



ACQUISITION AND
SUSTAINMENT

Architecting Affordable Mass Acquisition Research Symposium May 7, 2026

Panel #23 Accelerating Production through Modularity and Sustained Competition

*Gregory Sanders, Senior Policy Analyst
Joint Production Accelerator Cell (JPAC)*

Gregory.S.Sanders27.civ@mail.mil

703-571-8388

DOCUMENT
RESTRICTIONS

Controlled by: OUSD(A&S)

Controlled by: Joint Production Accelerator Cell

Unclassified

Dissemination Controls:

POC: Gregory.Sanders27.civ@mail.mil

Research Issue



Problem: The U.S. guided munitions enterprise faces and the supporting defense industrial base (DIB) faces high demand due to:

- the global proliferation of munitions
- advances in unmanned systems and their use in conflict
- China's emergence as a manufacturing superpower
- the return of industrial scale warfare

JPAC seeks to address this by building enduring production capacity, resiliency, and surge capability for key defense weapon systems and supplies.

- Munition Production Growth is already being pursued via:
 - Increasing the demand signal
 - Investigating in supply chains and intervening
- Three challenges magnify the difficulty of this process:
 - High barriers to entry
 - Production capacity fragmented by program
 - Boom and bust cycles and uncertainty
- Two Department initiatives offer hope:
 - Developing affordable mass programs
 - Architecting openness and commonality

Research Questions



- How do munitions and adjacent programs that employ MOSA incorporate producibility into their architectural decisions and investments?
- What traditional munitions producibility challenges are addressable through modularity or adoption of commercial standards, and what are the present plans of affordable mass programs to address or bypass these limitations?
- To what extent could architectural design expand DIB production capacity or surge capability by incorporating non-traditional or international producers or modernizing the existing U.S. DIB?

Methodology and Sources



- The author conducted 18+ interviews with acquisition professionals presently or previously in government service.
 - Pathfinder programs and standards included affordable mass guided missiles, one-way uncrewed aerial systems, and adjacent systems most notably exquisite guided munitions and the Collaborative Combat Aircraft.
 - The findings were divided into seven categories of tools to expand production capacity and surge capability.
 - The first three tools draw directly from MOSA guidebooks, the remaining four are derived from pathfinder practices.
- *The key standards and architectures covered in this paper include the Weapon Open System Architecture (WOSA) and Weapon GRA, the Open Mission System/Universal Command and Control Interface (OMS/UCI), the Agile Mission System, the Future Airborne Capability Environment (FACE), the Sensor Open Mission System Architecture (SOSA).*
 - *For the Army, this project focuses on Army Launched Effects (LE) / Long-Range Precision Munition (LRPM).*
 - *For the Navy, this project examined Conventional Prompt Strike (CPS) and the nascent Coalition Heterogenous Affordable Offensive Strike (CHAOS).*
 - *For the Air Force, the project considered the Air Force's Collaborative Combat Aircraft (CCA), Family of Affordable Mass Munition (FAMM) and Extended Range Attack Munition (ERAM), and Dragon Cart.*
 - *Multi-service and Research and Engineering efforts to expand production of energetics subsystems, including the Low-Cost Cruise Missile (LCCM), also provide important examples at the subsystem level.*

Theorized Affordable Mass and MOSA Pathfinder Enablers of Production Capacity and Surge Capability

A & S



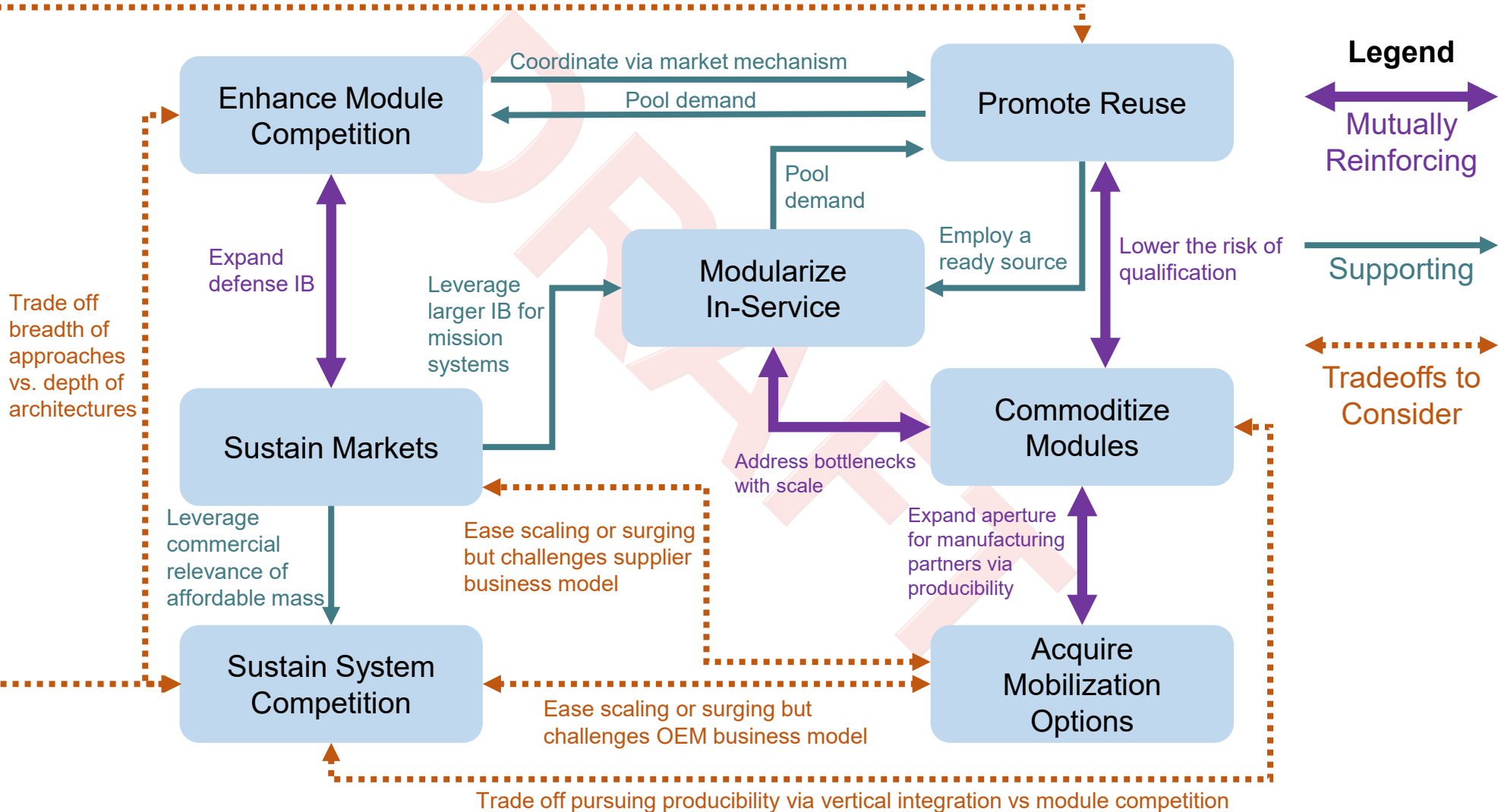
Enablers	Description	Production Capacity	Surge Capability	Pathfinding Examples
Enhance Module Competition	Allow open competition via open architectures with severable modules	● Adds flexibility to route around bottlenecks and rewards speed of scaling	⦿ Incentivizes producibility but optimizing for price risks losing slack capacity	Enterprise adoption of WOSA and AMS GRA
Promote Reuse	Use technology and items from any supplier across programs and life cycle	⦿ Reduces development and test requirements but requires conformity	○ Creates commonality which allows for other benefits but has risks	SOSA focus on scale of adoption; GPS modules
Modularize In-Service	Incrementally open a portion of a system's architecture.	⦿ Addresses bottlenecks, but requires leverage, e.g. block upgrade or MYP	⦿ Enables pursuit of other benefits, as above	Exquisite munition mission systems and propulsion 2 nd sourcing
Sustain Markets	Maintain diverse IB by pooling demand and enabling interchangeability	⦿ Leverages commercial IB, small business innovation, and allied IB	● Preserves engineering communities and allows for competition for scaling	FACE and SOSA for software and sensors respectively
Commoditize Modules	Prioritize producibility and lower qualification risk	● Sacrifices other priorities for production ramping	⦿ Lowers barriers to entry and eases surging	Energetic subsystems experimentation
Sustain System Competition	Use government reference architectures to sustain or expand prime competition	⦿ Avoids prime vendor lock, but challenging for exquisite systems	○ Eases bringing in latent or international capacity, but requires development	Affordable mass missiles and UAS; CCA; OMS/UCI inter-system MOSA
Acquire Mobilization Options	Employ contract-producers to address production constraints	⦿ Allows for mobilization, if license or government reference design in place	● Mobilizes flexible manufacturing and partner industrial bases.	Development of energetic subsystem technical data packages; franchise model

Legend: ○ Relationship situational or faces high barriers; ⦿ General benefit but notable risk(s) or scope limit(s); ● Clearcut benefits

Source: 18+ interviews with pathfinding programs and references from guidebooks (OSE&A, 2025; Guertin, 2025; Fookes, 2023; Kendall, 2013).

Interaction Between Affordable Mass and MOSA Pathfinder Enablers of Production Capacity and Surge Capability

Trade off breadth of approaches vs. commonality across systems



Recommendations



- Existing guidance on obsolescence is helpful when developing a product plan or seeking to insure against production constraints writ large.
- Existing efforts on energetics subsystems suggest that MOSA can be part of the solution to accelerating the pace of qualification by lowering risk by commoditizing modules and acquiring mobilization options.
- Pathfinders in adjacent systems suggest that MOSA can aid in incorporating Commercial-Off-The-Shelf Systems (COTS) and near-COTS to sustain markets that expand the munition IB.
- The Department has important leverage when ramping munition production. Both modularizing in-service munitions and acquiring mobilization options have production benefits, which can be considered as part of negotiating a steady demand signal.
- Testing conformance of inter-system MOSA will aid in achieving and sustaining the benefits of system competition and ensuring the viability of on-ramps.