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**Large Lot Procurement for Munitions Acceleration: A Novel Acquisition Typology to Catalyze a Defense-Industrial Renaissance**

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# Large Lot Procurement for Munitions Acceleration: A Novel Acquisition Typology to Catalyze a Defense-Industrial Renaissance

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## Abstract

Large Lot Procurement (hereinafter, Large Lot or LLP) was designed to address one of the primary structural constraints in munitions production: the current misalignment between government and private sector incentives. The proximate goal of this contracting typology is to incentivize vendors, at the prime level as well as lower tiers, to invest their own funds into facilities, personnel, and R&D. Accomplishment of this immediate aim, from production efficiencies as well as this additional investment, is then leveraged for additional manufacturing of end items. While, as originally conceived, Large Lot Procurement was intended to catalyze munitions production and supply chain development, it could easily be applied to other categories of defense articles that are like munitions.

This essay has eight sections:

1. The Need for Acquisition Transformation
2. Overview and Brief History of LLP
3. The American Arsenal of Democracy and Its Modern Discontents
4. Implementation Considerations
5. Recent Policy Decisions and Their Relevance
6. Modeling Why It Works
7. Large Lot Beyond Munitions
8. Lessons Learned: How to Spur an Acquisition Renaissance

## Section I: The Need for Acquisition Transformation: A Joint Urgent Operational Need

If there is a single area of defense policy that has nearly unanimous consent across the political spectrum, it is the need for critical munitions. Analysts from news outlets, think tanks, industry, universities, and other research institutions have been raising this issue with remarkable frequency. Their collective message, all within the past three years, includes such headlines, in relative order of urgency, as:

1. "The U.S. Defense Industrial Base Is Not Prepared for a Possible Conflict with China" (Jones, 2023)
2. "Fleet at Risk as Navy Struggles to Refill Missile Stores" (Frazier, 2025)
3. "The U.S. Military Faces a Critical Missile Gap Against China" (Green, 2025)
4. "America Doesn't Have Enough Weapons for a Major Conflict" (Leonard, 2025)
5. "US Only Has 25% of All Patriot Missile Interceptors Needed for Pentagon's Military Plans" (Lowell, 2025)
6. "The Crumbling Foundation of America's Military" (Bowden, 2024)

These were all issued before the initiation of Operation Epic Fury in February 2026 which has resulted in the expenditure of massive quantities of munitions at rates that greatly exceed current production. If the news of the past three years lends credence to the general conclusion that current procurement practices are not enough for expected needs, the events in the Middle East have changed the game. Not only do we not have enough munitions for a potential future conflict, but we may also not have enough for the current one if it is protracted.

Conflicts within this timeframe—despite their relatively short duration and limited overall U.S. involvement—have finally laid bare the fact that our munitions production and procurement processes are fundamentally insufficient for our wartime operational requirements. A 2025 article in *The National Interest* put the editorializing headlines in stark perspective: "The [U.S.] military used one fourth of its Terminal High Altitude Air Defense (THAAD) interceptors to defend Israel [for 12 days]. Imagine how many it would need to defend Taiwan" (Eaglen & Harrison, 2025). The same incongruence does not just pertain to advanced capability munitions, featuring exquisite components, complex production processes and supply chains, such as PAC-3 Missile Segment Enhancement (MSE) and THAAD's interceptors. To name just one example, "[a] single Ukrainian [artillery] battery can fire more 155mm rounds *in a day* [emphasis added] than some American units used during the [1991] Iraq War" (Soliman, 2025). Soliman's diagnosis is blunt.

> America's military is built for the wrong kind of war. The United States has optimized its defense industry for short, high-tech conflicts using precision weapons, but current global wars require sustained, large-scale production of conventional munitions. … Recent wars demonstrate that even the most advanced weapons are useless without the techno-industrial capacity to produce them in massive quantities, … as seen with Germany's defeat in World War II due to an inability to match Allied production. (Soliman, 2025)

While he couches his criticism by noting that the allure of "the cult of technology and the precision weapon" was "seductive and, within its narrow parameters, correct," the conflicts the United States engages in today require exponentially greater quantities of munitions and materiel than originally planned or budgeted for (Soliman, 2025). This brutal logic has even worse consequences the further right the timeline goes: The U.S. would confront even more challenging scenarios in any large-scale conflict with the People's Republic of China (PRC). If the Navy, for example, "burned through 30 years of missiles in [only] 15 months" when facing a

non-peer adversary in a limited conflict of short duration, the magnitude of the production disparity is catastrophic in the face of a peer or near-peer (Frazier, 2025). In other words, we are out of time. We need several orders of magnitude more munitions than we currently produce, and we need them immediately.

The U.S. defense community therefore faces the following challenges:

1. Current quantities and production levels are severely and consistently below requirements.
2. Past budget cycles and acquisition reform efforts have failed to materially close the persistent gaps between production and operational expenditure.
3. Recent investments in the defense and organic industrial bases will not yield the required improvements in even the medium-term time horizon.
4. The United States has limited fiscal breathing room, and today's permissive budgetary environment may not persist beyond the next several years.
5. Our principal adversaries already possess much higher production capacity and are keenly aware of this disparity.

Interlocutors' and analysts' proposed solutions generally seek to leverage existing U.S. strengths and competencies. Eaglen and Harrison (2025), in *The National Interest*, argue that "[t]he most promising solution for the fastest return is to leverage commercial innovation." Wasser and Sheers (2025), from the Center for a New American Security (CNAS), argue for more creative and flexible contracting and funding strategies. In a Heritage Foundation report entitled "A Strategy to Revitalize the Defense Industrial Base for the 21st Century," Greenway et al. (2025) use almost the same verbiage.

Further commentaries from Brookings and the Assistant Secretary of the Army for Acquisitions, Logistics, and Technology (ASA[ALT]), to name just two examples, suggest the need to put the Defense Industrial Base (DIB) on a "wartime footing," to quote the Secretary (McGinn & Cook, 2025). The government should not only be "[d]irectly incentivizing or even funding companies to develop spare production capacity and thus accommodate increased demand" (O'Hanlon & Rocha, 2024). The Department must provide "a coherent national demand signal" as a baseline requirement for achieving the necessary wartime footing (McCoy, 2025). Large Lot Procurement will provide the consistent, coherent demand signal that is required for mission-critical industry-government collaboration.

## Section II: An Overview and Brief History of Large Lot Procurement

Large Lot Procurement (LLP) predates the munitions and procurement reform *zeitgeist* by over a decade. The progenitor of this idea, a past Director of OUSW Comptroller Program/Budget's Investment Directorate (INV), began to develop the idea in the early 2010s. His deep professional experience throughout the Planning, Programming, Budgeting, and Execution (PPBE) process, in tandem with his contacts throughout government and the defense industry, broadly informed his insightful understanding of the fundamental challenges facing the Department's efforts to translate its procurement appropriations into deliveries on time and at budget.

Most importantly, Mr. Roberto Rodriguez possessed a clear-eyed understanding of the direct causes of the Defense Industrial Base's (DIB's) key difficulties that the Department must now urgently address. He leveraged his deep historical and organizational knowledge to address what he correctly ascertained to be one of the primary structural reasons why munitions procurement so often results in delayed deliveries, over-budget programs, and missiles that

perform below expectations. Namely, Mr. Rodriguez created a framework that is designed to incentivize contractors to invest their own resources and increase production while assuring that the government fulfils many of the requests the private sector has been making that would, in their view, suffice as a consistent demand signal. In other words, LLP aligns the incentives of the private and public sectors to produce a non-zero-sum game-theoretic landscape for both primary actors.

Large Lot coalesced between 2014 and 2015. Mr. Rodriguez's rationale for developing an evolution of existing MYP contracting and financing tools stemmed from two primary realizations. Firstly, contractors lack—in their view—sufficient financial incentives and demand signals to justify additional investment of their own capital into facilities, tooling, long-lead items, etc.[1] Second, the government, for its own part, believes contractors are shirking their duty to the government by not delivering on time and on budget. This claim notwithstanding, the government may not understand precisely why private sector companies with strong financial and capital markets access fail to translate department investment and procurement orders into industrial capacity to support mass production.

Large Lot Procurement functions by executing multiple manufacturing programs under a concurrent, multiyear procurement strategy (Rodriguez, 2023). It enables synergies across different but related programs that drive greater production capacity, accelerate deliveries, and drive down unit costs. LLP is a stepwise evolution of existing MYP contracting. Critically, Large Lot Procurement expands the use of incremental financing, the savings derived from which are applied toward additional end item deliveries and higher production and procurement rates. This is referred to as "Buy-to-Budget" financing. Crucially, the financial windfall from production efficiencies is reinvested into production as opposed to being returned to government coffers.

As initially envisaged, implementation of this contracting typology included two primary lines of effort, each aligned to one primary contractor:

1. Lockheed Martin – The final assembly of the AGM-158B Joint Air-to-Surface Standoff Missile – Extended Range (JASSM-ER) and AGM-158C Long Range Anti-Ship Missile (LRASM) are at the same facility in Troy, AL, and both processes employ a common set of subcontractors, production tooling and machinery, and raw materials and intermediary components.
2. Raytheon – The Standard Missile-6 (SM-6) and AIM-120 Advanced Medium-Range Air-to-Air Missile (AMRAAM) are assembled in the same facility in Tucson, AZ, and employ a common set of subcontractors, production tooling and machinery, and raw materials and intermediary components.

While MYP supports the health of the Defense Industrial Base by creating program stability—critically important for lower-tier subcontractors and Small and Medium-sized Enterprises (SME)—Large Lot goes further than traditional MYP by proactively addressing known bottlenecks and inefficiencies through upfront industrial base financing. It therefore builds upon one of the strengths of MYP—financing increased production at common manufacturing lines—which allows Original Equipment Manufacturers (OEM) and subcontractors to plan for and synchronize production in an orderly, more efficient fashion. This, in turn, mitigates against fitful, "stop-start" production schedules. Unfortunately, common in defense production, these factors

[1] Furthermore, the government and private industry have different motives. While contractors act in service of national security, they are for-profit entities that have a duty to shareholders. The government does not have a profit motive, and its mission overrides all other considerations. This misalignment in ends is another reason why this issue has resisted previous efforts at reform, like 2009's Weapon System Acquisition Reform Act.

introduce manufacturing inefficiencies, complicate logistics of raw materials and critical subcomponents, and reduce labor efficiency. As a direct result of the received acquisition process, “stop-start” production is particularly harmful for the manufacturing and assembly of the most advanced munitions owning to their greater internal complexity and inclusion of exquisite components. Large Lot is therefore best suited for accelerating the production and delivery of the most advanced munitions.

Finally, LLP differs from MYP in its government-side formulation:

1. The collection of concurrent production programs is managed at the Program Executive Officer (PEO) level, as opposed to the lower-echelon management of standard MYP programs at the Program Manager (PM) level.[2]
2. LLP features vertical integration (parallel workflows across the various weapon systems) as well as horizontal integration (executing one program across multiple fiscal years). MYP only includes the latter.
3. All annual procurement quantities are fixed at the Economic Production Rate (EPR) at a minimum, if not the full existing, advertised production capacity. In the originally envisaged program, annual procurement quantity is increased from Minimum Sustaining Rate (MSR) to EPR.
4. Inclusion of an upfront industrial base financing package to invest in production line efficiency and crucial capital projects. MYP as conventionally understood does not include direct public investment in industrial base needs.
5. Economic Order Quantity (EOQ): LLP also includes financing for long-lead item procurement. This is primarily targeted toward lower-tier subcontractors that produce intermediary components, basic components, or raw materials. MYP, in contrast, is oriented toward final assembly by prime contractors.
6. Buy-to-Budget, wherein savings generated by EOQ are used to procure additional end items. Savings from MYP, on the other hand, are not applied for further production quantity.
7. Concurrent execution: Work is executed in parallel (multiple systems over fiscal years) and the same place (OEM/factory/subcontractors).
8. Overlapping: Two or more MYP for the same end item. LLP is geared toward programs that produce advanced All Up Rounds (AUR); the benefits primarily accrue from rationalizing the production processes involved in assembling complex munitions.

[2] The Administration’s efforts to establish Direct Report Program Managers (DPRMs) and Program Acquisition Executives (PAEs) to manage large acquisition programs may result in a different organizational structure than LLP originally contemplated.

***Table 1. Large Lot Procurement versus Multi-Year Procurement***

| Multi-Year Procurement | Large Lot Procurement |
|---|---|
| Similarities | |
| Minimum savings requirement<br>Stable requirements<br>Stable funding/availability<br>Realistic cost estimate | |
| Differences | |
| Single contract | Parallel, overlapping and concurrent MYP contracts |
| Savings recouped | Savings reinvested into weapon systems |
| Design Stability | Flexible design |
| Unique production facility | Common production facility with another weapon system |
| Unique manufacturing process | Common manufacturing processes |
| MYP allows for reduction of long lead items | EOQ funding can be applied toward reducing long lead-time constraints |

The primary benefit is in savings/cost avoidance. As originally planned, implementation of LLP provides a 10% annual APUC saving during the contract period (Rodriguez, 2023). Furthermore, LLP preserves and improves industrial base capacity and efficiency at both prime contractors and subcontractors. It also stabilizes the defense and organic industrial bases and incentivizes private sector investment in facilities, tooling, and production capacity; leverages existing industrial capacity to control weapon system costs; and uses cost savings derived to procure additional weapons (Rodriguez, 2010b).

## Section III: The American Arsenal of Democracy and Its Modern Discontents

Summarizing, let alone synthesizing, modern commentary—or even the brief historical accounts—on U.S. industrial mobilization is beyond the scope of this essay. The revitalization of the U.S. Defense Industrial Base before and during the Second World War, the importance of its success to the U.S and the Allied war effort, and the lessons from this endeavor for the present are all important subjects. Reindustrialization, particularly with respect to the defense and organic industrial bases, is a well-deserved *cause célèbre* across the political spectrum.

*Freedom's Forge: How American Business Produced Victory in World War II*, a 2013 book by Arthur Herman, is particularly notable in the recent scholarship on this topic. It tells the well-trodden story of U.S. mobilization from the perspective of two important American industrial figures, William S. Knudsen and Henry J. Kaiser. Herman highlights several key factors that were essential to developing the U.S. industrial might that was a significant factor in ensuring Allied victory (Culclasure, 2013). Herman is particularly insightful in laying out the basic principles that allowed the U.S. to successfully mobilize its industry, especially given the diminutive military and low level of government-industry coordination in the interwar period. Per *Freedom's Forge*, the primary precondition for this ultimate success was a fundamental, clearly defined division of labor between the public and private sectors:

1. The government decided what would be produced, pair for it, and ensured the availability of basic materials needed (Smith, 2022).
2. Industry, on the other hand, undertook the actual production, from design to assembly, supply chain management, and labor policy (Smith, 2022).

Notwithstanding regular—and often serious—disputes between the government and its private-sector partners, to say nothing of labor strikes, supply chain issues, and other unforeseen challenges stemming from building a wartime industrial machine from the ground up, Herman frames the result in plain terms. By the conflict's end, "the U.S. managed to out-produce the rest of the Allies combined, while devoting a much smaller portion of its economy to the military than other nations and even *increasing* civilian consumption" (Smith, 2022).

The book's insightful analysis, its framing of a subject of national importance with an elegant model of political economy, and its straightforward lessons for contemporary challenges have all been well reviewed by the national security commentariat. To wit, to respond to today's challenges in the Defense Industrial Base, we need to restore a healthy, mutually beneficial relationship between the private sector and its ultimate master. Large Lot Procurement is well-suited as a critical tool to achieve this result.

## Section IV: Implementation Considerations

Probable hurdles to effective execution include, but are not limited to:

Budgetary Instability. The single greatest obstacle to enduring effectiveness of LLP (or any other procurement reform) is the Congressional appropriations process. The cyclical, partisan-forward nature of budgeting in the legislative branch—to say nothing of the unstable, often erratic, schedule of the release of the yearly President's Budget Request—makes it politically and structurally difficult for the Department to *credibly* commit funds, at the scale required for efficacy, for a multiyear procurement cycle spanning multiple legislative sessions. Absent changes to the appropriations process itself—which is beyond the scope of this essay and is even less likely than the reforms contemplated here—a future Congress, or presidential administration, could unilaterally alter priorities or funding. This would leave both the Department of War and its industrial partners, all of whom have proffered funds, reputational credibility, and institutional inertia on a new process, in a precarious legal and financial position.

Internal negotiations in 2022 highlight organizational tensions in executing long-term munitions production programs. Specifically, SASC's preferred proposal for weapons systems multiyear procurement was not true MYP, insofar as it failed to include EOQ financing and thereby lacked one of the key attributes that produce LLP's benefits. Moreover, it did not create an obligation on future Congress and Department to complete the planned procurement without invoking termination liability charges (Rodriguez, "Munitions Multiyear Proposal in Draft NDAA 2," 2022).[3] Removing Department financial obligation will *very likely* reduce the potential for mass industry buy-in. All parties need to have credible stakes in the execution of the program for its duration, or the structural reasons for its success—solving the information asymmetry problem to allow for effective coordination—will not hold.

Technological Obsolescence. LLP requires that the Department and its vendors make a significant investment in particular munitions, each with specially sourced components. Committing to a five- or more -year procurement of a particular weapons system is inherently risky in a world characterized by rapid, accelerating technological change. As originally envisaged, weapon configurations would largely be 'fixed' at the time the contract is finalized (Rodriguez, "Large Lot Procurement – DepSecDef – November 2010"). However, funding stability may be amenable to spiral capability additions with government approval (Rodriguez, "Large Lot Procurement – 3 STAR Briefing – DRAFT2," 2010). As a result, Large Lot is particularly useful for programs that allow for improvements to be made over time in the form of

[3] Of the sort required by, for example, DFAS 252.239-7007 or 52.241-10. Asking contractors to commit resources absent either the expected payoff (from LLP being executed) or insurance in the form of cancellation liability runs against their fiduciary obligations.

improved variants. Current systems that may be particularly amenable to Large Lot include PrSM, LRASM, or even less exquisite systems like LUCAS.

Industrial Base Fragility. The LLP concept assumes, as a matter of course, that the defense and organic industrial bases already possess the latent capacity and willingness to scale up if a sufficient government demand signal is provided. This is not a given. Decades-long industry consolidation, facilities offshoring, and an aging skilled workforce, to name just a few issues, have left multiple supply chains brittle and dependent upon a small number of suppliers and diminishing manufacturing sources. Even with a contract that guarantees payoff over many years, there is an inherent concern that the industrial base may simply not be up to the task of sourcing adequate machine tools, recruiting and maintaining skilled labor, long lead-time materials, and testing and evaluation processes to expand production at the rate that is contractually required. This uncertainty demands comprehensive market research into the state of the industrial base before the contract is signed.

First-of-its Kind (FOAK) Risks. A final, critical impediment is that the evidence presented for the virtues of this proposal is theoretical and notional. Speculative reasoning is used to prove the points explicated here. Acquisition executive leadership will be taking significant professional risks by implementing a first-of-its-kind approach to acquisition that lacks prior actualization examples. In other words, the first *true* test of LLP would have no strict precedent. This issue is, in general, common to all FOAK projects, whether they are industrial demonstration plants, manufacturing processes, or conceptual (legal) innovations. Current Department initiatives, including but not limited to the Munitions Acceleration Council (MAC), ..., advancement of 7-year contract terms for MYP versus the standard five years are promising steps that begin to address FOAK risks and challenges. The results are not apparent yet and will not be for some time; but the efforts currently ongoing are a significant departure from the norm. Addressing a culture of risk avoidance may require upstream organizational and cultural changes within the acquisition workforce. For example, advance socialization of the idea and a binding agreement with CAPE to consider LLP throughout future Program Budget Review cycles may help abate institutional hesitance to FOAK ideas like LLP. The establishment of Program Acquisition Executives (PAE) is precisely the sort of organizational change that is required to enable changes in contracting practices like LLP.

Successfully executing Large Lot Procurement requires program managers to address the following considerations:

Funding Strategy and Considerations (Rodriguez, 2010a):

1. LLP funds 2+ years of production in one fiscal year.
2. USW(P) approves deviating from the 12-month funded delivery period policy.
3. To avoid “new start” requirements, particularly the validation process, and to avoid requalification of hardware, procurement quantities are retained in all covered fiscal years.
4. OUSW(C) works with OMB to establish new, unique outlay (expenditure) rates for LLP.
5. Congress would have to agree to the LLP acquisition strategy (as with MYP).
    a. The Department should pursue express approval for Large Lot Procurement in all forthcoming bills. The current rate of expenditure of critical munitions in the Middle East means that getting more munitions into the hands of warfighters, as soon as possible, is a top national security priority.

b. While Congress has periodically shown a willingness to adjust MYP requirements, the proposal must be announced in advance and socialized with relevant legislative stakeholders. Failure to get approval before legislative action risks the proposal getting delayed or watered down.

6. DoW assumes operational risk for the delay of new munitions.
7. No new tooling is financed by the government.
8. Objective is for the contract to be ROI neutral.
9. As noted above, Configuration and Engineering Change Proposals (ECP) would be restricted and would require USW(A&S) and USW(C) approval prior to implementation (Rodriguez, 2010a).
10. "Reclassification of Capital Budget / Account program."
11. Assumes a Lean 6 environment to maximize assembly rate/activity.
12. Production Strategy (Rodriguez, 2010a):
13. Prime and subcontractors will need to effectively phase work at their own facilities.
14. Contractors should adopt best practices, such as lean manufacturing principles.
15. Delivery schedule is negotiated prior to the signing of the contract, but it should be phased to the most efficient cost margin.
16. Contracting Strategy (Rodriguez, 2010a):
17. Omnibus contract vehicle for all production products.
18. Multiyear procurement concept from inception to end item delivery.
19. Firm Fixed Price (FFP) contract.
20. Priced annual options (for additional buys) by missile system.
    a. These can be rolled into the omnibus contract at government's discretion.
21. Negotiated price, fully indexed (at OMB rates) to cover inflationary costs.
22. Production risk cost share set to 50/50.
23. Earned Value Management System (EVMS).
24. Government option to use cost savings for additional purchases or for other requirements.
25. Payments set to 50% upon contract award, 25% based on assembly progress, and 25% upon delivery.[4]

## Section VI: Modeling *Why* It Works

The issue at hand can be modeled as a coordination problem: The principal parties (i.e., the government and industrial firms) may earn a higher payoff if they successfully cooperate. This involves both entities coming to mutually beneficial agreements to ensure that the government receives the maximum quantity on time and at budget, while the private sector gets

[4] It is worth further studying the contract award spread to determine which best incentivizes contractor performance. Denominating the exact criteria for "assembly progress" beforehand and communicating the milestones to vendors will maximize chances of success by addressing the information asymmetry that characterizes government-contractor relations.

a more reliable order book into the medium-term future. While the results of positive coordination are superior to the status quo, it is not guaranteed that both actors will successfully cooperate. In fact, failing to do so (the so-called 'defection' option) still produces a positive, but not ideal, result. This often characterizes the landscape of munitions contracting and production. The government receives its deliveries—often late and over budget—and contractors' profit, but the relationship between the two parties is often acrimonious. Both sides have a strong incentive to cooperate, which would produce mutual benefit, but structural factors in the relationship make it easier to stick with the (still beneficial, but suboptimal) status quo.

As such, the problem is a type of *coordination game*. Put in game-theoretic parlance, it is an assurance game colloquially known as the Stag Hunt. As originally posed, the two parties (hunters) can either jointly pursue a stag or individually hunt rabbits. The former is challenging and requires cooperation, but it carries a higher potential payoff. Importantly, defection still results in a positive, but less than ideal, outcome for any of the hunters in the party:

> In the Stag Hunt, what is rational for one player [the government] to choose depends on his beliefs about what the other [private actors] will choose. Both stag hunting and hare hunting are *equilibria*. That is just to say that it is best to hunt stag if the other player hunts stag and it is best to hunt hare if the other player hunts hare. … A player who chooses to hunt hare runs no rush, since his payoff does not depend on the choice of action of the other player, but he foregoes the potential payoff of a successful stag hunt. Here rational players are pulled in one direction by considerations of mutual benefit and in the other by considerations of [institutional] risk. (Skyrms, 2001)

The game-theoretic dynamics can be modeled with a simple Decision Matrix:

| | Player 1: Hunt Stag | Player 1: Hunt Hare |
|---|---|---|
| Player 2: Hunt Stag | (10, 10) | (0, 7) |
| Player 2: Hunt Hare | (7, 0) | (7, 7) |

In this matrix:

1. (10, 10): Both players cooperate to hunt the stag, resulting in the highest payoff for both.
2. (0, 7) or (7, 0): One player hunts the stag (unsuccessfully), whereas the other hunts the hare (successfully). This is less risky for both players, as the payoff variance over the other's strategy is lower.
3. (7, 7): Both players hunt hares on their own, receiving a moderate (but still non-zero) payoff.

This dynamic neatly maps onto the government-industry relationship with respect to munitions production.

Munitions Decision Matrix:

| | Department: LLP | Department: Business As Usual |
|---|---|---|
| Contractor: LLP | (10, 10) | (0, 7) |
| Contractor: Business As Usual | (7, 0) | (7, 7) |

In this more illustrative matrix:

1. (10, 10): The Department and the Contractor cooperate to produce and deploy more munitions than otherwise. Highest payoff for both.
2. (0, 7) or (7, 0): One player attempts acquisition and contracting reform without involving the other. On the private side, this entails R&D and production investment absent binding signals from the government for future demand. Little or no payoff beyond business as usual for either player.
3. (7, 7): Business as usual. Received issues with the current system remain standing.

As applied to the munitions production situation, the stag hunt possesses two equilibria, with both players preferring one to the other:

1. Cooperative Equilibrium: The course of action with the highest payoff for both players requires trust and genuine cooperation. This is the so-called payoff-dominant strategy.
2. Non-Cooperative Equilibrium: Business as usual results on a lower reward, but it does not require cooperation. This is the so-called risk-averse strategy.

In coordination games like the Stag Hunt, players require knowledge about their counterparts: what they value, what they will do in certain circumstances, and the like. Absent this knowledge, *defections* that lead to realization of non-cooperative equilibria—less than ideal outcomes—will become the rule.[5] While this is a sub-optimal outcome for both parties, it is not the worst-case scenario. This game-theoretic typology therefore serves to illustrate the difficulties of multi *n* coordination by agents who (a) would both benefit from information sharing but (b) may also receive a discounted but still-positive payoff by way of defection from the cooperative equilibrium. The general dynamics of the assurance game therefore map isomorphically onto the munitions production and procurement situation:

Choosing the course of action that results in the cooperative equilibrium—and which produces the highest mutual payoff—*de facto* requires coordination and trust between players. This is seen in the current impasse between the government and its vendors:

1. The government often states that the private sector ought to invest more of its resources into R&D, facilitization, labor, etc. to meet production and fielding goals set by the NDS (e.g., TMR, Global Floor).
2. The government is also dissatisfied with what it views as subpar performance by the private sector: delays, price hikes, underperformance of delivered systems, etc.
3. In response, private industry claims that it lacks a consistent demand signal from the government that would grant it, and its stockholders, financial certainty that its investment will be recouped by way of future (and, ideally, increased) orders.

[5] The prototypical formulation of the Stag Hunt assumes that each player is a unitary entity with a single set of attributes. In contrast, the Department is a multifaceted entity, the components of which may have a range of positions on certain issues. Department entities that support the status quo are considered defections. Furthermore, defection by a subcomponent (e.g., a particular entity within the Department) may be enough to cause the entire Department to defect. It is therefore of the upmost importance to ensure top-down conformity once it is determined that Large Lot Procurement is the recommended course of action. A Direct Reporting Portfolio Manager approach may be precisely what is needed.

4. Industry also argues that balancing its fiduciary duty to shareholders requires that its non-mandatory expenditure on facilities, R&D, etc. has a relatively high likelihood of positive return.

LLP addresses the impasse between government and industry because it solves the "knowledge problem" that generally stymies the relationship between two players in assurance games. First posed by F. A. Hayek in 1945, this dilemma has two main components:

1. The *complexity* knowledge problem*:* The difficulty of coordinating individual plans and choices in the ubiquitous and unavoidable presence of dispersed, private, subjective knowledge. Trade secrets and internally privileged corporate operations prevent the government from possessing a so-called perfect understanding of the market. Government-mandated classification criteria and CUI dissemination controls (e.g., FED ONLY and NOCON) limit vendor understanding of government deliberations.[6]
2. The *contextual* knowledge problem*:* The epistemic fact that some knowledge relevant to coordination does not exist outside of the market context. Such knowledge is either created in the process of market interaction, tacit knowledge that is not consciously known …, or inarticulate knowledge that is difficult to express or aggregate (Kiesling, 2015).

Namely, "Hayek characterized the fundamental economic problem … as the coordination of actions and plans among dispersed agents with diffuse private knowledge" (Kiesling, 2015). Furthermore, prices serve a fundamental coordinating role in imperfect markets. Hayek adduced that "decisions facilitated by prices are indispensable in enabling … coordination to occur by providing a way to access dispersed, private knowledge" in a market characterized by compartmentalized information access (Kiesling, 2015). Prices are thus "knowledge surrogates" that "communicate the consequences of the realized actions and interactions" of the agents that participate in the market (Kiesling, 2015).

As defined above, Large Lot's implementation solves the knowledge problem by facilitating visibility, for all market participants, of key surrogates for otherwise compartmentalized (de facto secret) knowledge. The government's legal commitment to spending levels over the lifetime of the contract is a sufficient knowledge surrogate, to vendors, of the government's intentions. It is an advanced commitment to financing that addresses the private sector's competing demands to its customers and its shareholders. The inclusion of additional orders beyond the standard year-over-year budgeting practice therefore provides firms with an expected payoff that further incentivizes them to meet the government's performance requests.

## Section V: Recent Policy Decisions and Their Relevance

Recent news articles and developments indicate that primary components of the original LLP proposal are being implemented today. For example:

1. On 23 February 2026, *Military & Aerospace Electronics* published an article analyzing a USAF task order to Lockheed Martin dated 13 February 2026. The analysis specifically mentioned Large Lot Procurement: "Large Lot Procurement refers to buying missiles in very high quantities under a consolidated contract instead

[6] In game theory, "perfect information" describes the situation in which all players have knowledge of all relevant system information. Also known as "no hidden information," the fact that this does not pertain in government-vendor negotiations means that the situation features "imperfect information." The knowledge problem between players inherently results.

of issuing smaller annual production awards to increase production capacity (thousands of missiles over several years); reduce cost per missile through economies of scale; stabilize the industrial base and supply chain; and accelerate fielding to meet U.S. and allied demand" (Keller, 2026).

2. On 17 February 2026, L3Harris Technologies was awarded a $400 million contract to produce SRMs and other control and guidance systems for THAAD (Miller, 2026). It is unclear if this contract is multiyear, but its focus on components below the AUR integration process speaks to the Department's awareness of supply and manufacturing constraints below the prime contractor level.
3. On 06 January 2026, Lockheed Martin (LM) announced a similar deal to triple production of the MIM-104F PAC-3 MSE. The firm's press release includes more detail than that provided by Raytheon. It notes that both the Department and Lockheed "will participate in the cost savings opportunity enabled by long-term demand certainty" for the munition (Lockheed Martin Corporation, 2026). The company's announcement also states that the joint DoW/LM framework:

> [I]ntroduces a new model that provides long-term demand certainty, enabling industry investment, increasing production rates and driving operational efficiencies. It incorporates a collaborative financing approach designed to preserve initial cash neutrality, allowing industry to invest confidently to meet required production levels (Lockheed Martin Corporation, 2026).

1. The Department's press release on the DoW/LMT deal states that:

> The framework agreement establishes the basis for negotiating a seven-year supply contract, subject to Congressional authorization and appropriations …. This facilitization strategy will be applied to multiple munitions procurement contracts over the next year …. … As part of the framework agreement, the DoW will work with key suppliers of PAC-3 MSE to deliver seven-year subcontracts to ensure facilitization investments and the production capacity of components also expand to meet the increased demand for all-up-rounds (U.S. Department of War, 2026).

2. The 06 January 2026 agreement between the Department of War and Lockheed Martin builds off the MYP contract, signed on 03 September 2025, to produce 1,970 PAC-3 MSE interceptors between FY 2024 and FY 2026 (Judson J. , US Army awards Lockheed record $9.8 billion missile contract, 2025).
3. Jason Reynolds, Lockheed's Vice President for Integrated Air and Missile Defense, commented earlier in the year that the firm looking at "efficiencies and streamlining and doing everything we can to stretch those [procurement] dollars to take [it] to a higher capacity, upwards of around 750 per year by 2027" (Judson, 2025b).
4. On 04 January 2026, Raytheon (RTX) and the Department agreed to increase production of six critical munitions (RTX, 2026): RGM/UGM-109E Block V Tomahawk Land Attack Missile (TLAM), RGM/UGM-109E Block Va Maritime Strike Tomahawk (MST), AIM-120 Advanced Medium-Range Air-to-Air Missile (AMRAAM; presumably the AIM-120-D3 variant), RIM-174 Standard Missile 6 (SM-6; unclear which variant[s]

are included), RIM-161C Standard Missile 3 (SM-3) Block IB, and RIM-161D Standard Missile 3 (SM-3) Block IIA.

5. Per the company's press release, the deal includes "up-to-seven-year agreements to … build on the company's previous investments to expand production" (RTX, 2026). Furthermore, production will take place at company facilities where multiple of the covered munitions are assembled (Tucson, AZ; Huntsville, AL; and Andover, MA). As noted above, Tucson and Huntsville are where many of these munitions are assembled; Andover is where many of the subcomponents are produced. On 15 January, Raytheon disclosed that it has invested over $115 million to secure a nearly 67% capacity increase at Huntsville, AL, for final integration of all Standard Missile variants (Judson 2025a).
6. On 31 July 2025, the Department awarded several contracts worth a total of $7.8 billion for many of the munitions envisaged for LLP. Commentators on the deal stated that these agreements marked "a major step in the Pentagon's new strategy of buying munitions in multiyear batches, a move officials say is necessary to provide a strong demand signal to industry and encourage companies to increase production capacity" (Hadley & Tirpak, 2025).
    a. Lockheed Martin Missiles and Fire Control was awarded $4.3 billion for five lots of JASSM as well as for lots' worth of LRASM. The contract announcement explicitly states that the "definitization modification (PZ0007) … [covers] large lot procurement for JASSM Lots 22-26 and LRASM Lots 9-12" (U.S. Department of War, 2025).
    b. Raytheon was awarded $3.5 billion for AMRAAM Lots 39-40. Besides production of AURs, the contract provides for production of missile components including telemetry systems as well as initial and field spares (Fletcher, 2025). Work will be completed in Q3 of FY 2031 (U.S. Department of War, 2025).
7. On 30 September 2024, the Department awarded LMT a $3.2 billion multiyear contract to procure AGM-158C LRASM and AGM-158B JASSM AURs until July 2032 (Losey, 2024).

Other private entities have also announced programs and projects aimed at meeting lower-tier supply and capacity gaps or entirely separate production lines:

1. On 25 September 2025, Avio USA (a subsidiary of Avio S.p.A.) signed a $26 million MoU with Raytheon in the process of becoming a second supplier of Mk 104 dual-thrust solid rocket motors (Raytheon, 2025). This follows a July 2024 contract for preliminary engineering and a subsequent November 2025 purchase order to fund the project through Critical Design Review (Raytheon, 2024, 2025). Subsequently, Avio announced that it would be developing a $500 million production facility in Virginia (Avio USA, 2025). This will build upon its plans to also assemble the Mk 104 at an existing plant in Colleferro, Italy (Kington, 2025).
2. On 17 September 2024, Kongsberg Defense & Aerospace announced that it will construct a missile production and maintenance facility in James City County, Virginia (Judson, 2024). The $100 million facility will help the company meet the existing multiyear demand for its RGM-184A Naval Strike Missile (NSM) and follow-on Joint Strike Missile (JSM) systems (Kongsberg Defense and Aerospace, Inc., 2026).

Finally, the Munitions Acceleration Council (MAC) has commendably acted with speed to greatly expand munitions production. However, the Department lacks a dedicated entity and process that is empowered to analyze whether this contracting approach is generating the contemplated gains in production volume and speed. The absence of an accountable entity or group should be deliberately addressed to avoid what may be repeated or common practice to quickly establish contract parameters outside of the standard process designed specifically to identify and prevent waste, fraud, or abuse.

## Section VII: Large Lot Beyond Munitions

During the original idea development phase, the following demand-side attributes are deemed compatible with LLP (Rodriguez, 2010b): (1) Funded production rates, (2) firm military requirements, and (3) flexible production manufacturing facilities. Moreover, while the program was originally intended for munitions production, it is not inherently limited to missiles or other munitions. In other words, LLP has significant applicability beyond this type of defense articles. Ideal candidates for inclusion in an LLP scheme will have: (1) shared intermediary components, (2) diminished sources/supply chain challenges, (3) repeatable/mass producible end items, and (4) assembly of multiple systems at shared locations and/or contractor facilities. Potential areas of extension include, but are certainly not limited to, small satellites, radars and sensors, and turbines and rocket engines

Each of these meets the required attributes that are shared with the original, notional category envisaged for LLP. Satellites, particularly current and next generation small/microsatellites, are made on assembly lines; multiple variants are often produced by manufacturers at a single facility that brings together components from subcontractors; critical components must be produced *en masse* and often have significant long lead-time constraints and/or supply chain constraints. Spacecraft, like those the Department is looking to procure in the future, deviating from the traditional choice of exquisite, bespoke end items, makes small satellites an ideal candidate for an LLP-type contracting vehicle. Phased array radars, EO/IR sensor arrays, and aeroengines, particularly turbine engines, also meet these criteria. The Large Lot contracting typology possesses immense inherent promise beyond missiles and munitions. Especially since many of its features are currently being implemented, it would behoove the Department to explore similar moves for other product types. Satellites, sensors, and engines are each excellent potential opportunities for a second phase of LLP.

## Section VIII: Lessons Learned: How to Spur an Acquisition Renaissance

The zeitgeist behind LLP has been framed across essays and books that carry evocative, often poetic titles. They can be categorized into historical accounts (e.g., Paul Kennedy's *The Arsenal of Democracy* and Maury Klein's *A Call to Arms*), diagnoses of the current situation (e.g., Karp and Zamiska's *The Technological Republic*, Jones' *The American Edge*, Shah and Kirchhoff's *Unit X*), and more forward-looking books that prognosticate future policy choices (e.g., Sankar and Hart's *Mobilize* and Freymann et al.'s *The Arsenal of Democracy*). That there are two recent works that share the 'arsenal of democracy' shibboleth, yet exist on different time horizons, serves as a useful coda for this essay. To put this essay's motivating problem in simple terms, how do assemble a second arsenal of democracy from the ashes and legacy of its 20$^{th}$-century forerunner?

While the cost of rearmament is substantial—in terms of absolute fiscal expenditure as well as macroeconomic crowding out—it is a bargain if the alternative is a great power war. The United States can, and must, leverage its 'fourth arm' of defense: the potent combination of economic strength, financial reserves, and latent industrial capacity. Effective deterrence and, if that fails, peace on our terms, requires the Department to procure, manufacture, and field

critical materiel at scale. Munitions are a *sine qua non* of 21st-century war: Large Lot Procurement is an indispensable tool to achieve an American acquisition renaissance.

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