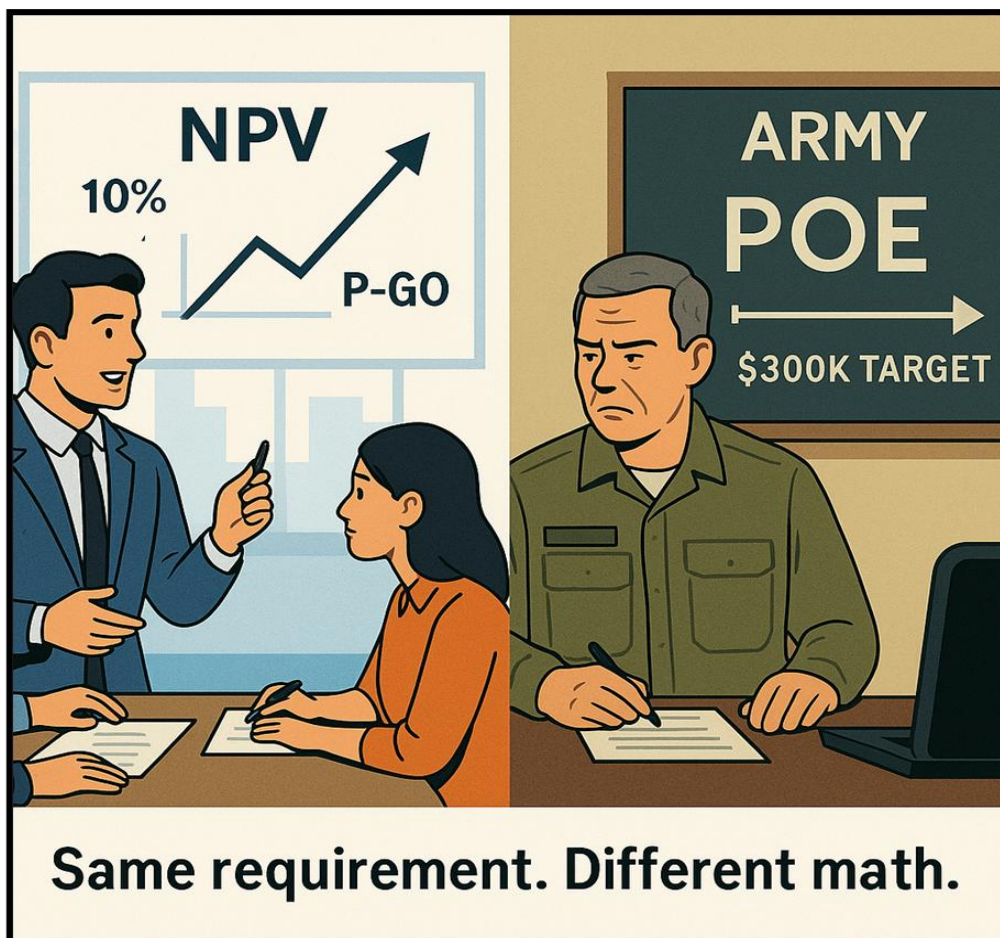


A Technological Brick Wall: Why the Army's Pricing Model Risks Losing the Warfighting Edge

BLUF: The Army's pricing model—built for Cold War-era primes and 40-year platforms—is fundamentally misaligned with the risk and return expectations of venture-backed tech firms. While these firms evaluate opportunities using Net Present Value and 20%+ hurdle rates, the DoD still uses Program Office Estimates (POEs), ICEs, and AUMC targets rooted in legacy assumptions. The result is a financial disconnect: even affordable, off-the-shelf solutions become no-bid propositions when margins don't meet internal return thresholds. Unless DoD adapts its pricing logic to reflect commercial capital behavior, it will continue to repel the very innovation it claims to seek—and risk hitting a technological brick wall when it needs rapid capability most.



The Army wants speed, agility, and commercial tech innovation.

But its pricing model—designed for legacy primes—doesn’t align with how industry calculates risk and return. As the character of war accelerates, from massive platforms to fast-cycle systems, **the DoD and Army are risking a technological brick wall**. Pricing models that worked for the Abrams tank or Ford-class carriers don’t work for drone-disabling software or modular robotics. Unlike the government’s approach to affordability—built around Average Unit Manufacturing Cost (AUMC) and life cycle cost targets—tech firms make bid/no-bid decisions using tools like Net Present Value (NPV) and Free Cash Flow (FCF). These commercial calculations account for:

- **Upfront investment**—often millions in IR&D before any contract is awarded
- **Risk**—probability of winning (P-Win) and funding (P-Go)
- **Time horizons**—longer delivery schedules shrink today’s value of future profit
- **Volume**—low-quantity buys don’t amortize sunk costs

What matters to industry is not whether a unit is “affordable” to the Army, but whether the contract delivers a positive return to justify investment. This paper outlines why that misalignment is growing dangerous and illustrates the point with a notional Future Unmanned Ground Vehicle (FUGV) scenario that reveals just how far off the financial math really is.

The FUGV Scenario: A Misalignment in Pricing and Profit Expectations

A notional FUGV program (600 units, 6 years, **\$10M** investment) illustrates the pricing disconnect (details in the scenarios section below). At a \$300K AUMC, even a 10% profit margin is not enough to overcome a negative NPV calculation, reflecting the challenges faced by legacy DIB firms. With this time horizon (6 years is long for tech companies), low volume buy, and \$10M investment, the AUMC would have to rise to \$434K to yield a barely positive NPV (\$1M) with a 41.2% profit margin—likely unpalatable to the government. Army and Navy CTOs note startups see the acquisition system as a “black box” (Starks), risking failure to deliver capability. The Trump administration’s push for efficiency and waste reduction (Tanne) may falter if the DoD doesn’t align pricing with commercial tech’s profit expectations (e.g., Apple’s 38% net profit margin on iPhones, Kan).

A Legacy of Stability: How DIB Primes Thrived with Low-Risk, Long-Term Contracts

For 50 years, DIB primes thrived on long-term, relatively low-risk contracts that ensured viability through stability, often starting as cost-type contracts where contractors were reimbursed for costs plus a small profit. Programs like General Dynamics Land Systems' Abrams, BAE Systems' Bradley, AM General's HMMWV, Lockheed Martin's F-16, and Huntington Ingalls Industries' aircraft carriers (e.g., Ford-class) benefited from minimal competition and extended timelines—often spanning 40 years—allowing investment recoupment despite low margins (5–10%, NDIA Vital Signs 2025). As these programs matured, many shifted elements to firm-fixed-price (FFP) contracts with similar low margins, but the risk remained low due to long-term commitments and lack of competition (McKinsey & Company). Even when cost-type contracts were used for engineering change proposals with limited profitability, this was acceptable due to reduced risk from minimal competition (OUSD A&S). Consolidation further entrenched this model: 51 major defense firms in 1990 merged into 5 by 2010 (McCormick et al.). NDIA Vital Signs 2025 notes 54% of companies cite FFP overuse as a constraint, with DIB net profit margins averaging 6%—far below commercial tech norms like Google's 27% or Microsoft's 44% (U.S. Securities and Exchange Commission). This legacy of stability is now a disconnect as faster tech introduction over shorter time horizons demands a profit-driven model with higher margins.

The Character of War Evolves: Tech Demands Rapid, High-Margin Cycles

Clausewitz argued that while the essence of war remains constant, its manifestation evolves over time, a concept often summarized as the **nature** of war being constant while its **character** changes (Clausewitz 48). Historically, this shift was gradual—tanks in WWI, airplanes in WWII, nuclear deterrence in the Cold War—but Ukraine shows weekly changes: \$200 FPV drones take out \$10M vehicles (Kan; "T-90"). The Navy faces similar issues, using \$1.8M–\$4.3M missiles to down \$2,000–\$20,000 Houthi drones, costing over \$1B in the Red Sea conflict (Keller; Kheel). Moore's Law (tech doubles every 2 years, Markoff) demands attritable systems with 3–5 year cycles, not 40-year programs. While DARPA and ARL can continue S&T work, the Army's DEVCOM RDECs (such as GVSC and C5ISR) must shift from traditional S&T (6.3 funding) to a new model, leveraging industry prototypes, supporting warfighter experiments, and informing fielding decisions of minimum viable capabilities faster, refreshing tech every 3–5 years to counter obsolescence.

Scenarios Reveal the Disconnect: Pricing Fails Tech Firms' Profit Needs

The notional FUGV program (600 units, 6 years, **\$10M investment**) illustrates the pricing disconnect using net present value (NPV) and free cash flow (FCF) to assess profitability (**see appendix for detailed calculations**):

- **Scenario 1 (Fixed AUMC)**: At a \$300K AUMC, a 10% profit margin (DIB norm) yields costs of \$162M, with an **NPV of -\$7.783M**, prompting a no-bid.
- **Scenario 2 (Fixed AUMC)**: At the same AUMC, assume a company can execute with slightly lower costs adjusted to \$153M for a 15% profit margin **still results in an NPV of -\$6.9M**, insufficient to overcome the investment, low volume, and short horizon—no-bid.
- **Scenario 3 (Uncap AUMC)**: Keeping costs at \$153M (scenario 2), an increased AUMC of \$434.1K yields an **NPV of \$1M**, with a 41.2% profit margin—barely profitable **but likely unpalatable to the government**. This example shows that short, low-volume programs require margins far above DIB norms, even for non-gold-plated, COTS systems, to justify tech firms' investment in rapid cycles.

A New Business Model for a New War: Aligning with Tech's Profit Expectations

The Army's pricing, designed for stable DIB primes, fails tech firms needing high margins for short, low-volume programs, driving no-bids and risking innovation. Even for low-cost, COTS systems, tech firms expect profits far above DIB norms—Scenario 3's 41.2% margin highlights this gap, showing what's needed to justify investment in rapid tech cycles. As the character of war changes, so must our business model. Pierre Chao (AUSA 2015) noted: innovation is about business models (e.g., Uber, Google), not just gizmos (Chao). The Army must shift to a profit-driven model with margins of 15%–50%, rethinking cost allowability (e.g., executive compensation) to enable higher profits without inflating costs. The Trump administration's focus on efficiency (Tanne) may falter if the DoD doesn't revise cost estimation (POE, DASA-CE, CAPE) to align with commercial tech's profit expectations (e.g., Apple's 38% net profit margin).

The DoD/Army must adapt pricing to attract tech firms, or lose the warfighting edge.

Appendix: Financial Assumptions for FUGV Scenarios

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Scenario 1: Fixed AUMC, 10% Profit Margin (No-Bid – can’t overcome investment)

- **Assumptions:** \$300,000 AUMC, 600 units over 6 years (100/year, 2029–2034), \$10M investment (\$5M in 2025, \$5M in 2026), 10% margin, P-Win = 30%, P-Go = 60% (P-Win × P-Go = 0.18), 10% discount rate, Present Value Factor (PVF) over years 4–9 = 3.272.
- **NPV Calculation:**
 1. Revenue = $600 \times \$300K = \$180M$
 2. FCF = $\$180M \times 10\% = \$18M \rightarrow$ Annual FCF = \$3M
 3. Risk-adjusted FCF = $\$3M \times 0.18 = \$0.54M/year$
 4. PV of FCF = $\$0.54M \times 3.272 = \$1.767M$
 5. PV of Costs = $\$5M + (\$5M / 1.1) = \$9.55M$
 6. NPV = $\$1.767M - \$9.55M = -\$7.783M$
- **IRR Estimate:** < 0% (no internal rate of return as cash outflows exceed inflows)

Scenario 2: Fixed AUMC, 15% Profit Margin (No-Bid – still can’t overcome investment)

- **Assumptions:** Same as Scenario 1, except 15% margin, cost reduced to \$153M.
- **NPV Calculation:**
 1. Revenue = \$180M
 2. FCF = \$27M \rightarrow Annual FCF = \$4.5M
 3. Risk-adjusted FCF = $\$4.5M \times 0.18 = \$0.81M/year$
 4. PV of FCF = $\$0.81M \times 3.272 = \$2.65M$
 5. NPV = $\$2.65M - \$9.55M = -\$6.9M$
- **IRR Estimate:** ~3.8% (well below tech-sector hurdle rates)

Scenario 3: Uncapped AUMC, 41.2% Profit Margin (Bid – achieves positive return)

- **Assumptions:** Same cost (\$153M) but AUMC raised to \$434.1K \rightarrow Revenue = \$260.46M
- **NPV Calculation:**
 1. FCF = \$107.46M \rightarrow Annual FCF = \$17.91M
 2. Risk-adjusted FCF = $\$17.91M \times 0.18 = \$3.224M/year$
 3. PV of FCF = $\$3.224M \times 3.272 = \$10.55M$
 4. NPV = $\$10.55M - \$9.55M = \$1M$
- **IRR Estimate:** ~21.4% (just meets many venture capital hurdle rate thresholds)

Conclusion: These scenarios show that even under favorable assumptions, high-margin pricing is required to cross the IRR hurdle rates typical in venture-backed or self-funded tech firms.



Government AUMC targets must reflect this reality to avoid systematic no-bid decisions from the very firms it seeks to attract.

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