycles where the duration and magnitude are both underpriced...

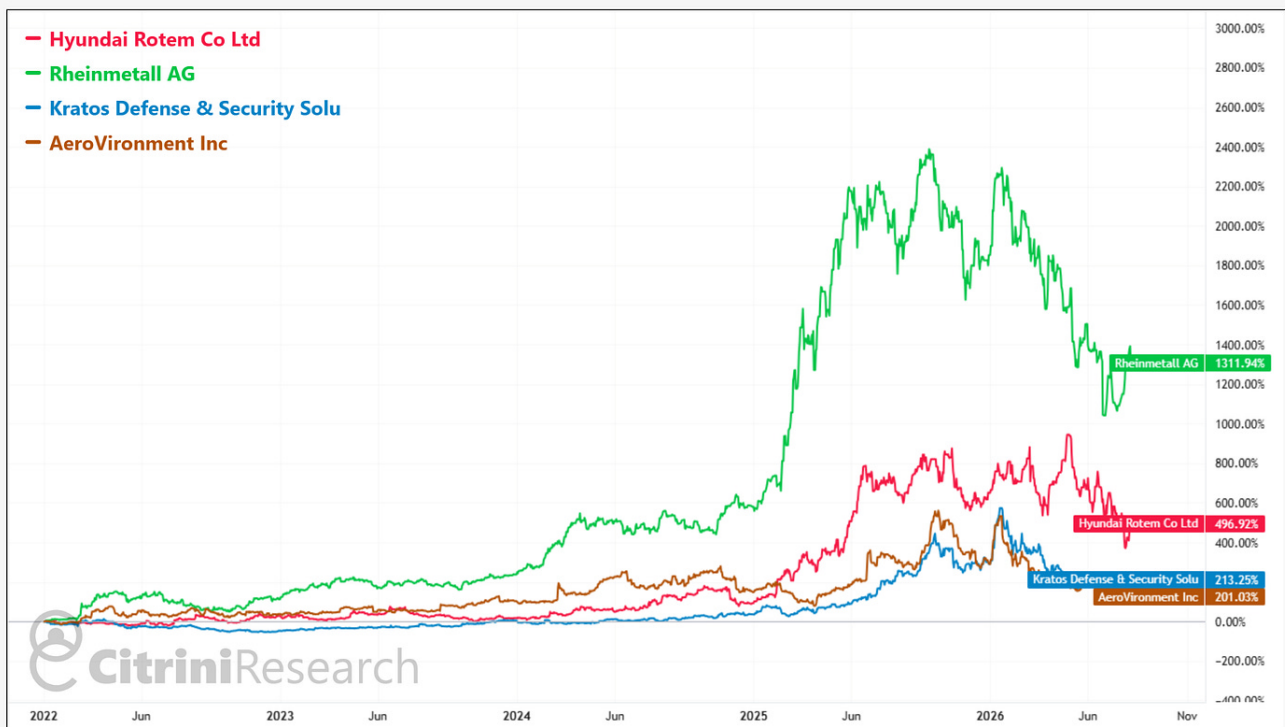


2018 was likely the cheapest year for organized protection in recorded history: Pax Romana and Pax Britannica can't hold a candle to the supposed "End of History" in the late 2010s. Today, even as regional conflicts have pushed spending higher, allocation to global defense is still well below the peacetime norm, let alone "wartime footing" by historical standards.

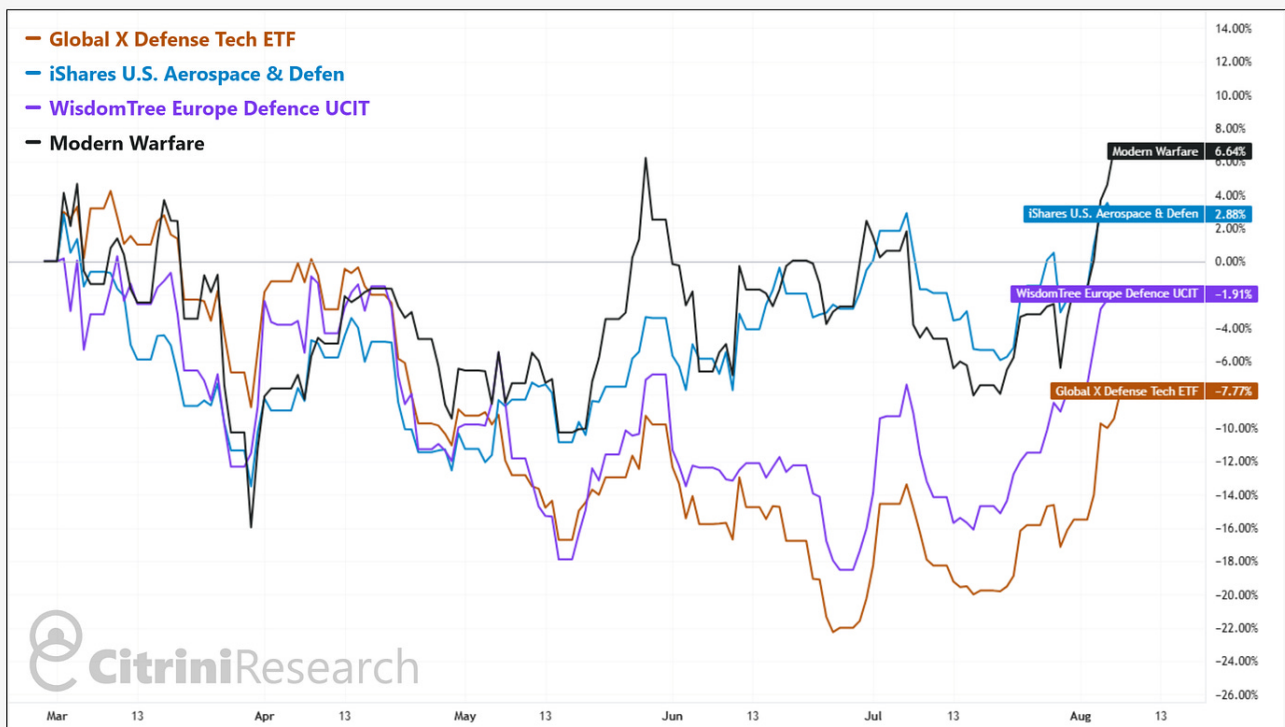
But our thesis is more than just "bigger budgets". It's about understanding how the battlefield is evolving – which is why our dynamic thematic basket is titled ***Modern Warfare***.

Both Ukraine and Iran drive home two points. First is the growing ***asymmetry*** between the expensive traditional military assets and the low-cost but highly capable world of autonomous drones, loitering munitions, and guerrilla tactics – weapons that are far more easily accumulated and deployed by lesser powers. Second, the ability to ***sustain*** active warfare requires a reinvigoration of the supply chain from peacetime power projection to actual industrial production.

We aren't the only ones who have picked up on these trends. Last year, European and Korean defense contractors surged as Trump hammered allies to start pulling their weight or risk the alliance. Pure-play drone and hypersonic beneficiaries meanwhile have been popular momentum stocks since at least 2024. A look at some of the popular single-name expressions shows the narrative inflation -> deflation playing out over the past year.



And ironically, the Iranian conflict beginning on February 27 essentially marked the top for many US defense stocks which have traded off in a *buy-the-rumor, sell-the-news* fashion. These names lost their mojo just as their fundamental signals started to scream.



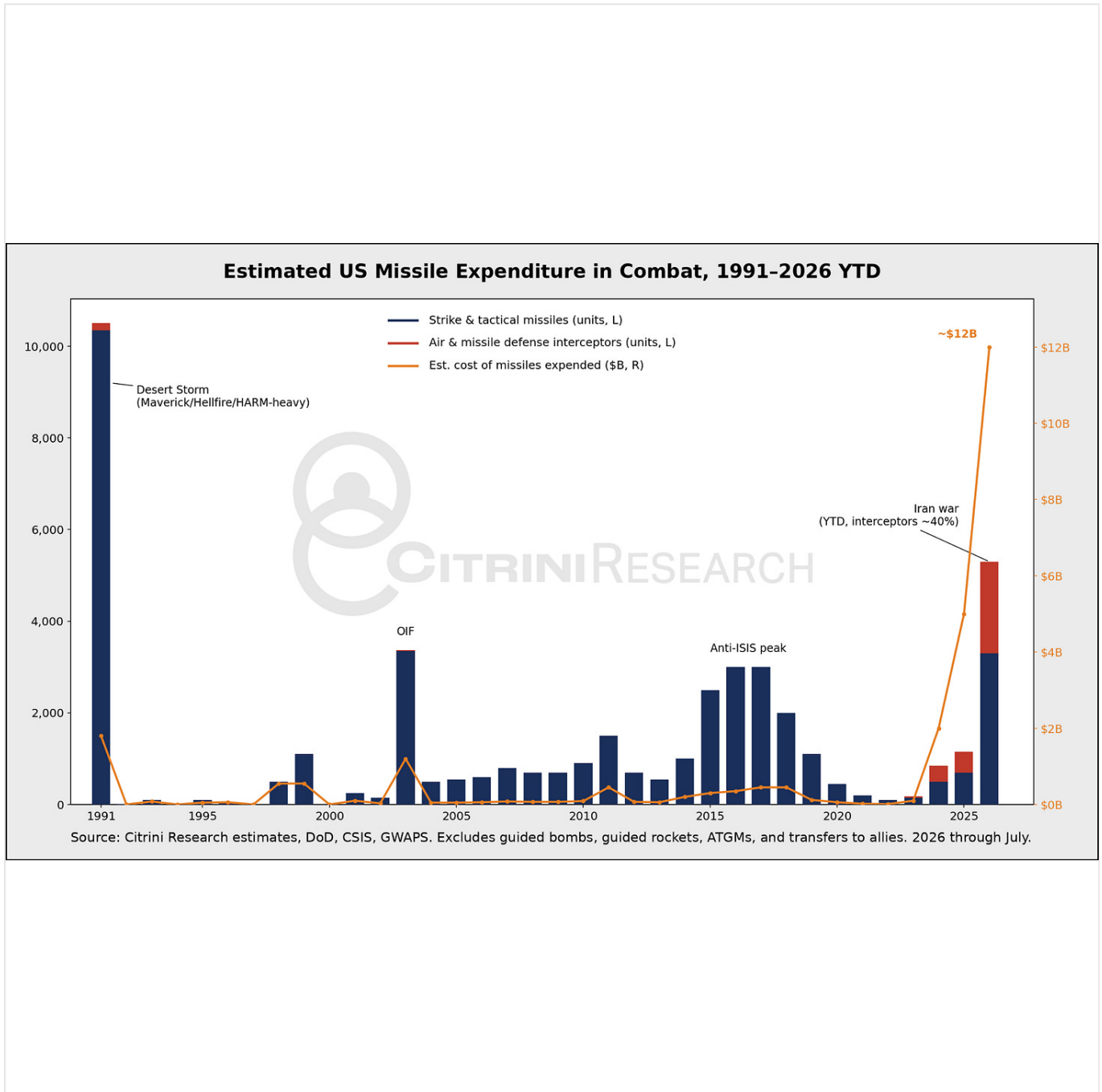
Source: Citrini Research

The case for military procurement has moved from think-tank PDFs to battlefield necessity, with global energy, trade, and power hanging in the balance. **The most acute bottlenecks we see today are in the missile complex.**

Empty Clip

"Systemic constraints in the munitions industrial base, including limited production capacity, fragile supply chains, long-lead dependencies, and related production bottlenecks, may impair the ability of the United States to produce, sustain, and expand the availability of munitions, missiles, and equipment required for the national defense."

In just five months, the US military has fired more missiles and interceptors than it has in any year since Desert Storm. And unlike bombarding and occupying ill-equipped adversaries in the GWOT, this is not a unilateral (and inherently voluntary) offensive.



Rather, the massive expenditure of costly interceptors is a response to advanced Russian and Iranian militaries who have developed both abundant autonomous drones and high-powered ballistic missiles that threaten nearly every military asset or allied infrastructure throughout the region.

Military planners have been ringing alarm bells about inventory drawdowns for some time, and (for national security reasons) no one knows *exactly* what the true numbers are. Prior estimates across a wider range of munitions show that expenditures (through five months) have dramatically exceeded annual production capacity and current delivery cadence.

Status of Key U.S. Munitions at the Iran War Ceasefire

Interceptors / missiles. Prime and sub-tier contractors, consumption, procurement request, deliveries, capacity, and restocking timelines.

Munition	Prime contractor	Key sub-tier suppliers	Estimated use in Iran War	FY2027 request	Deliveries in FY2026	Annual production capacity (Current max rate / framework agreement goal)	Estimated return to prewar inventory
Tomahawk	RTX (RTX US)	Williams International (F107/F415 turbofan, pvt); L3Harris (LHX US) — MK 135 booster	1,000+	785	207	600 / 1,000	Late 2030–early 2031
THAAD	Lockheed Martin (LMT US)	BAE Systems (BA/ LN) — IR seeker, 4x capacity deal; L3Harris — SRM & DACS; RTX — AN/TPY-2 radar	190–290	857	92	96 / 400	Mid to late 2029
Patriot (PAC-3 MSE)	Lockheed Martin (LMT US)	Boeing (BA US) — seeker, 3x capacity deal; L3Harris — two-pulse SRM, ACM, Lethality Enhancer	1,060–1,430	3,203	172	2,000 / 2,000	Mid-2029
SM-3	RTX (RTX US)	L3Harris — MK 72 booster, MK 104 DTRM, TDACS; Northrop Grumman (NOC US) — MK 136 TSRM (Blk IB); Mitsubishi Heavy (7011 JP) — Blk IIA 3rd stage/nose cone	130–250	214	52	156 / 250	Early 2029
SM-6	RTX (RTX US)	L3Harris — MK 72 booster, MK 104 DTRM	190–370	540	125	239 / 500	Late 2028–early 2029
JASSM	Lockheed Martin (LMT US)	Williams International (F107-WR-105 turbofan, pvt)	1,100+	821	484	860	Mid-2027
PrSM	Lockheed Martin (LMT US)	L3Harris — solid rocket motor; Inc. 4 ramjet propulsion in test (L3Harris)	40–70	1,134	70	680 / 550	Late 2026

Note: Prime contractors hold sole-source production contracts; sub-tier list is illustrative, not exhaustive, and highlights suppliers that are either identified capacity constraints or subject to their own Pentagon capacity agreements. Current maximum rate is surge capacity with existing facilities; multiyear framework agreements expand capacity beyond it. Capacity does not equal actual production rate, as budgets may not fund to capacity. No new capacity target has been announced for JASSM; the SM-3 target is estimated from FY2027 budget materials. Variants are combined (SM-3 Blocks IB & IIA; PrSM Baseline & Increment 2). L3Harris' Missile Solutions segment (formerly Aerojet Rocketdyne) received a \$1bn DoD convertible preferred investment in January 2026 and is slated for IPO in mid-2027. Williams International is privately held.

Source: CSIS — Mark F. Cancian & Chris H. Park, "Last Rounds: Status of Key Munitions at Iran War Ceasefire," April 21, 2026. Contractor attributions per company press releases and DoD contract announcements. Authors' calculations based on FY2027 and prior DoD budget materials.



But it's the White House's own actions that underscore the severity of the situation – and the administration has been preparing to increase capacity well before first contact.

US Munitions Ramp: 2026 Timeline

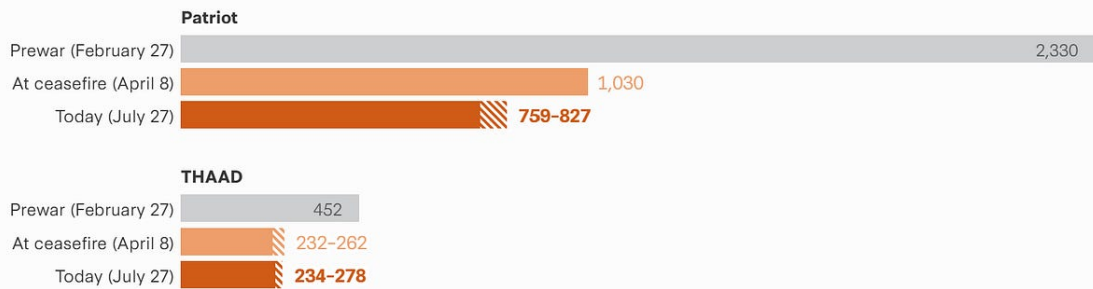
JAN-FEB	● Capacity frameworks set War Department targets Lockheed PAC-3 MSE toward ~2,000/yr, THAAD from 96 to 400/yr, and five RTX munitions including Tomahawk above 1,000/yr.
MAR 6	● First CEO summit Days into Epic Fury, Trump announces the primes have agreed to quadruple production of "Exquisite Class" weaponry.
APR	● Boeing seeker framework Framework signed to triple PAC-3 seeker output; deliveries remain years away.
LATE APR	● MAC priority list Munitions Acceleration Council names 14 critical munitions for multiyear deals of up to seven years, with contractors absorbing cost overruns if ramps slip.
MID-JUN	● DPA invoked Invocation cites "systemic constraints in the munitions industrial base."
JUN 24	● Second CEO summit Patriot, THAAD, Tomahawk and AMRAAM ramps discussed; executives say expansion requires congressional funding.
JUL 8	● Ukraine Patriot license US authorizes Ukrainian licensed production of Patriot interceptors at the Ankara NATO summit.
JUL 13	● Freyja coalition launched Ten nations sign in Paris to field a Ukrainian-led interceptor at roughly one-fifth the cost of a Patriot round.
JUL 15	● Third CEO summit ~\$10B of industrial-base investment announced at Carlisle; FAMM frameworks target 28,000 low-cost cruise missiles; Castalion Blackbeard framework at 500+/yr.
JUL 20	● EO 14415 Covered-material waivers end Jan 1, 2027 absent mitigation plans; full bill-of-materials tracing; forced domestic-source qualification; "Project Vault" reserve carved out.
JUL 20	● Lockheed low-cost Patriot Lockheed unveils a cheaper, faster-to-produce Patriot missile variant.
JUL 27	● Propulsion frameworks Seven-year L3Harris and Lockheed agreements to triple PAC-3 MSE propulsion and quadruple THAAD component output; demand signals, not binding contracts.
JUL 29	● \$58.6B PAC-3 multiyear \$53.9B modification extends April's \$4.7B contract, aiming to triple Patriot interceptor production capacity by end-2030.

Source: Citrini Research, DoW announcements, press reports

The hardest numbers come from the FY2027 DoW budget proposal. The request shows a nearly 5x increase in dollars allocated to missiles across the spectrum.

Interceptor depletion is at the top of mind, not just for the US but for anyone who relies on these systems for their own protection. The most recent estimates from CSIS (below) show that Patriot and THAAD stockpiles have been drawn down by ~66% and ~44%, respectively, adding that there are *"no good alternatives to Patriot and THAAD for ballistic missile defense."*

Patriot and THAAD interceptors remaining in U.S. inventory



Note: Estimated inventories today account for additional interceptor use and new deliveries since the April 8 ceasefire. THAAD deliveries during the ceasefire outpaced estimated use over the same period, resulting in higher inventories today than in April. Patriot calculations include the latest MSE variant and PAC-3s. Several hundred PAC-2s, not represented in the chart, are estimated to remain in the U.S. inventory.

Source: Authors' calculations based on FY 2027 DOD budget materials and publicly released information. Methodology detailed in Mark F. Cancian and Chris H. Park, "Last Rounds? Status of Key Munitions at the Iran War Ceasefire," CSIS, April 21, 2026.



This is urgent. The assumption of comprehensive missile interception capability has been central to both the US and its allies. It has allowed US bases and warships to operate comfortably in the Gulf, while also providing the cover for military, civilian, and energy infrastructure to allies in the Middle East (and well beyond).

America's umbrella of protection is leaking. The response demands a multipronged approach – one that addresses both the practical reality of today and technical shifts of tomorrow.

The Demand Signal

Stockpiles of existing weapons platforms will be replenished. But DoW planners face manufacturing lead times measured in years and an asymmetric landscape that demands modern platforms — **which means the shift in procurement has to come with long-term demand signals attached.**

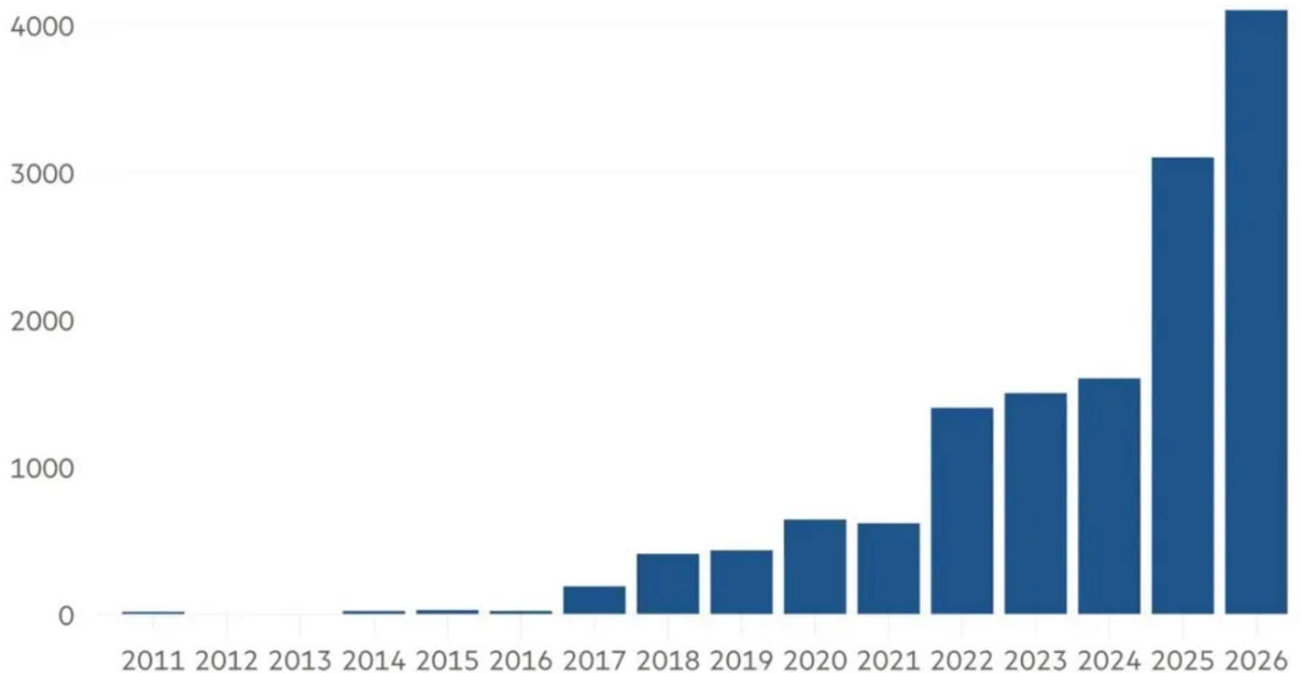
Corporate consolidation in the defense sector

Source: Department of Defense Report on the State of Competition within the Defense Industrial Base, February 2022

Now see this trend going in reverse. Instead of shutting down capacity and allowing consolidation, the US government is using both carrots and sticks to expand production capacity, while also introducing increased competition.

Defence primes pile into VC rounds

Value of VC rounds with defence prime participation (\$'000mn)



Source: Dealroom

And of course, since you are reading investment research, we've laid out a four-part framework of how this will ripple through global equities...

Citrini Research Missile Framework

1

Restock the "Exquisites":

Cost-be-damned, the most urgent priority is triaging the depleted high-end interceptors like PAC-3 and THAAD, which benefits the Lockheed/RTX duopoly but offers better cycle sensitivity through sole-source subcontractors

2

Advance Low-Cost Capabilities:

Simultaneously, invest in new technology platforms and affordable mass munitions (the FAMM program, targeting an eightfold production increase), and diversifying the supply chain through upstart competitors.

3

Leverage Global Allies:

Foreign defense contractors benefit from incremental production capacity for US restocking, sovereign rearmament for their own nation's defense, and new demand from other nations squeezed out of US supply.

4

Secure Critical Materials:

De-risk and expand supply chain of raw materials – titanium, tungsten, superalloys, scandium – favoring names at the feedstock layer.



(Missile Framework backtest, constituents and weighting below)

1) Restock the “Exquisites”

-

“The demand signals are outstanding.”

\- LHX Q2 Earnings Call

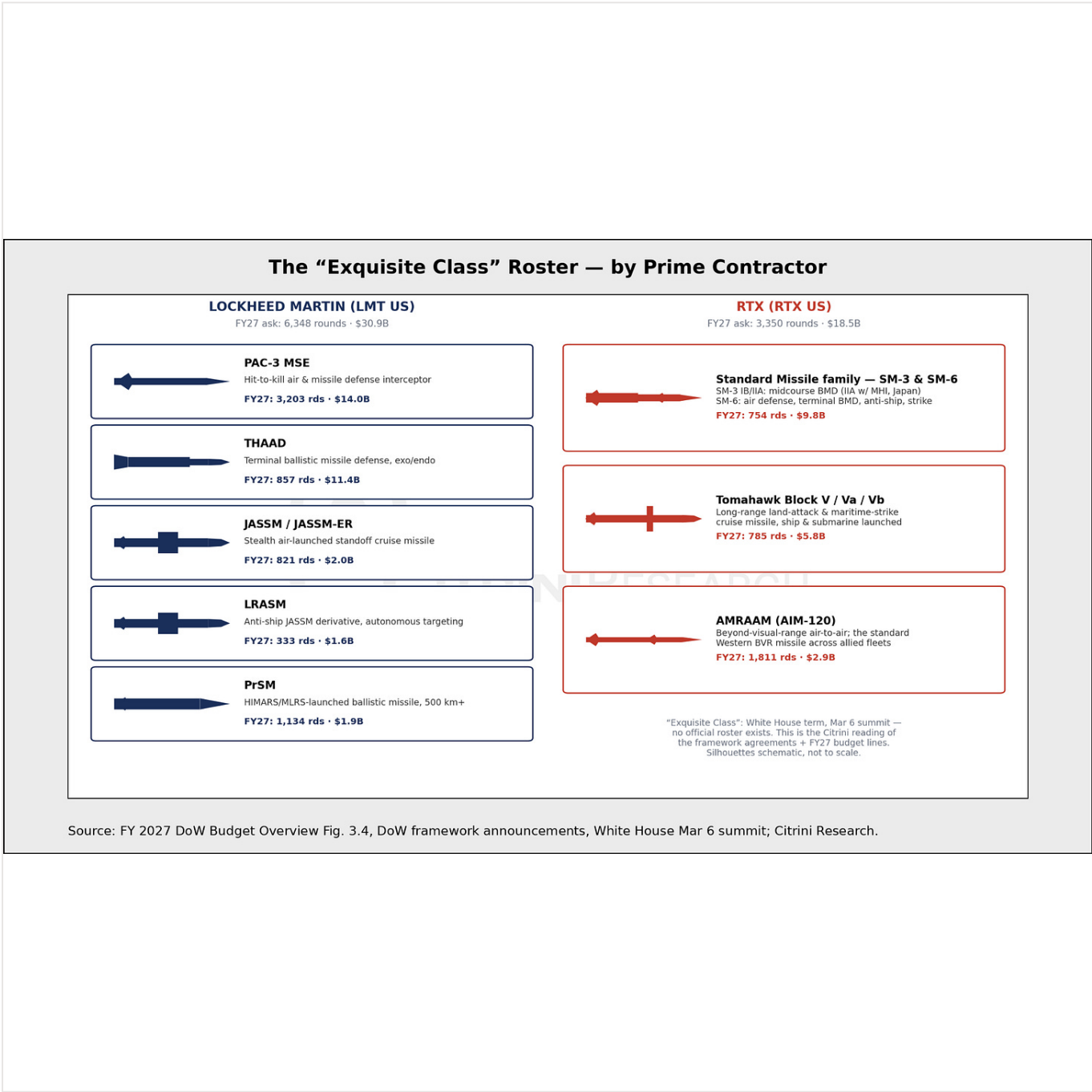
“In all our years, we have never seen anything like this.”

\- PKE Q2 Earnings Call

Ignore the financial burdens and technology development for a moment (*we'll get to that later*). **The first order is triage.**

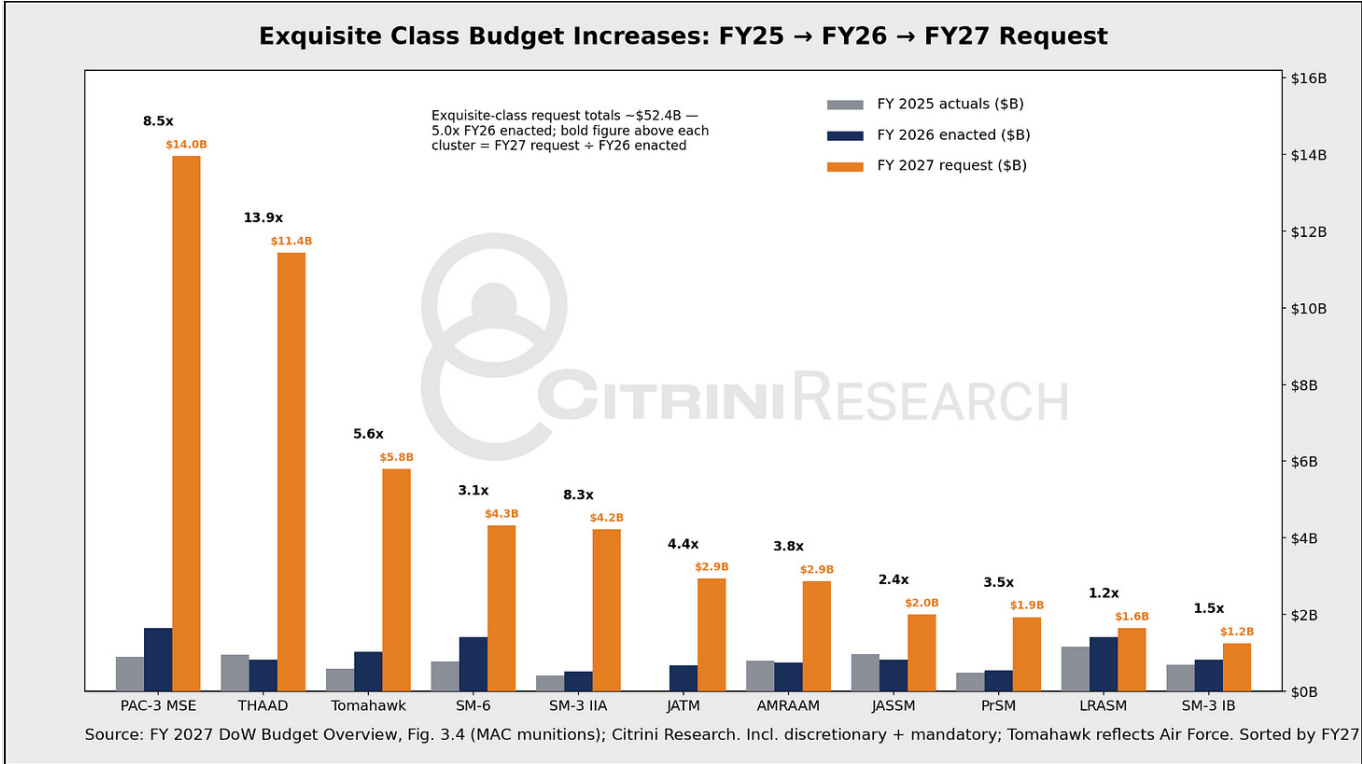
New low-cost systems designed for the modern battlefield are coming but they can't intercept a ballistic missile today, which is problematic since the US and its allies are taking ballistic fire today.

The most acute shortages in the munitions stack are the “exquisite” class weapons, as they’ve been dubbed by the administration. That is, top-of-the-line weaponry that is extraordinarily effective, expensive, and is being depleted far faster than it can be built.



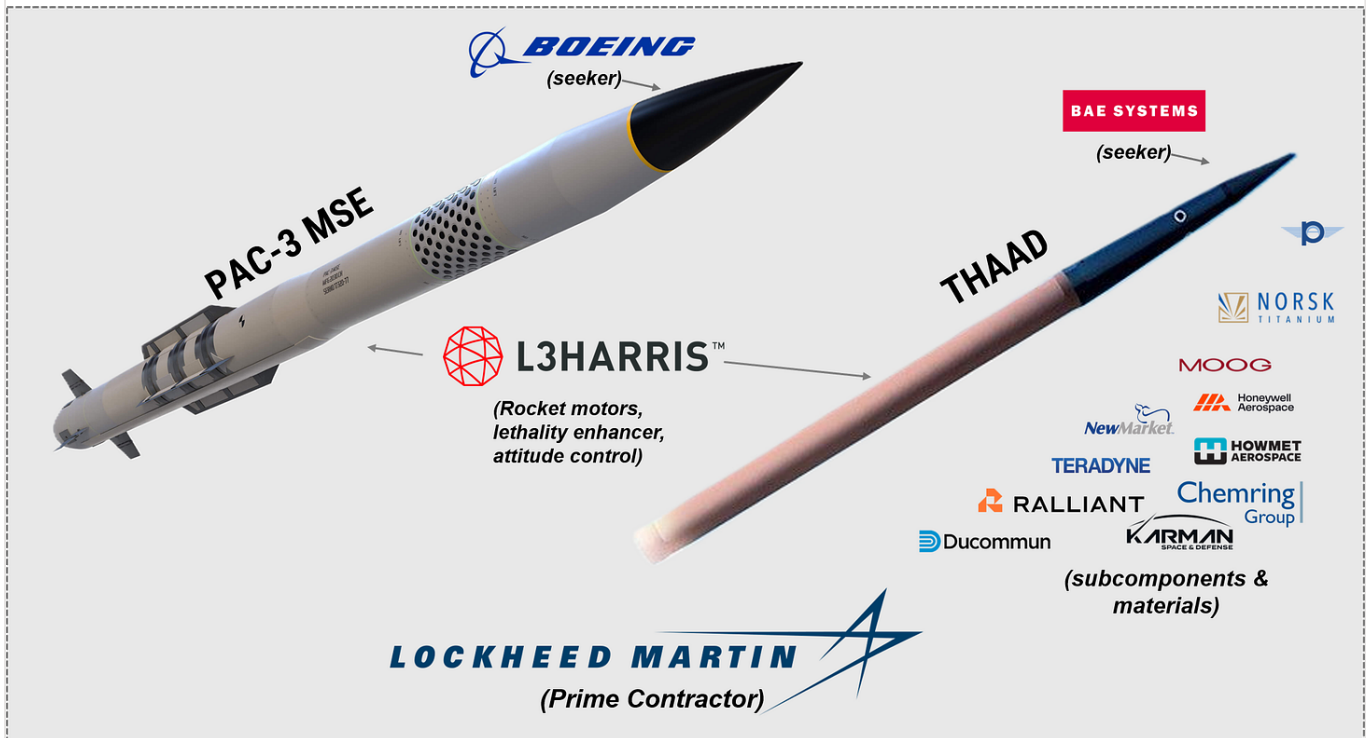
At the prime contractor level, this market is essentially a duopoly between **Lockheed Martin (LMT US)** and **RTX (RTX US)**. And even as these companies have disappointed on costs and timelines in the “consolidated” era of the megaprimes, these incumbents are still the first in line for new procurement.

The FY27 DoW budget request (below) makes this quite clear, and unsurprisingly, the companies have echoed the urgency and inbound demand signals from the US government.



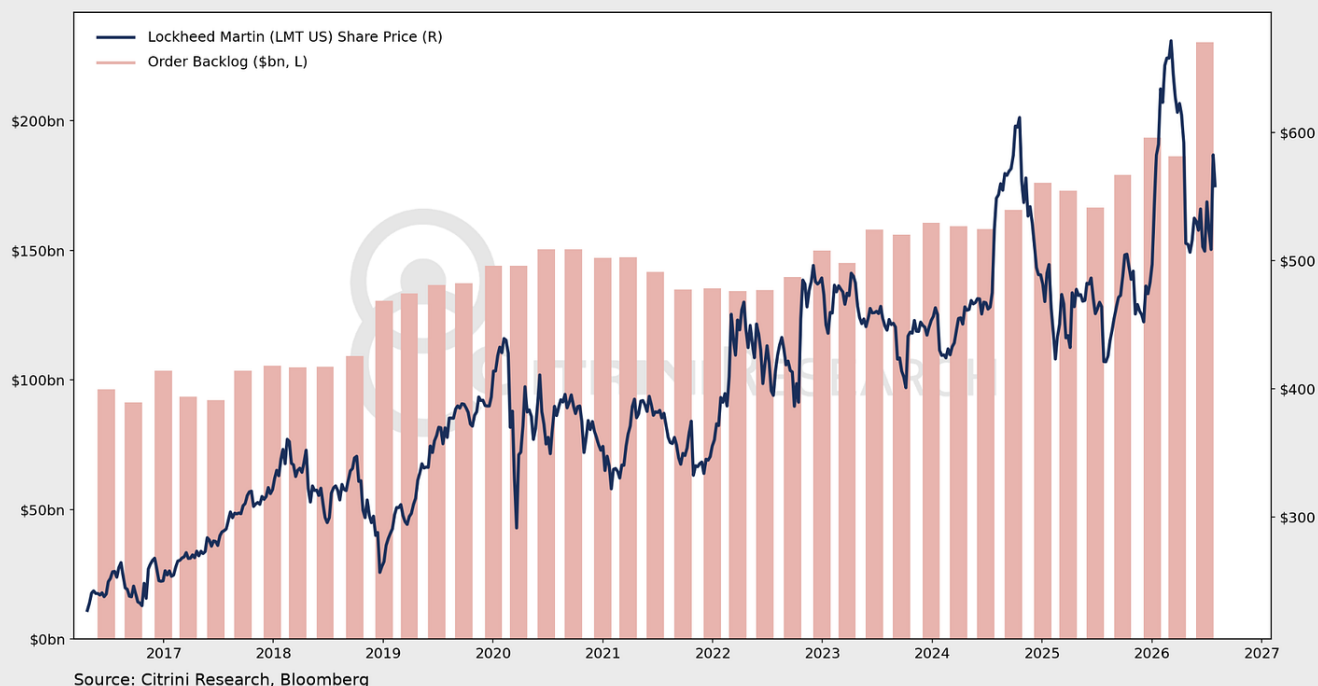
We are seeing these requests translate into backlog real time.

In January, Lockheed Martin signed an agreement with the Department of War to quadruple THAAD interceptor production from 96 units to 400 units per year. Since then, they've converted this forthcoming capacity into a [\\$35 billion contract](#) running through 2032. Similarly, in July, Lockheed was awarded another seven-year, \$54 billion contract to triple PAC-3 interceptor production by the end of 2030. The award is a follow-on to the original one-time, ~\$5 billion award issued in April.



Tripling and quadrupling production is great, but it's important to note that the US fired an estimated 190 to 290 THAAD interceptors and another 1,000+ PAC-3 missiles in a single campaign earlier this year. The need to restock will endure far beyond the Iranian conflict...assuming that the war ever does come to a conclusion. The US is in a vulnerable state, and the world is watching.

Lockheed Martin (LMT US): Share Price vs. Order Backlog



Lockheed's Q2 print on July 23 reinforced their leadership in this effort. LMT posted a book-to-bill of 3.2-to-1, with the multi-year THAAD contract comprising the bulk of its \$65 billion in new bookings. Management reiterated that "*[T]hey're being asked to triple PAC-3 MSE production, quadruple THAAD production and scale up PrSM production faster than we ever thought we would.*" The stock gained 10.5% in the following trading session.

Meanwhile, RTX shares jumped after reporting Q2 backlog growth of 22% across the firm while raising sales, EPS, and cash flow guidance, explicitly tied to its missile franchise.



Underneath the prime lives an ecosystem of major system subcontractors. The THAAD system, for instance, includes large cap defense primes like **BAE Systems (BA/ LN)**, which produces the infrared seeker necessary for sensing and guidance capabilities, and Aerojet Rocketdyne, which was bought by **L3Harris (LHX US)** in 2023, and produces the solid rocket motors that propel these munitions.

L3Harris disclosed that the Department of War would invest \$1 billion into LHX's Missile Solutions segment via convertible preferred equity. The funds would be drawn from the DoW's [Industrial Base Analysis and Sustainment authority](#), with the conversion triggering upon a public listing.

"We're taking action to build today's 'Arsenal of Freedom' by launching a pure-play missile solutions provider. Recent Trump Administration actions have placed renewed emphasis on strengthening the defense industrial base and reinvigorating competition following a 30-year wave of consolidation."

The Missile segment has historically comprised a mid-to-low teens share of LHX's total sales with a ~\$4 billion run rate. However, per L3Harris' President of Missile Solutions, [Ken Bedingfield](#), missile sales are expected to more than double by 2030, and could continue scaling over the decade following.

A LEADER IN MISSILE SOLUTIONS

Positioning for unprecedented, durable missile demand

▶ GENERATIONAL DEMAND	DoW requires 3-4x increase in key MAC interceptors; MSL is supplier on majority of these programs
▶ MARKET-LEADING	MSL is on 75% of all domestic missiles currently fielded
▶ DIVERSIFIED, ENTRENCHED POSITIONS	On >30 missile programs; ~80% sole source
▶ DIFFERENTIATED GROWTH OUTLOOK	Durable high-teens growth
▶ SCALE ADVANTAGE	Delivering production capacity faster than anyone in industry
▶ MARGIN EXPANSION OPPORTUNITY	Strong margins today with opportunity to expand as production ramps

The appearance of U.S. Department of War visual information does not imply or constitute DoW endorsement.



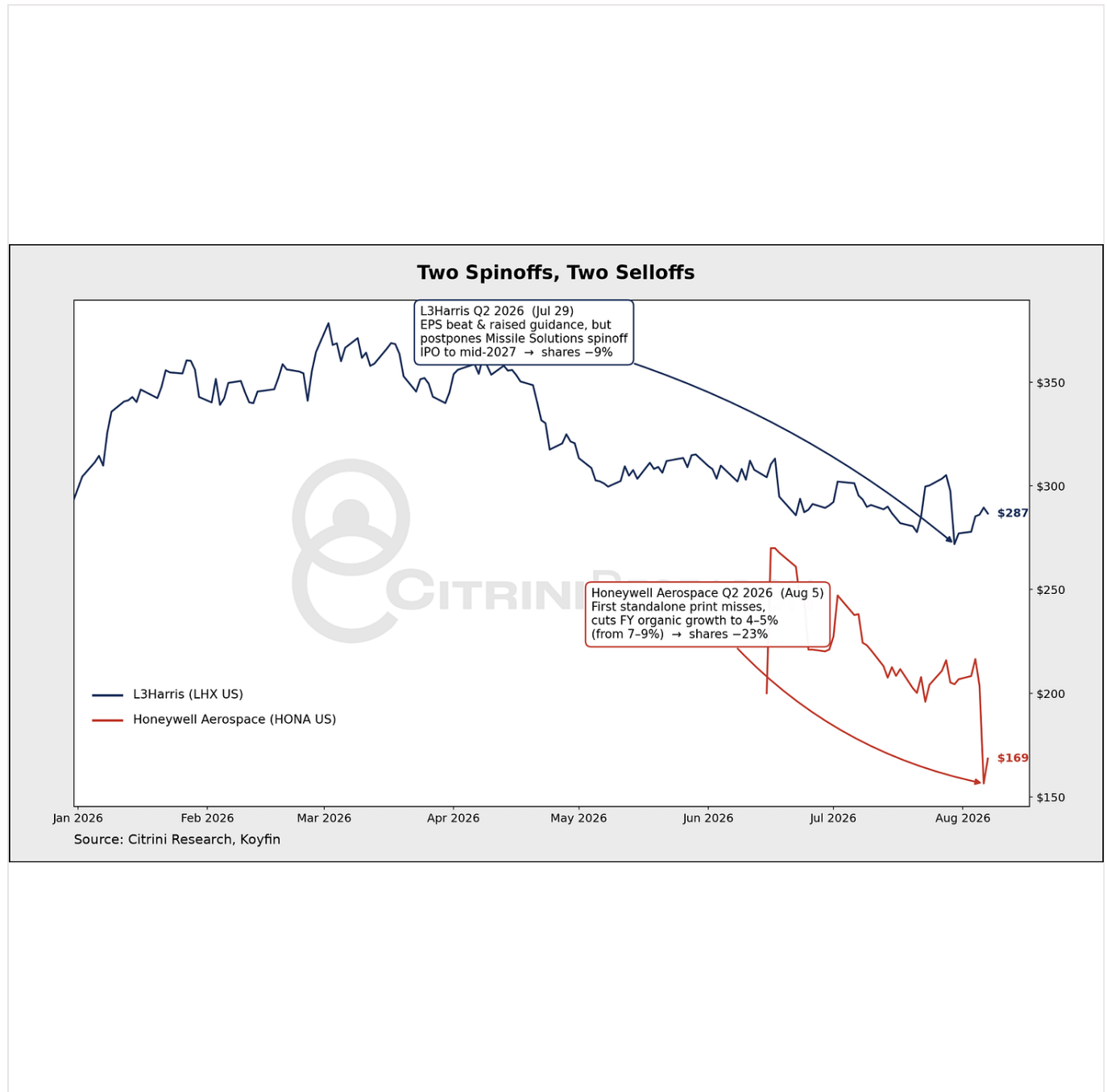
15

But, if we run the math, we may not need the 4+ year timeline laid out by LHX management.

As depicted above, the company is the sole source contractor on the PAC-3 Patriot solid rocket motor, which comprises roughly 1/3rd of the total bill of materials for the PAC-3 at \$1.5 million worth of SRM content per shot. Assuming that the company can deliver on the full 2027 request of 3,200 missiles – ***you're looking at***

\$4.8 billion from just the Patriot program alone. That doesn't include other programs in which LHX's SRM is found – like THAAD, Standard Missile, GMLRS, Javelin, and hypersonics.

In April, L3Harris filed a confidential S-1 for their Missile Solutions segment, wherein they would retain 80% ownership of the SpinCo, with the government serving as an anchor investor for the remaining float. The IPO was originally scheduled to take place in the back half of 2026, although those plans were scuttled, with LHX management citing "market conditions".

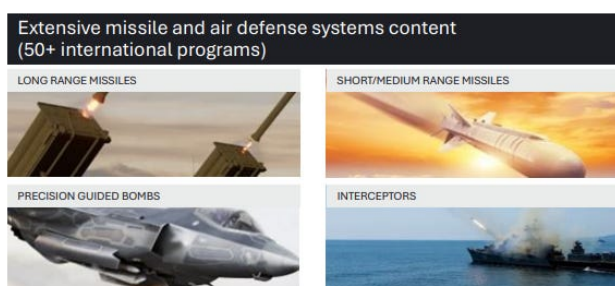


While the market clearly expressed their frustration with LHX's decision to delay the spin-out of the missile division – shares closed down 9% in the following day's trading session – it might've been guided by the lackluster performance of **Honeywell Aerospace (HONA US)**, which began trading at the end of June.

The public markets have been unkind to HONA thus far – after the opening trade valued HONA at just shy of \$300/share, the stock has fallen into the \$160s after its first standalone earnings release, wherein the company missed earnings estimates and lowered its organic growth expectations for the year. Meanwhile, the **Honeywell (HON US)** ParentCo has gained +20% year-to-date.

Critical supplier to U.S. DoW missile programs

Leading missiles and munitions portfolio well-positioned to capitalize on surging global demand

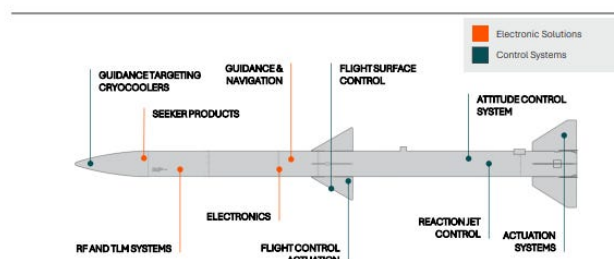


Record global demand (DD% CAGR '25-'30¹)

- Escalating global security challenges
- Ongoing modernization of arsenals
- Increase in demand for precision-guided munitions
- Need to replenish munitions stockpiles
- Long-term U.S. DoW framework agreement drives 2–4x capacity expansion and multi-year visibility

Honeywell Aerospace Investor Day 2026

1. Source: Janes.



Why we win

- Differentiated, global navigation leadership, with best-in-class precision and resilient (GPS-denied) capabilities driving content on advanced systems (e.g., THAAD, PAC-3)
- Acquisition of CAES significantly increased electronic warfare capabilities and presence on franchise missile programs (e.g., AMRAAM, Standard Missile, AARGM-ER)
- Embedded on priority missile programs with expanding roles on next-gen programs, such as Sentinel
- Breakthrough in missile electromechanical actuation – Assure™

106

However, Honeywell Aero is not left-for-dead. In fact, it looks much more palatable at ~15x FY2027 FCF estimates.

We're specifically interested in HONA's position on the interceptor programs where demand is the least elastic. The company has been tasked by the Pentagon to expand production of their navigation systems and maneuverability actuators that help guide PAC-3 and other precision munitions. Separately, Honeywell Aero has an existing relationship with **Boeing (BA US)** centered on PAC-3 seeker output, placing them alongside

Lockheed in the PAC-3 MSE supply chain. This follows the same playbook as L3Harris – a direct-to-supplier mandate on the most supply-constrained interceptor line in the market.

But when the big boys eat, so does the entire subcontractor system. A ramp up in missile production also includes the nozzles, control systems, and fabrics. And while the primes have outsized exposure, the smaller subcontractors can offer better sensitivity to the cycle.

Subcontractor Call-outs

Obviously there are many companies in the entire Bill of Materials of state-of-the-art missiles, and most will see some sort of tailwind, but here are the ones that stand out.

Ducommun (DCO US) is the oldest company in the state of California still operating today. Founded by Charles Ducommun in 1849, DCO began as a watch-repair shop and general store. It's a key partner of the defense primes, helping those businesses absorb non-core and specialized manufacturing. It sits at the convergence of two tailwinds.

Positioned to Benefit from Macro Defense Tailwinds



First is a boom in supply offloading. The government wants the defense industry to quadruple output, but the primes are physically unable to meet output quotas on their own. The overflow works to Ducommun's favor – and management has been eager to cite notable customer wins in RTX, Northrop Grumman, General Atomics, BAE Systems, and Parker.

Second is tied to the explosive (sorry) buildout in missile manufacturing. Ducommun supplies the defense primes with coaxial, space-qualified switches, radio frequency switches, motion control devices, and more. In Q4 2025, DCO booked over \$130 million worth of missile orders – a book-to-bill greater than 4x on the missile franchise alone. The company also highlighted an MIR award of over \$80 million, one of the largest orders in company history. The company has a robust manufacturing footprint and labor hours to meet this ramp, versus having to pony up new capex.

"DCO's missile business grew 68% in Q2 and is now up 29% over the past 12 months. I mentioned before that RTX, our largest customer and Lockheed are expected to significantly increase production on many programs, including the PAC-3, SM-3, SM-6, Tomahawk, THAAD, AMRAAM, and we are in discussions on multiple opportunities.

*DCO is well positioned on all these programs and in great shape with capacity in our operations that fully support the required ramp-up. **DCO is the key supplier on these programs and as the orders for missile replenishment begin to work their way from announcing to firm orders, Ducommun is laser-focused on capturing as much of this content as we can.***

Next up is "dual use" rocket company, **Karman Space & Defense (KRMN US)**, which serves as a critical Tier-1 and Tier-2 supplier of composites, separation mechanisms, and payload protection systems for the THAAD program.



Company leadership has already called out the missile ramp. On the Q4 2025 earnings call, the CEO stated:

"[...] multiple prime contractors have recently outlined significant planned annual production increases across key missile programs we support, including approximately 100% growth in AIM-9X, 200% in THAAD and standard missile, and 300% for PAC-3."

In Q2 2026, they reported a record backlog of \$1.3 billion, up from \$1 billion in Q1. The stock has spent the better part of the year being part of the "orbital reentry" space trade – if they continue to post wins in missiles, counter-UAS, and other defense programs, they'll realize value better than waiting for Starship commercialization.

Next up, housed in a regional airport in the middle of Kansas, **Park Aerospace (PKE US)** is the sole-source for ablative materials for the PAC-3. In January, they ran an ATM offering to raise capital for capacity expansion – a new \$65 million facility in Tulsa to accommodate the production ramp.

The bull case is cleanly stated in a pitch deck with almost Trumpian verbosity:

Missile Systems Park's New Juggernaut *Extreme* (Continued)

➤ The PAC-3 Patriot Missile System

- ✓ Park is sole source qualified for advanced composite ablative materials for the solid rocket motors for the PAC-3 Missile System program
- ✓ The PAC-3 Missile System is considered by many to be the world's premier missile defense system
- ✓ We have covered the PAC-3 Missile System extensively in recent quarterly investor presentations, so we will just hit the high points and the new items here
- ✓ Stockpiles of PAC-3 Missile System interceptors were already badly depleted by the ongoing War in Europe and last June's 12-day Mideast War
- ✓ We do not want to repeat the reporting here because it may not be appropriate to do so, but suffice it to say that the current War with Iran has *very* badly depleted the already depleted stockpile of PAC-3 Interceptors
- ✓ PAC-3 Missile System Interceptors have been extensively, and very effectively (maybe too effectively), used by US allies in the region, including Saudi Arabia, the UAE, Kuwait, Qatar, Bahrain and Israel, to defend against incoming threats during the Iran War



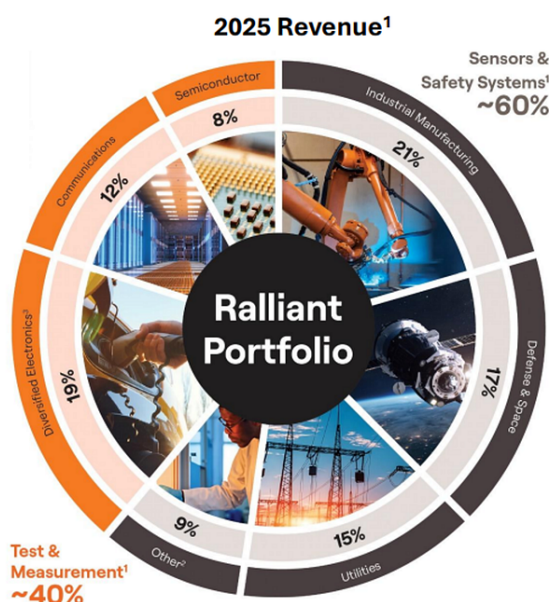
052826 Slide 34

Ralliant (RAL US)'s PacSci manufactures the components to help things blow up – pin pullers, arming devices, motor igniters, and two crucial subsystems for every THAAD interceptor. First is the **Laser Initiated Ordnance System (LIOS)**, a subsystem used to control "critical flight events," like explosions. Optical initiation removes electrically initiated devices from the ordnance train, sharply reducing susceptibility to EMI, stray voltage, or deliberate jamming of critical flight events.



The second component is the **Thermally Initiated Venting System (TIVS)**, a built-in safety mechanism aimed towards preventing a violent reaction if the motor is exposed to fire or excessive heat during transport, storage, or loading. If the rocket gets too hot, this will cut a pressure relief "slice" into the motor casing, allowing propellant to vent instead of causing a cascade failure in a magazine.

Ralliant also has PAC-3 exposure – this past April PSEMC received a [\\$27.3 million Defense Production Act](#) award to "expand the munitions industrial base." The funds are targeting a universal Arm Fire Device (AFD), which is interoperable across multiple platforms.



Q1 2026 Y/Y Organic Revenue Growth

Sensors & Safety Systems	+9%
Industrial Manufacturing	+4%
Defense and Space	+21%
Utilities	+1%
Other ²	+10%
Test & Measurement	+9%
Diversified Electronics ³	+13%
Communications	+14%
Semiconductor	(8)%

The company has tailwinds in all kinds of missiles – not just the ones that explode, but also the ones that go into space. They are embedded in the supply chain for NASA, Blue Origin, and SpaceX.

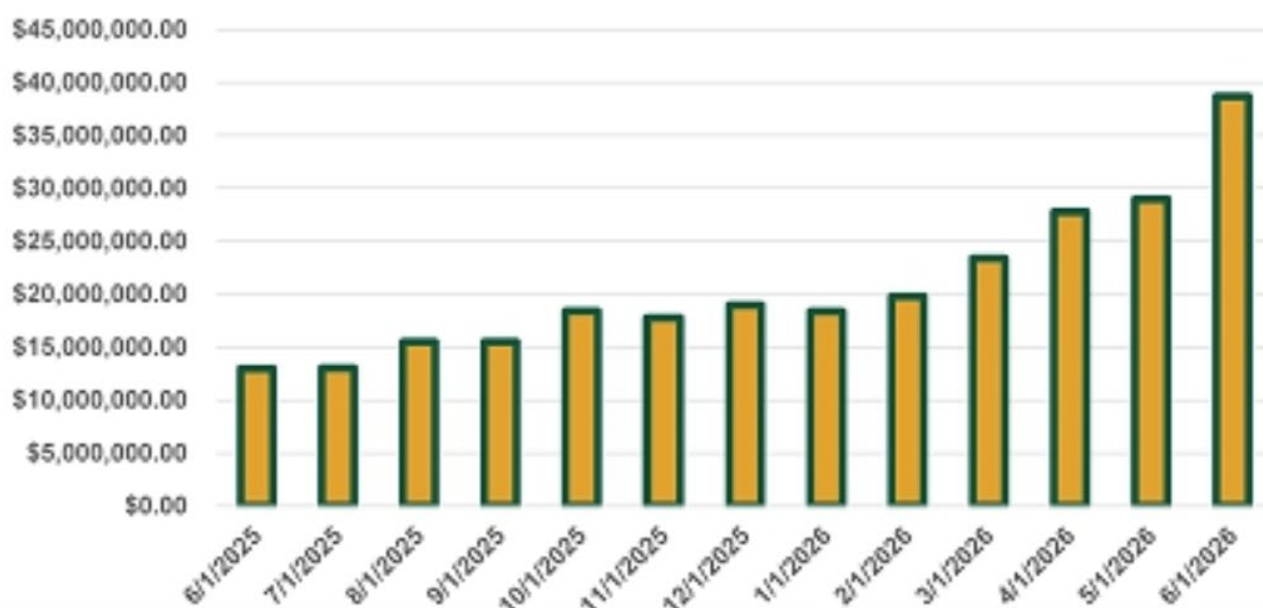
Moog (MOG/A US) is deeply embedded across the current restocking programs. Most notably, in January 2025 Lockheed Martin selected Moog to provide actuators for PAC-3 MSE.

Moog holds “preferred supplier” status with the Missile Defense Agency and manufactures thrust-vector-control actuation, fin/wing control systems, servo valves, and divert-and-attitude-control-system (DACS) thruster valves used in interceptor kill vehicles.

IEH Corp (IEHC US), a niche supplier of high-stress connectors used in missiles, has one of the most concentrated exposures to this theme, and its backlog shows just how recently and rapidly the orderbook has grown – predominantly since the conflict began in late February.

Backlog as of June 1, 2026

*65% higher than it's previous record high
TRIPLED in the past 12 months*

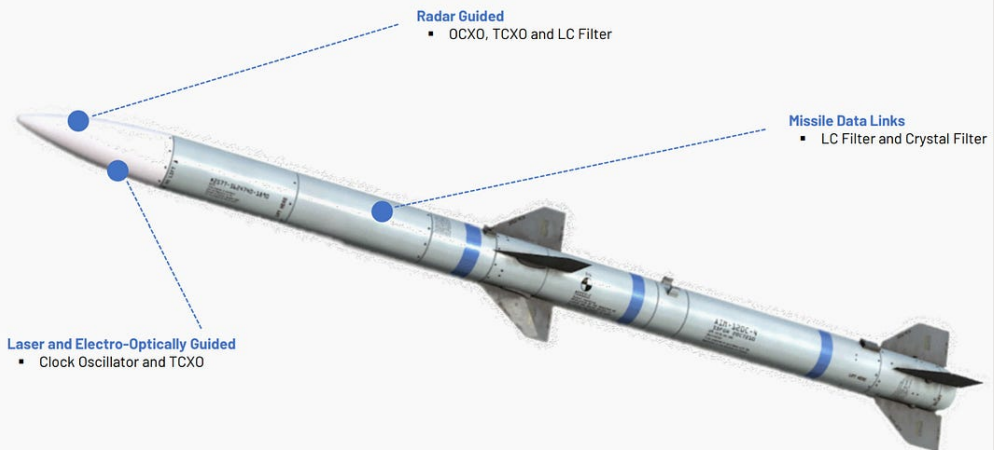


M-tron Industries (MPTI US) is the frequency-control equivalent of the IEHC connector thesis. Every guided munition, radar, and EW system needs its oscillators and precision clocks to keep signals in time under extreme conditions. Precision-guided munitions already comprise roughly 30% of MPTI's revenue, and management has guided to missile production ramps of 2x-20x across the programs it supplies. On top of that, new DoW framework agreements are expected to drive growth from 2027 onward.

Product Applications: Precision-Guided Munitions

Pinpoint Missile Accuracy with Superior Electronic Technology

- Defense agencies are focusing on high-performance, precision strike weapons that have farther standoff, multi-mode seekers, robust guidance systems, and less time for target selection with less collateral damage
- **MPTI has several design wins for clocks, oscillators, and filters within various Missile Defense Programs**



Some Missile Programs average approximately \$10,000 of Mtron content per missile



Source: Company data

Once the missile rolls off the assembly line, it goes to test and integration, which is managed by **KBR (KBR US)**. Their job is to make sure all the electronics communicate, including an in-flight data link to a ground station that aids in mid-course adjustments to intercept a payload.

What's most interesting to us is how KBR is running the same SpinCo playbook as LHX and HON, announcing their Mission Tech business will become independent and be named **Trinzic**. The deal is expected to close in January 2027.

Howmet Aerospace (HWM US) provides the forged and cast superalloy and titanium components. On its Q2 call, management stated that "the near-term outlook for our missile business continues to strengthen, with demand increases being either seen or signaled for the PAC-3, THAAD, Tomahawk, and some classified

programs," alongside a sharp increase in inbound quotation activity. This isn't an enormous part of the business, though we are positive on its commercial engine business as well.

Finally, we note **Albany International (AIN US)**, a 130-year-old textiles business with a burgeoning advanced composites engineering arm – known as Albany Engineered Composites (AEC).

AIN's primary contribution to the missile buildout can be found on Lockheed's JASSM and LRASM families of munitions. Last September, AIN received a multi-year contract extension from LMT to continue to produce "unique composite components" for both programs through 2029, using braiding and resin-transfer-molding technology.

*"For both JASSM and LRASM missiles, we have been requested by our customer to increase production, **bringing output to the highest level achievable within our current capabilities**, including through the use of overtime."*

\- Albany International Q1 2026 Earnings Call; April 2026

Its 2Q results disappointed the market, driven by a miss in its fabrics business, but could present an attractive entry.

2) Advance Low-Cost Capabilities

-

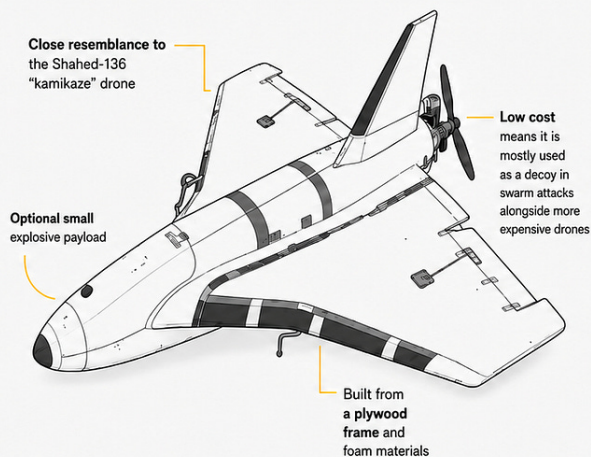
Even as the DoW spends big on the exquisites it sees the writing on the wall and is investing heavily into modern platforms suited for modern war.

Asymmetrical warfare has been the theme of the 2020s thus far. Ukraine's success in deterring a much larger (and allegedly, better equipped) Russian military exemplifies this dynamic perfectly. The point being that – *like the New York Mets*, spending a boatload of money doesn't give you a definitive advantage.

The Ukrainians have been notoriously successful with "Operation Spiderweb", commercial trucks fitted with container roofs that deploy quadcopter drones within range of Russian airbases.

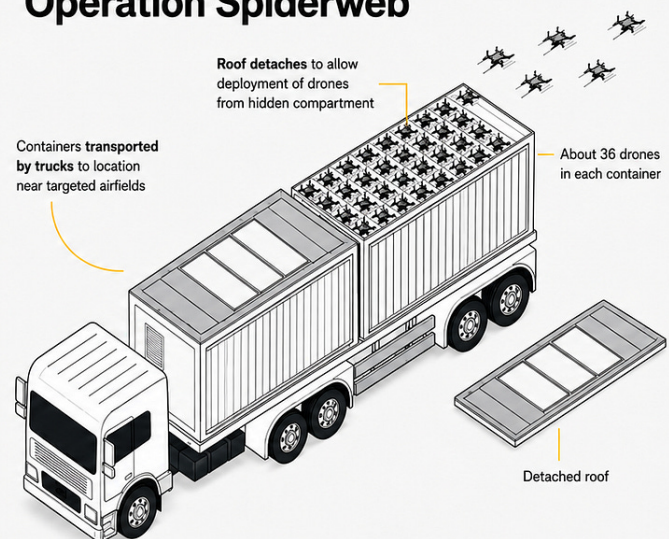
The Russian equivalent is the *Gerbera*. Open-source work on Russian salvo composition suggests that in some months in 2025, 40-60% of launches were Gerbera decoys. These are typically unarmed and cost around \$10,000, built for no other purpose than to make an air-defense commander spend a million-dollar defensive round on nothing.

Gerbera drone



Source: Institute for Science and International Security, Ukrainian Border Guard

Operation Spiderweb



Source: Ukraine's Security Service



Your opponent trading a \$10,000 Gerbera or a \$20,000 Shahed attack drone for a \$4,000,000 missile is a bad trade either way you frame it.

We laid out this "**warfare accounting**" logic last June in [**The New WFH \(War from Home\)**](#). The natural evolution of warfare seems to point to lower cost autonomous robots, vehicles, and missiles. Therefore **the product mix of warfare should begin tilting towards the lower end of the "cost per shot"**. The acute missile shortage should just be the tipping point which accelerates this trend even further.

The Cost of One Shot: What the West Fires and What It Costs

Drawn to relative length		Producer	Cost per shot	vs \$30k drone
	SM-3 Block IIA	RTX US	\$28m	933x
	THAAD	LMT US	\$13m	433x
	PAC-3 MSE	LMT US	\$4.2m	140x
	AMRAAM (NASAMS)	RTX US	\$1.1m	37x
	Coyote Block 2	RTX US	\$115k	3.8x
	APKWS II rocket	BA/ LN	\$30k	1.0x
	Interceptor drone	Private	~\$1.4k	0.05x
	Laser, per shot	LASR US	~\$5	<0.01x

Shaded: costs the same or less than the drone it shoots down

Source: Citrini Research, DoD FY2027 budget justifications, CSIS, company disclosures. Cost per shot are open-source estimates.

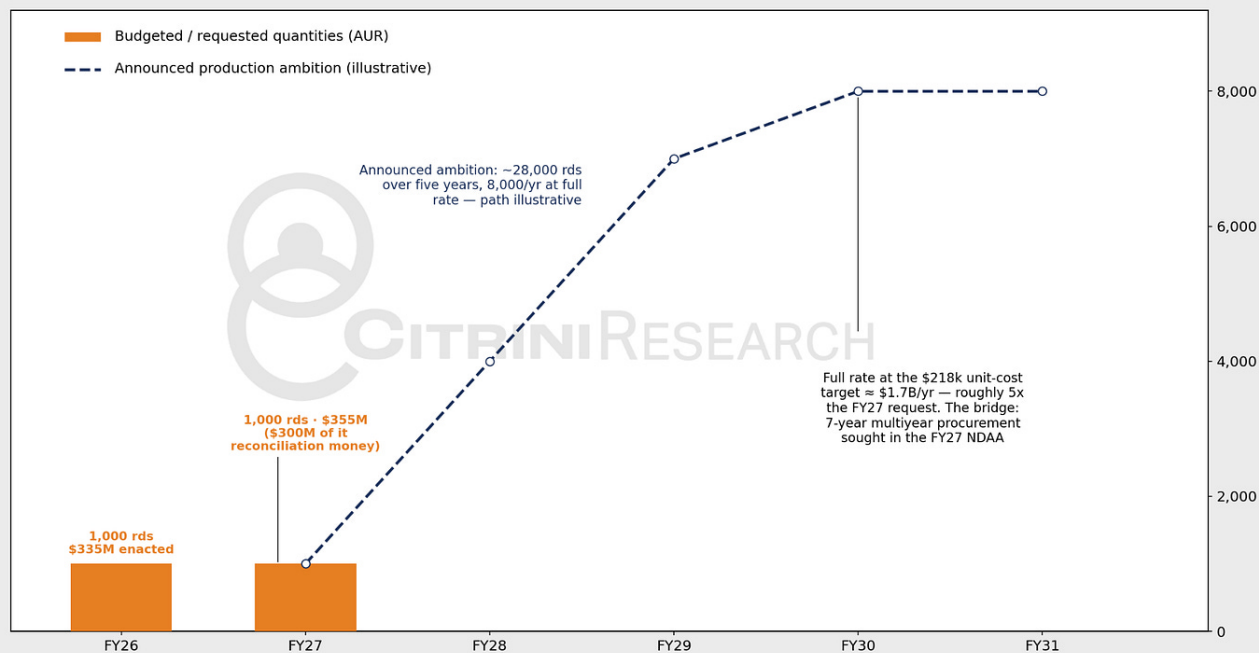
The proof of this evolution is in the US expansion of its FAMM (Family of Affordable Mass Missiles) budget.

The FAMMily

The so-called *FAMMily* consists of Zone 5's Rusty Dagger, CoAspire's Rapidly Adaptable Affordable Cruise Missile (RAACM), and Anduril's Barracuda-500 that reportedly cost in the range of \$218,000 to \$355,000. That's roughly one-sixth to one-quarter of a JASSM-ER that they aim to compete with.

The DoW program targets roughly an eightfold increase in FAMM production, from 1,000 to 7,990 rounds. Set that against JASSM production at 860 a year, which is barely increasing. **The production ramp of low cost missiles is set to be massive.** Yet, nobody is looking at it because this year's request is a rounding error next to the \$14 billion of PAC-3.

FAMM: Budgeted Quantities vs Announced Ambition

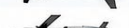


Source: FY 2027 DoW Budget Overview Fig. 3.4, DoW release Jul 15 2026, Air & Space Forces, TWZ; Citrini Research. Ramp path is illustrative, anchored to stated

The primes are swiftly adjusting to this new reality. First, by building out their own suite of low-cost technologies and secondly, by piling into startups that are leading the way on autonomous, modern warfare. We'd even argue that the Trump administration's denigration of buybacks and dividends will extend the runway for defensetech fundraising – ***after all, the missile replenishment windfall has to go somewhere...***

To the first point, on July 20, [Lockheed unveiled](#) the **PAC-3 ACE**, designed to defeat cruise missiles and short-range missiles at half the price of a PAC-3 MSE. While Lockheed executives say the low cost missile complements rather than substitutes its existing suite, we're reading this as Lockheed effectively volunteering to halve the price of its own flagship interceptor. **We don't believe they would do this unless the product mix shift is real and here to stay.**

Again, this is not to say the DoW will stop producing higher end weapons – the US government hasn’t shown a ton of cost discipline in the past.

Western Low-Cost Munitions by Cost Per Shot					
Product		Company	Listed	Cost / shot	Purpose
	Cruise missile	Lockheed Martin	LMT US	~\$2.1m est.	Cruise + SRBM intercept
	Reusable interceptor drone	Anduril	private	~\$500k	Reusable drone interceptor
	Long-range loitering munition	Anduril, CoAspire, Zone 5	private KOG NO	\$218-355k	Mass air-launched strike
	ERAM glide bomb	Zone 5, CoAspire	private KOG NO	~\$246k impl.	Export strike (Ukraine)
	Loitering munition	AeroVironment	AVAV US	~\$150k	Loitering munition
	Palletised strike missile	Lockheed Martin	LMT US	~\$150k	Palletised affordable strike
	Counter-drone interceptor	RTX	RTX US	~\$115k	Counter-drone interceptor
	Guided rocket / counter-drone	BAE Systems	BA/ LN	~\$30k	Guided rocket, counter-drone
	30mm airburst round	Rheinmetall	RHM GR	~\$1.5k	Gun-based drone defeat
	Drone-on-drone interceptor	Frankenberg, Greenjets	private	~\$1.4-5k	Drone-on-drone intercept
	Directed-energy laser	nLight, Lockheed	LASR US	~\$5	Directed energy, swarms
	High-power microwave system	Epirus	private	<\$1	High-power microwave
COST PER SHOT NOT DISCLOSED					
	Low-cost hypersonic strike	Castelion	private	n/d	Low-cost hypersonic strike
	Drone / cruise interceptor	MBDA	AIR FP, LDO IM	n/d	Drone / cruise intercept
	One-way effector	MBDA	AIR FP, LDO IM	n/d	One-way effector, saturation
	Small cruise missile	Leidos	LDOS US	n/d	Small cruise missile
	Low-cost strike + EW	L3Harris	LHX US	n/d	Low-cost strike + EW

Source: Citrini Research; FY2027 Department of War budget justifications; DoW, DGA and company announcements; press reporting. Costs per shot are open-source estimates and vary materially by source, volume and configuration. ERAM implied from the August 2025 FMS award. PAC-3 ACE shown at half the PAC-3 MSE unit cost.

With the FAMMily companies being mostly private, our instinct is to buy the supply chain.

Ironically, however, the objective of FAMM is to avoid these supply chain snarls entirely. Anduril, for instance, has qualified four separate turbojets for its Barracuda-500 precisely to avoid supply shortages – roughly 70% of its airframe is commoditized. Their design uses 95% fewer tools than a conventional cruise missile, thus removing a monopoly “chokepoint” for them to circumvent, and a tradable bottleneck for us to buy.

In this regard, **Kratos (KTOS US)** is one of the few highly exposed companies to this class that fits the bill as a near-pure play propulsion business. The Spartan turbojet line is ramping production to 3,000 engines in 2027,

The TDI-J45 turbojet engine is designed to deliver affordable military-grade performance in compact form. TDI engines are tested for reliability and survivability on airborne platforms.

Engine Specifications

Parameter	TDI-J45
Uninstalled Maximum Thrust at Sea-Level Static	30 lb, (13.3 daN)
Overall Length (with minimum reference nozzle)	9.1 in (231 mm)
Nominal Engine Case Diameter	4.5 in (114 mm)
Uninstalled Engine Weight	9 lb _m (4 kg)
Maximum Operating Altitude / Mach Number	35,000+ ft (10,668 m) / 0.85+
Maximum Continuous Power Generation	1.2 kW
Approximate Maximum EGT	1,600 °F (871 °C)
Proven Starting Methods	Pyrotechnic, Windmill
Fuel Compatibility	JP-10, JP-8, JP-5, JET-A, JET-A1

High-Performance, Low-cost Propulsion for Military UAS and Tactical Missiles

TDI-J45 Turbojet Engine

PRODUCT FACTS

Compact and Power-Dense

- 4.5" O.D., 9" length
- Modular exhaust nozzles adaptable to any installation
- Thrust up to 30 lb, sea-level static
- Best-in-class TSFC from state-of-the-art turbomachinery
- Integral generator delivers up to 1.2 kW of continuous power

Established 'Turn-Key' Propulsion Solutions

- Nearly 40 years of development experience with major defense primes
- 100% designed and produced in the USA
- Scalable production capacity up to 10,000 engines/year
- Fuel and explosives handling/storage and support
- Integration testing, flight test, and full lifecycle support

Simple, Robust Architecture & Subsystems

- Engine and subsystems tested for survivability on air-launched platforms
- Able to withstand high acceleration from ground-launched applications
- Reliable start and operability validated via multiple captive-carriage flight tests

kratosdefense.com

Approved for Public Release: DOPSR 24-T-0743

While the stock has come down a lot, it's still not cheap by any measure – trading at roughly 60x forward P/E. But the company's position in low-cost military grade propulsion is robust and perhaps should command a premium in public markets. KTOS being oversold in the short term could prove to be an attractive entry point if the company is able to capitalize on the production ramp forthcoming.

Drones

The \$40 billion that was committed at the most recent Ankara summit could mark an interesting reversal point for the names that have finally come down to more reasonable valuations.

*"Drone dominance will do two things: drive costs down and capabilities up. We will deliver tens of thousands of small drones to our force in 2026, and **hundreds of thousands of them by 2027.**"*

\- Pete Hegseth, US Secretary of War

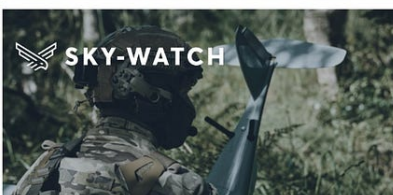
With mass production of FPV collapsing the cost of airframes, we believe the most value will accrue to drone *consumables* and to what can be used to shoot down drones.

In our last Modern Warfare update, we highlighted **AeroVironment (AVAV US)** as the best example of a fixed-wing loitering munition. Their Switchblade 400 was selected by the US Army's LASSO program as a substitute for tube-launched anti-tank missiles. The Army is requesting up to \$110 million for LASSO procurement in FY2027, with an estimated \$1.2 billion earmarked between FY2026-FY2031.

Next Vision (NXSN IT) is the drone equivalent of the propulsion thesis for rockets, making ultra-light gimbals and cameras. NXSN's products are known to have been used in the US-Israeli UAV deployments into Iran. The stock is off roughly 50% from its 2026 peak and now trades at a more palatable 26x 2026E EV/EBITDA.

Trusted By The Leading Customers For Diverse And Complex Missions

NextVision
STABILIZED SYSTEMS LTD



Investor Presentation | May 2026

15

In the US, we can turn to **Unusual Machines (UMAC US)** as a domestic supplier of drone motors, batteries, and airframes. Like KTOS, UMAC is priced for growth – and the company's association with the Trump family has certainly played a factor in its year-to-date performance. However, the value proposition is not lost on us: a domestically-manufactured, NDAA-compliant provider of drone components gets you direct exposure to the US drone buildout.

Ondas Holdings (ONDS US) is the publicly-traded representation of interceptor drones. Its Iron Drone Raider has been active across Europe and the Middle East as a potent deterrent to Gerbera and Shahed drones. The company remains small and speculative, as we detailed in our February Modern Warfare update, but is worth highlighting as a high-beta, growth name in this universe.

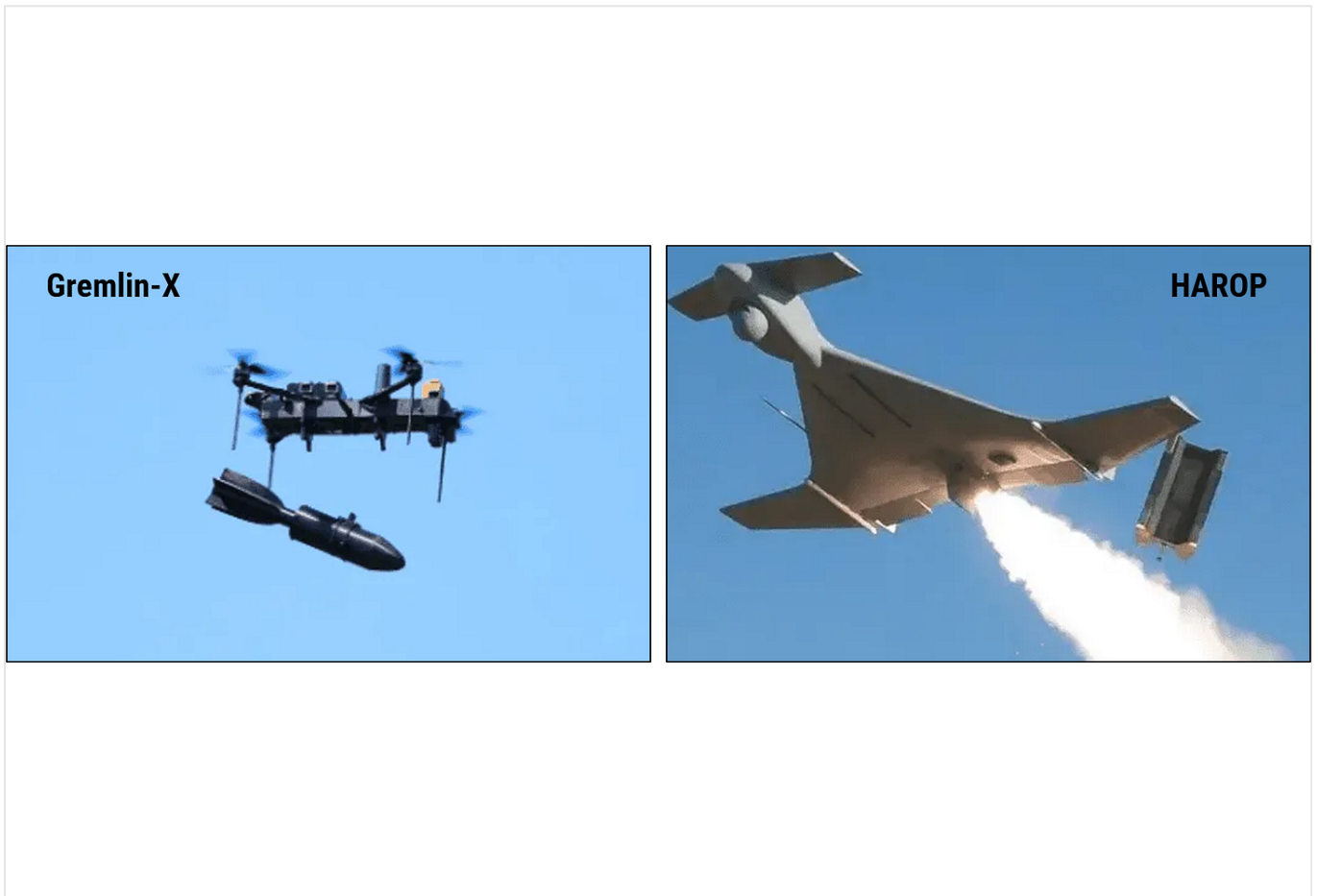
Palladyne AI (PDYN US) is finishing off a decade-long 360° pivot – starting as a defense contractor, shifting to robotics, spinning off its physical division as a pure AI trade, and then back to manufacturing munitions for the war machine.

Just a few years ago the company would be a clean expression of a robotics thesis, but recent acquisitions have embedded them in supply chains like the F-22 and Tomahawk programs.

They crossover to the “low cost capabilities” side as well.

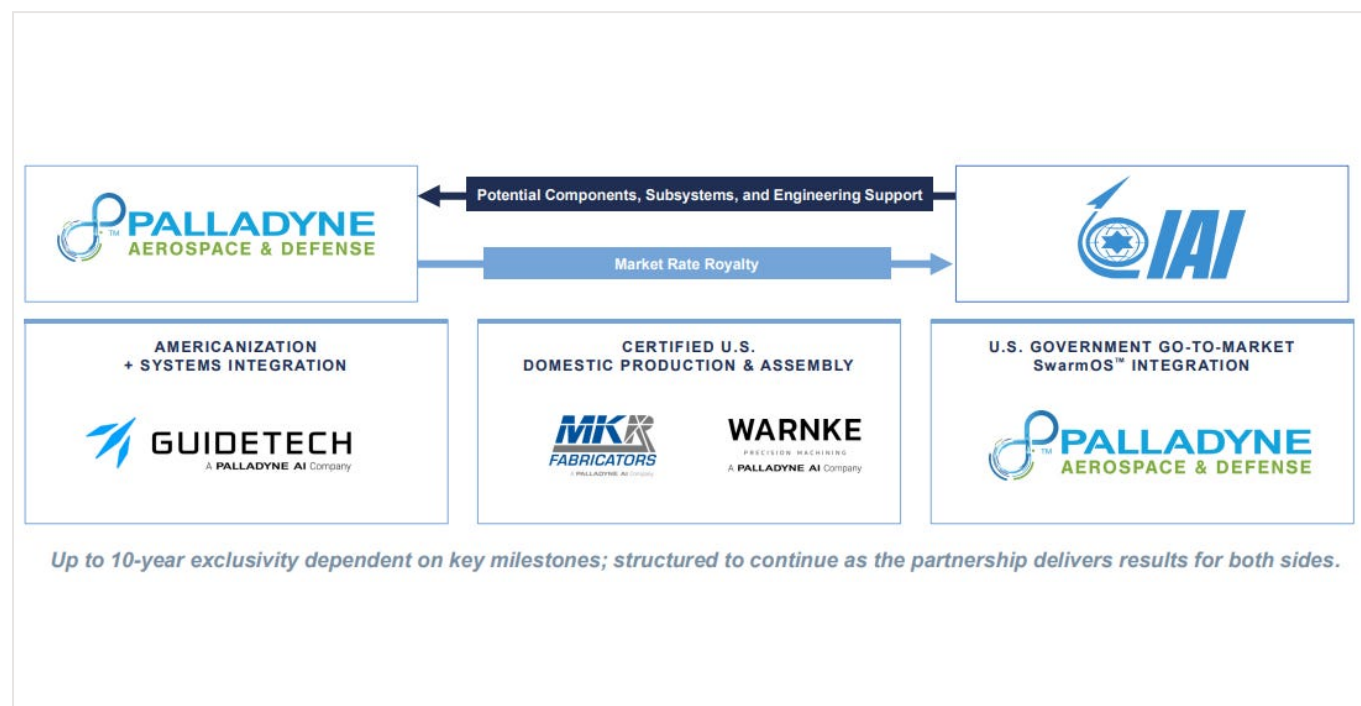
The **Gremlin-X** is a multi-use bomber currently in development, and in June it received a contract under the US Army’s Disruptive Applications program, alongside **SwarmOS**, an architecture that allows for autonomous communications and coordination for drone swarms.

So far this feels like a layup for both of our themes here, but what really caught our eye was a recent partnership with IAI, Israel’s state-owned defense contractor. **Palladyne has the exclusive US manufacturing rights to IAI’s full suite of loitering munitions.**



The **HAROP** is a long-range loitering munition similar to Iran’s Shahed drones, trading a higher base cost with precision, man-in-the-loop guidance, and the ability to turn around and land. These drones are already battle-proven and integrated into existing defense systems – these were what took out Russian S-300s during the Second Nagorno-Karabakh War between Azerbaijan and Armenia.

All of that means there's no lengthy development cycle – the drones are production ready and fill an immediate need.



The company's recent acquisitions now make sense, as each business unit will control a piece of the supply chain.

Note: While we are including a handful of drone picks in our missile restocking basket, there is a wider list of pure-play public companies that could fill an entire thematic primer. We won't attempt that here, but we have constructed a standalone basket for a direct expression of the drone theme.

Our revised drone basket is shown below available [here](#).



Source: Citrini Research

Drone Basket

Active holdings & allocations · August 12, 2026

MODERN WARFARE: DRONES		25 holdings · equal-weight 4%
ACSL	(6232 JP)	4%
AeroVironment	(AVAV US)	4%
Aerospace Industrial Development	(2634 TT)	4%
Chemring Group	(CHG LN)	4%
Draganfly	(DPRO US)	4%
DroneShield	(DRO AU)	4%
Elbit Systems	(ESLT US)	4%
IPG Photonics	(IPGP US)	4%
Karman Space & Defense	(KRMN US)	4%
Kratos Defense & Security	(KTOS US)	4%
L3Harris Technologies	(LHX US)	4%
LIG Defense & Aerospace	(079550 KS)	4%
M-tron Industries	(MPTI US)	4%
Mobilicom	(MOB US)	4%
Next Vision Stabilized Systems	(NXSN IT)	4%
nLIGHT	(LASR US)	4%
Ondas Holdings	(ONDS US)	4%
Palladyne AI	(PDYN US)	4%
Parrot	(PARRO FP)	4%
Red Cat Holdings	(RCAT US)	4%
Redwire	(RDW US)	4%
Swarmr	(SWMR US)	4%
Teledyne Technologies	(TDY US)	4%
Thunder Tiger	(8033 TT)	4%
Unusual Machines	(UMAC US)	4%

Source: Citrini Research. Weights as of August 12, 2026.

3) Leverage Global Allies

•

The missile shortage is not just America's problem. It's a problem for any allied nation who has assumed US protection and the availability of US supplies.

In this context, foreign defense contractors represent:

- **Incremental production capacity**
- **Sovereign necessity**
- **Alternative supply in global arms sales**

We expect the ongoing restocking cycle will also spill over into the European and Asian industrial base, and a rash of recent announcements indicate deepening industrial entanglement with US defense contractors.

US Partnerships & Production Capacity

Kongsberg (KOG NO), in partnership with RTX, co-developed the National Advanced Surface-to-Air Missile System (NASAMS) – KOG supplies the fire distribution center, the canister launchers, and the communications suite while Raytheon equips the Sentinel radar and interceptor missile (effectors). NASAMS are actively used across sixteen countries and are employed to defend the US Capital region.

NASAMS: Kongsberg–Raytheon Partnership



Raytheon:
Effector
(interceptor missile)

Kongsberg:
Canister launcher

NASAMS PARTNERSHIP



Kongsberg contributions:
Fire distribution center, canister launchers, communications suite



Raytheon contributions:
Sentinel radar, effectors

i Fire distribution center, communications suite, and Sentinel radar are system components not shown in this image.

 KONGSBERG DEFENCE & AEROSPACE

 RAYTHEON

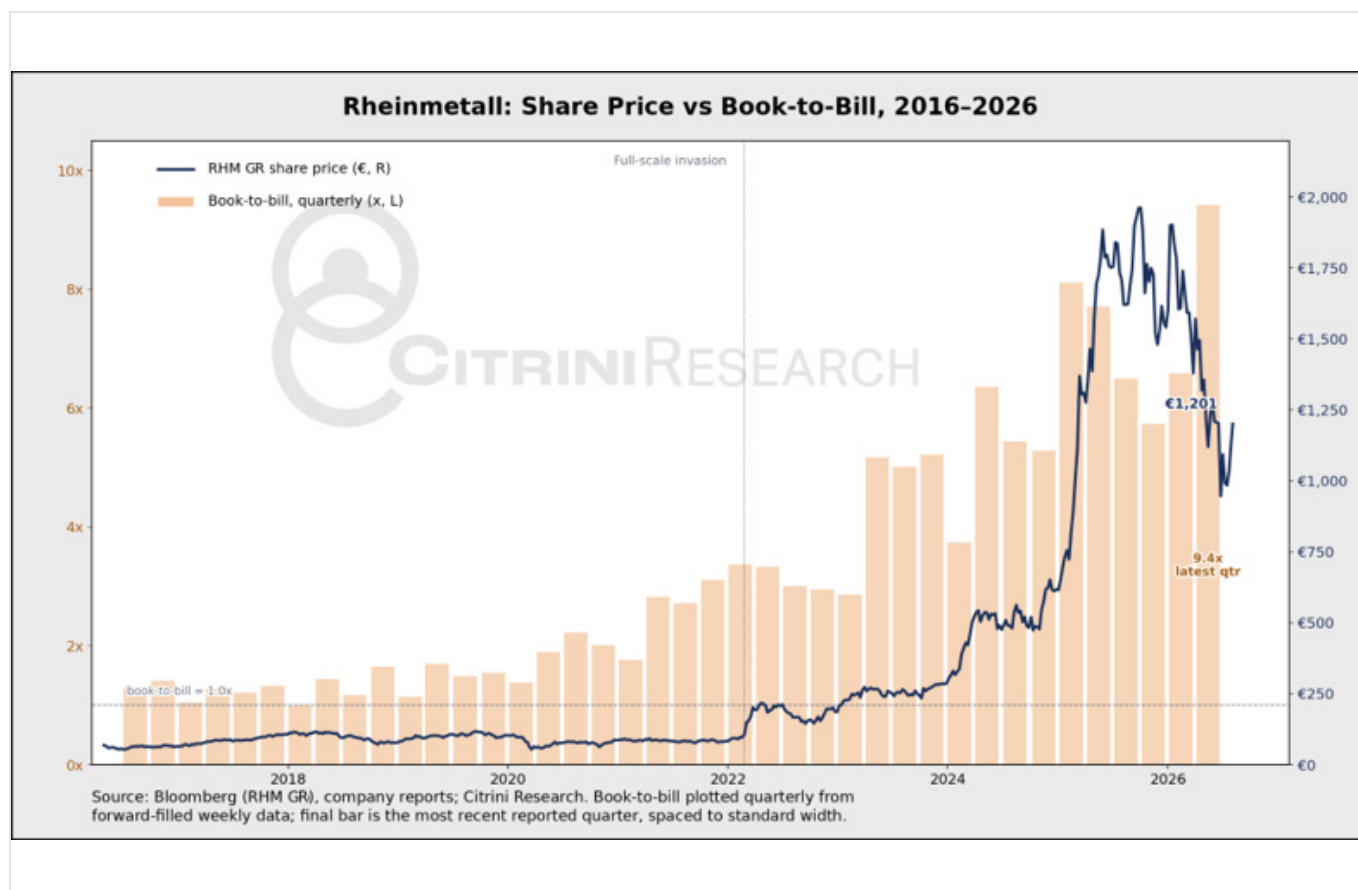
In April this year, RTX promoted AMRAAM-ER – the extended-range effector built specifically for NASAMS launchers – into full-rate production under a \$235 million contract award running through 2030, with FMS funding from Hungary, Kuwait, Lithuania, the Netherlands, Taiwan, and Norway.

The order book is potent: the US Army contracted over \$1 billion worth of NASAMS fire units for Kuwait in May, of which we estimate \$400 million will go to Kongsberg. What's more, last summer, the US approved a \$4.7 billion sale of NASAMS air defense to Egypt, while Taiwan signed a near-\$700 million contract last fall. The Egypt approval hasn't translated into a tangible contract quite yet, although the approval is a nice stamp of validation. The forward order book is effectively telegraphed from government filings – which rings bullish for Kongsberg looking ahead.

KOG is also playing for the low-cost category via its 90% stake in Zone 5 Technologies, a California-based defensetech business that is one of two manufacturers of the AGM-188A *Rusty Dagger* missile – a 926km-range low-cost strike missile competing in the US Air Force's ERAM and FAMM programs. Rusty Daggers are already being supplied to Ukraine and were recently cleared for use on four US fighter types – including the F-16.

Per the FY2027 budget request, the US Air Force is seeking up to 28,000 FAMM munitions over the subsequent five years. Management believes their Zone 5 acquisition will be integral in meeting this target, stating that *"Zone 5 missiles are designed to be delivered in thousands, even tens of thousands per year."* In the medium term, KOG believes the Zone 5 business could generate NOK 10 billion (~\$1 billion) of annual revenue.

Rheinmetall (RHM GR) is a bit of an inverse case to KOG. Whereas KOG acquired their way into a US footprint, RHM is creating a beachhead for US primes looking to develop a European manufacturing presence. And while the stock has been a loser for the past year, its backlog continues to surge higher, now reaching a book-to-bill ratio of nearly 10x.

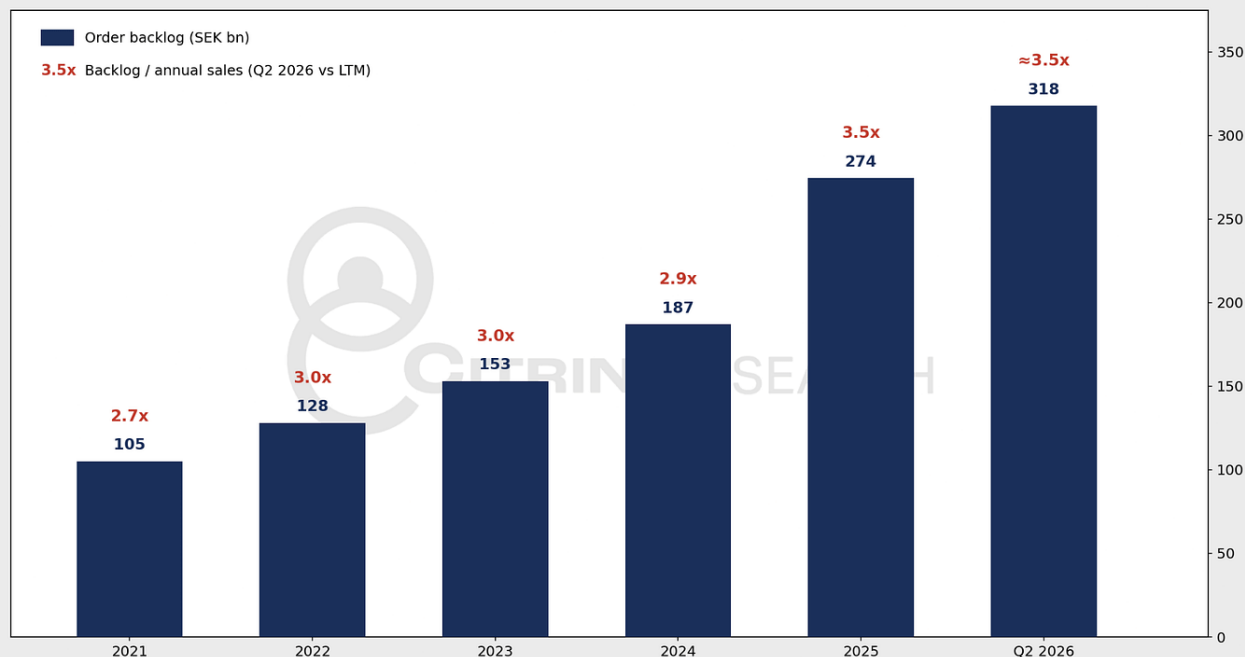


In July at the NATO Summit Defense Industry Forum – LMT and Rheinmetall signed an MOU for a joint-venture geared at building a “European center of excellence” for manufacturing and distributing ATACMS at Rheinmetall’s Unterlüess site. Lockheed claims this is the world’s only ATACMS facility found outside of the US – with production expected to commence in 2027. This extends an existing partnership between Lockheed and Rheinmetall, where they’ve previously collaborated on the GMARS system, a HIMARS-class launcher.

Now, of course, with anything in the defense space – it still needs government signoff. And, on top of that, the ATACMS system is being phased out in favor of the PrSM family of missiles.

Saab (SAABB SS) represents the capacity expansion leg of our European defense thesis.

Saab (SAABB SS): The Order Book Runs Years Ahead of the P&L



Source: Citrini Research, Saab company reports

In Sweden, the company has committed €500 million to Saab Dynamics, its missiles and munitions division. Like others we've highlighted in this piece, Saab is aggressively ramping capacity, targeting a 4x in output. From a US restocking perspective, Saab plays a similar role to Ducommun in supply offtakes – In April 2025, the company broke ground on a new \$75 million facility in Grayling, Michigan. The plant is geared towards final assembly and integration of shoulder-fired munitions, although management has hailed this particular plant as *"a national asset to the US government"*. Saab has made this plant available to US defense businesses seeking new capacity, serving as a valuable relief outlet for supply-constrained primes.

Finally, Saab has dipped its toes in the counter-UAS race through the **Nimbrix missile**. These munitions are expected to hit the market towards the end of this year, and – in our view – reflects the effort from incumbent defense businesses seeking to capitalize on the next generation of munitions and defense platforms.

European Missile Independence

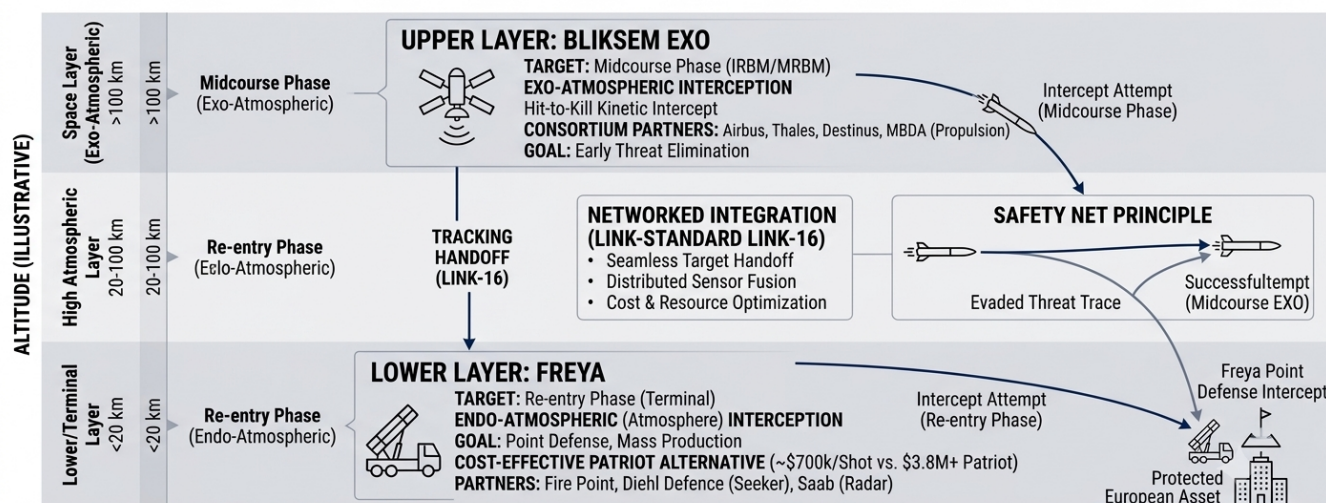
The intertwining of the US-Euro defense complex is partly out of necessity. The armament shortage means rationing and hard decisions on where to route air defense capabilities – a recent example of this was a [redeployment](#) of THAAD batteries from South Korea to the Middle East.

Europe's primary air defense system is the SAMP/T, built out by the **Eurosam consortium (MBDA – owned by Airbus, BAE, and Leonardo – with Thales as a partner)**. It's the closest analog to the Patriot missile system, and production is already ramping, with expectations to double missile output by end of year.

Yet warfare has, as we say, *modernized*, and the SAMP/T system is focused on long range attacks like cruise missiles and aircraft while adversaries are pushing hard into loitering munitions.

In response, ten European countries have formed the **Freya Anti-Ballistic Missile Coalition** to build out a next-gen interceptor system, directly supporting Kyiv's Freya air-defense project. Alongside is the **Bliksem EXO Consortium** to develop an exo-atmospheric interceptor system to be competitive with the THAAD platform.

EUROPE'S EMERGING MULTI-LAYERED MISSILE DEFENSE: A STRATEGIC ARCHITECTURE



Note: Altitudes and costs are illustrative of multi-tiered concepts and hypothetical 2026 defense projects.

CitiriniResearch

These two systems will be complementary in nature. Bliksem EXO will handle the upper-tier atmospheric interception while Freya will focus on terminal-phase interception. Another overlap is with industrial partners – **Thales (HO FP)** is well positioned in both as it will provide the tracking, C2, and radar, acting as the sensory backbone for European missile defense.

Korean Defense

South Korea is seeking to kick arms exports into overdrive, committed to a “larger-than-expected budget” and aiming to become the world’s fourth largest arms exporter, only trailing the US, Russia, and France.

This initiative is underscored by the **Defense Innovation 4.0** framework, first announced by President Yoon Suk Yeol in 2023. South Korea’s procurement agency – the Defense Acquisition Program Administration

(DAPA), has established aggressive export targets – Last year, DAPA sought to export \$20 billion of arms. While they fell short of their target (actual: \$15.4 billion), arms exports in 2025 still jumped 60% versus the year prior. The swift and aggressive foray into defense innovation has emboldened the country's defense sector to win key defense contracts in Europe and the Middle East.

Notably, Defense Innovation 4.0 centers on autonomous artillery, unmanned ground, air, and surface vehicles, manned-unmanned teaming (MUM-T), and of course – drone technology. It's exactly these categories, alongside conventional munitions and air defense, where the demand pull from the US will be most accentuated.

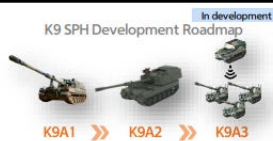
Korea's medium-range interceptor – the Cheongung-II / M-SAM – is produced by **LIG Defense and Aerospace (079550 KS)**, with **Hanwha Aerospace (012450 KS)** supplying the launchers and **Hanwha Systems (272210 KS)** the radar. This system took center stage earlier this year in the UAE's defense against Iranian strikes – and neighboring countries in the Middle East have since pressed Seoul for faster deliveries – serving as a viable alternative for Gulf countries seeking US-supplied Patriot missiles.



Total Defense Solution Provider

Drone / Anti-Drone Lineup

UGV (Unmanned Ground Vehicle)



GRUNT - Next Generation UGV



EOD(Explosive Ordnance Disposal) Robot



UAV (Unmanned Aerial Vehicle)



Next Generation small UAV engine



Next Generation drone wingmen, CCA(Collaborative Combat Aircraft) engine



L-PGW (Loitering Precision Guided Weapon)



USV (Unmanned Surface Vehicle) / UUV (Unmanned Underwater Vehicle)

Combat USV



Surveillance UUV



Combat UUV



Anti-Drone (Air Defense)

BIHO Gun and Missile Air Defense System



Chunma Short-Range SAM System



Chunho 30mm Anti-Aircraft Gun
Wheeled Vehicle



Sky Light Laser Weapon System



LIG Defense has since edged out Hanwha Systems to lead the ₩3 trillion (\$2.2 billion) award for the next iteration of Cheongung missile – the Cheongung-III / M-SAM III.

Where LIG and Hanwha Systems lead in interceptor missiles, Hanwha Aero (important distinction!) has the lead in offensive-strike missiles through their Chunmoo guided MLRS and CGR-080 precision-guided rocket family. The order book quantifies this: Norway inked a near-\$1 billion contract with Hanwha Aero to supply up to 16 Chunmoo launch vehicles, while Poland signed an even more expansive \$4 billion contract to locally produce CGR-080 guided missiles for Poland's Homar-K system.

Hanwha's localization efforts also spill over into the United States – earlier this year, the company secured an enhanced use lease for a site at the Pine Bluff Arsenal in Arkansas, paving the way for a +\$1 billion

manufacturing plant to produce critical missile propellants and energetics. As a kicker, management has explicitly flagged rocket-motor production as a follow-on, subject to demand.

The memory-driven unwind of the KOSPI serves as a valuation reset, rather than being reflective of a broken thesis. The demand backdrop is robust – and, in the instance that US supply is unable to meet both domestic and international demand – Korean defense businesses may be able to pick up that overflow.



Source: Citrini Research

4) Secure Critical Materials

The last demand vector in focus within the missile replenishing cycle is at the raw materials layer. We won't spend a ton of time rehashing our thesis here – we'd recommend readers revisit our [Atoms vs. Bits](#) piece,

which we penned back in February. We argued that several secular themes would drive structural demand for critical materials and components, including titanium, aluminum, tungsten, and more.

Tailwinds for Atoms

Structural demand drivers for critical physical materials and components.



For the sake of the missile replenishment trade, we see spending converging into five key end markets: munitions and land systems, air and missile defense, drones and counter drones, ISR, space and digitization, and naval crafts. Coincidentally, each of those consumes **energetic materials and propellants, titanium and superalloys**.

The urgency is no longer theoretical: NdPr oxide prices have doubled since 2024, with ex-China sources commanding a strong premium. Tungsten has also tripled over this timeframe, while European contractors have been unable to secure magnets for missile guidance systems. At the same time, Beijing is unlikely to grant export licenses to defense users.



⌕ PRESIDENTIAL ACTIONS

SECURING AMERICA'S DEFENSE SUPPLY CHAINS AND ENSURING DOMESTIC ACQUISITION OF CRITICAL MATERIALS

Executive Orders | July 20, 2026

The White House's July 20 order enforces this from the other side — Chinese-sourced critical minerals are barred from defense procurement starting January 2027, and contractors must fund active qualification of alternatives just to get a temporary waiver.

Within the US side, **ATI (ATI US)** and **Carpenter (CRS US)** have been the quiet outperformers of 2026, having gained 99% and 78%, respectively. ATI's materials and forgings are found on a handful of sub-assemblies, such as the nickel superalloy forgings that line the rocket motor exhaust nozzle produced by L3Harris.

"Our materials, titanium, nickel and hafnium are vital to missile platforms like Tomahawk, PAC-3 and THAAD. These materials are used for structural applications and propulsion systems where high temperature performance, strength and durability are required. This is a small percentage of our business today but provides an opportunity for accelerated growth and strong visibility ahead."

ATI, Q1 2026 Earnings Call

Of course, we feel it's beneficial to widen our geographic scope. After JX Advanced Metals acquired Toho Titanium, there is essentially just one pure-play titanium sponge producer outside of China and Russia: **Osaka Titanium (5726 JP)**, which we covered **[back in February](#)**. Titanium sponges are the raw feedstock of every aerospace-grade titanium part, positioning Osaka as a near-monopoly player in the premium titanium market.

On the other side of the titanium restocking thesis lives **Norsk Titanium (NTI NO)** – which is perfectly positioned as a relief valve for this exact bottleneck. The company’s “Rapid Plasma Deposition” technology presents itself as a leaner alternative to traditional forging techniques.

WHY CUSTOMERS USE RPD®

Less waste. Shorter lead times. Lower supply-chain risk.



Reduce Buy-to-Fly

Near-net-shape preforms cut material use by up to 75% in high-waste parts.



No Forging Constraints

No part-specific dies; no exposure to forging queues.



Certified Production

Nadcap, AS9100D, AMS 7004/7005, MMPDS-published.



Secure Supply

Three facilities across global footprint, including ITAR-registered U.S. defense production.

On July 27, [the company was selected](#) for a DoW program that qualifies NTI as a supplier across all US military services. We believe Norsk Titanium personifies the type of company which stands to reap the tailwinds of “Rearmament 2.0”, yet its management has struggled to execute, which has made it (so far) a lousy investment.

RPD® VERSUS FORGING

A practical alternative to legacy titanium production.

Customer Challenge	Conventional Forging Constraint	RPD® Advantage
High titanium waste	Large forged or billet input must be machined down	Near-net-shape preform — up to 75% less material
Long lead times	Dies, queues, and multi-step supplier networks can delay supply	No part-specific forging die required
Cost pressure	Material, machining, tooling, and inventory all compound cost	Up to 70% less machining; ~40% lower total part cost
Supply-chain risk	Limited qualified capacity can constrain production	Qualified, ITAR-registered U.S. source
Part adoption	New process must satisfy engineering, quality, and procurement	Nadcap, AS9100D, AMS 7004/7005, MMPDS-published data

Almonty (ALM US) is a tungsten producer and **Renk (R3NK GR)** has a near Western monopoly on transmissions for tracked vehicles. The valuations of these have sobered up materially (*no pun intended*) since the defense euphoria in Q4 2025.

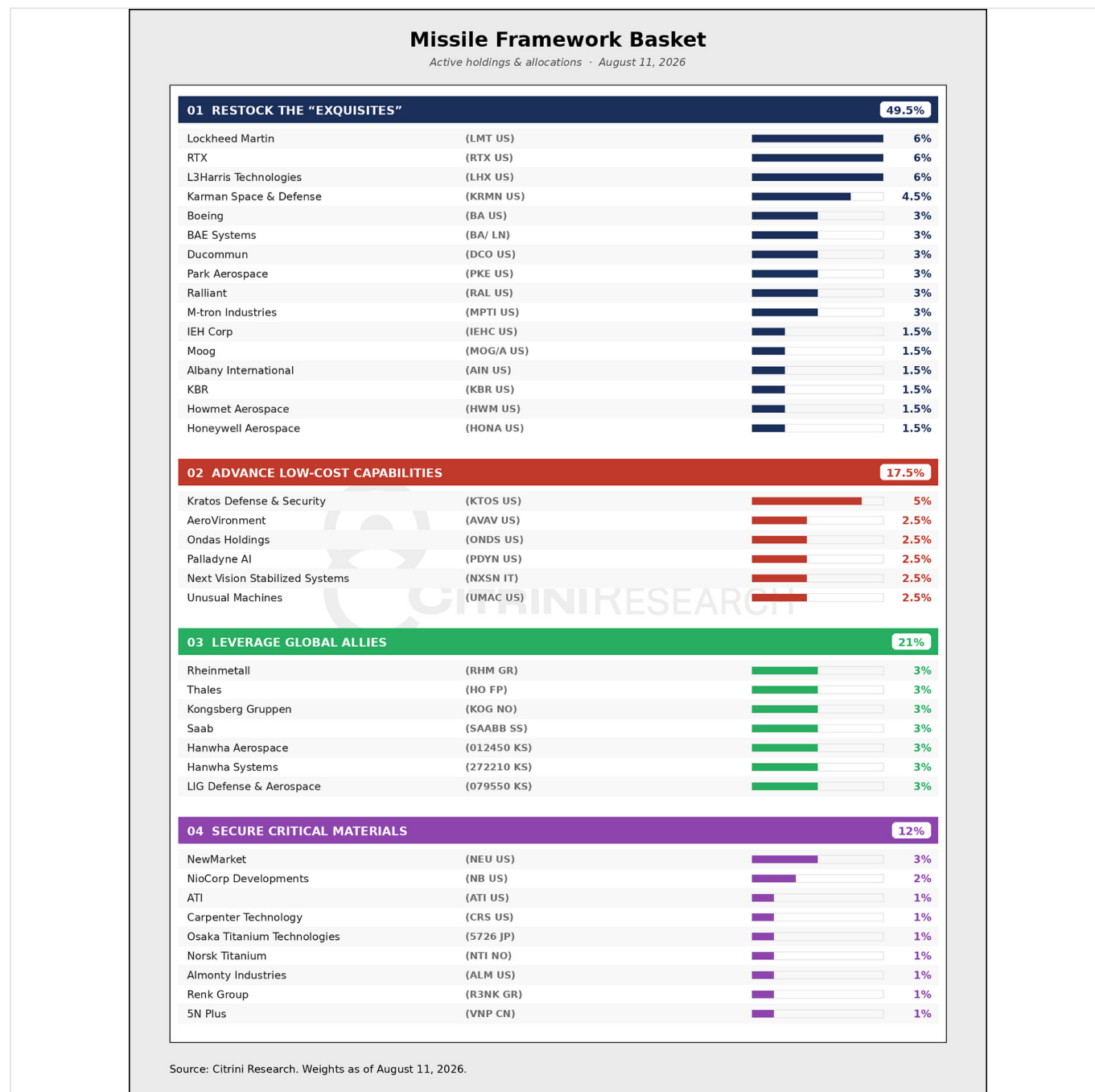
NioCorp (NB US) just had some fresh news, signing a non-binding MOU with Lockheed for up to 15 tonnes/year of scandium oxide. Last year there was no domestic scandium production, which is needed for aerospace alloys. Alongside this deal is a supply agreement with **5N Plus (VNP CN)** for access to germanium, used in sensors and other key components.

Finally, **NewMarket's (NEU US)** January 2024 acquisition of American Pacific (AMPAC) gave it the leading North American producer of ammonium perchlorate — the oxidizer that is the primary ingredient in every solid rocket propellant, defense or space. This is the smaller of the company's two segments, but with solid margins, market dominance, and a strong demand signal, it's enough to move the needle. The company is investing \$100 million for a new production line at Cedar City, lifting AP capacity by more than 50% with completion scheduled for 2026.

The Basket

•

Our basket construction includes the names mentioned above and is weighted to express pure exposure to the theme, with some subjective judgement considering the tactical opportunity. You can find the basket and backtest [here](#).



This article is for informational purposes only and does not constitute investment advice. By accessing this material, you agree to our [Terms of Service](#).